Kurukshetra University Kurukshetra
Scheme of Examination for Undergraduate programmes
Subject: Geography
According to Curriculum Framework for Undergraduate Programmes as per NEP 2020
(Multiple Entry-Exit, Internships and Choice Based Credit System)
To be Implemented w.e.f. Academic Session 2023-24 in Kurukshetra University and Its Affiliated Colleges

Sem.	Course Type	Course Code	Nomenclature of paper	Credits	Contact hours	Internal marks	End term Marks	Total Marks	Duration of exam (Hrs.) T + P
Sem 1	CC-1 MCC-1	B23-GEO-101	Physical Geography (Theory)	3	3	20	50	70	3
			Physical Geography (Practical)	1	2	10	20	30	3
	MCC-2	B23-GEO-102	Fundamentals of Resource Geography (Theory)	3	3	20	50	70	3
			Fundamentals of Resource Geography (Practical)	1	2	10	20	30	3
	CC-M1	B23-GEO-103	General Geography of Haryana	2	2	15	35	50	3
	MDC-1	B23-GEO-104	Physical Geography of India (Theory)	2	2	15	35	50	3
			Physical Geography of India (Practical)	1	2	5	20	25	3
Sem 2	CC-2 MCC-3	B23-GEO-201	Human Geography (Theory)	3	3	20	50	70	3
			Human Geography (Practical)	1	2	10	20	30	3
	DSEC-1	B23-GEO-202	Cartographic Techniques in Geography (Theory)	3	3	20	50	70	3
			Cartographic Techniques in Geography (Practical)	1	2	10	20	30	3
	CC-M2	B23-GEO-203	General Geography of India	2	2	15	35	50	3
	MDC-2	B23-GEO-204	Human Geography of India (Theory)	2	2	15	35	50	3
			Human Geography of India (Practical)	1	2	5	20	25	3
Sem 3	CC-3 MCC-4 / CC-M3	B23-GEO-301	Geography of India (Theory)	3	3	20	50	70	3
			Geography of India (Practical)	1	2	10	20	30	3
	MCC-5	B23-GEO-302	History and Philosophy of Geography (Theory)	3	3	20	50	70	3
			History and Philosophy of Geography (Practical)	1	2	10	20	30	3
	MDC-3	B23-GEO-303	Resource Geography of India (Theory)	2	2	15	35	50	3
			Resource Geography of India (Practical)	1	2	5	20	25	3
	SEC-3	B23-SEC-325	Geographical Landscapes: Exploration beyond the classroom learning (Theory)	2	2	15	35	50	3
			Geographical Landscapes: Exploration beyond the classroom learning (Practical)	1	2	5	20	25	3
	CC-4 MCC-6	B23-GEO-401	Fundamentals of Economic Geography (Theory)	3	3	20	50	70	3
			Fundamentals of Economic	1	2	10	20	30	3

Sem 4			Geography (Practical)						
	MCC-7	B23-GEO-402	Introduction to Social Geography (Theory)	3	3	20	50	70	3
			Introduction to Social Geography (Practical)	1	2	10	20	30	3
	MCC-8	B23-GEO-403	Geography of Settlements (Theory)	3	3	20	50	70	3
			Geography of Settlements (Practical)	1	2	10	20	30	3
	DSE-1	B23-GEO-404	Fundamentals of Bio-Geography (Theory)	3	3	20	50	70	3
			Fundamentals of Bio-Geography (Practical)	1	2	10	20	30	3
		Or							
		B23-GEO-405	Geography of Tourism (Theory)	3	3	20	50	70	3
			Geography of Tourism (Practical)	1	2	10	20	30	3
	CC-M4 (V)	B23-VOC-226	Introduction to Geographical Information System (GIS) (Theory)	3	3	20	50	70	3
			Introduction to Geographical Information System (GIS) (Practical)	1	2	10	20	30	3
	VAC-4	B23-VAC-415	Disaster Management	2	2	15	35	50	3
Sem 5	CC-5 MCC-9	B23-GEO-501	Statistical Methods in Geography (Theory)	3	3	20	50	70	3
			Statistical Methods in Geography (Practical)	1	2	10	20	30	3
	MCC-10	B23-GEO-502	Regional Development and Planning (Theory)	3	3	20	50	70	3
			Regional Development and Planning (Practical)	1	2	10	20	30	3
	DSE-2	B23-GEO-503	Geography of Trade and Transport (Theory)	3	3	20	50	70	3
			Geography of Trade and Transport (Practical)	1	2	10	20	30	3
		Or							
		B23-GEO-504	Cultural Geography (Theory)	3	3	20	50	70	3
			Cultural Geography (Practical)	1	2	10	20	30	3
	DSE-3	B23-GEO-505	Geography of Disaster Management (Theory)	3	3	20	50	70	3
			Geography of Disaster Management (Practical)	1	2	10	20	30	3
		Or							
		B23-GEO-506	Geography of Water Resources (Theory)	3	3	20	50	70	3
			Geography of Water Resources (Practical)	1	2	10	20	30	3
Sem 6	CC-6 MCC-11 / CC-M6	B23-GEO-601	Fundamentals of Remote Sensing (Theory)	3	3	20	50	70	3
			Fundamentals of Remote Sensing (Practical)	1	2	10	20	30	3
	MCC-12	B23-GEO-602	Urban Geography (Theory)	3	3	20	50	70	3
			Urban Geography (Practical)	1	2	10	20	30	3
	DSE-4	B23-GEO-603	Political Geography Theory)	3	3	20	50	70	3
			Political Geography (Practical)	1	2	10	20	30	3
		Or							
		B23-GEO-	Agricultural Geography	3	3	20	50	70	3

		604	(Theory)						
			Agricultural Geography (Practical)	1	2	10	20	30	3
	DSE-5	B23-GEO-605	Elementary Soil Geography (Theory)	3	3	20	50	70	3
			Elementary Soil Geography (Practical)	1	2	10	20	30	3
		Or							
		B23-GEO-606	Introduction to Population Geography (Theory)	3	3	20	50	70	3
			Introduction to Population Geography (Practical)	1	2	10	20	30	3
	CC-M6 (V)	B23-VOC-320	Making of Maps (Theory)	3	3	20	50	70	3
			Making of Maps (Practical)	1	2	10	20	30	3
Sem 7	**CC-H1 / CC-HM1**	B23-GEO-701	Geography and Climates	4	4	30	70	100	3
	CC-H2	B23-GEO-702	Landforms: Origin, Structure and Processes	4	4	30	70	100	3
	CC-H3	B23-GEO-703	Geography and World Economies	4	4	30	70	100	3
	DSE-6	B23-GEO-704	Geography of Asia	4	4	30	70	100	3
		Or							
		B23-GEO-705	Population Dynamics and Policies	4	4	30	70	100	3
	PC-H1	B23-GEO-706	Advanced Cartography	4	8	30	70	100	6
Sem 8	**CC-H4 / CC-HM2**	B23-GEO-801	Geography and Hazard Management	4	4	30	70	100	3
	CC-H5	B23-GEO-802	Research Methodology in Geography	4	4	30	70	100	3
	CC-H6	B23-GEO-803	Geography of Agriculture and Food Security	4	4	30	70	100	3
	DSE-7	B23-GEO-804	Geography of Europe	4	4	30	70	100	3
		Or							
		B23-GEO-805	Geography and Watershed Management	4	4	30	70	100	3
	PC-H2	B23-GEO-806	Morphometric Analysis of Landforms	4	8	30	70	100	6
		Or							
	CC-H4/ CC-HM2	B23-GEO-801	Geography and Hazard Management	4	4	30	70	100	3
	CC-H5	B23-GEO-802	Research Methodology in Geography	4	4	30	70	100	3
	Project/Dissertation	B23-GEO-807	Project/Dissertation	12	-	-	-	-	-

Kurukshetra University Kurukshetra
Syllabus for Under Graduate Programmes as per NEP- 2020
(Multiple Entry – Exit, Internships and Choice Based Credit System)
w.e.f. 2023-24

<table>
<tr><td colspan="4">CC-I/MCC-I</td></tr>
<tr><td colspan="4">Session: 2023-24</td></tr>
<tr><td colspan="4">Part A - Introduction</td></tr>
<tr><td>Subject</td><td colspan="3">Geography</td></tr>
<tr><td>Semester</td><td colspan="3">I</td></tr>
<tr><td>Name of the Course</td><td colspan="3">Physical Geography</td></tr>
<tr><td>Course Code</td><td colspan="3">B23-GEO-101</td></tr>
<tr><td>Course Type: (CC/MCC/MDC/CCM/DSEC/VOC/ DSE/PC/AEC/VAC)</td><td colspan="3">CC/MCC</td></tr>
<tr><td>Level of the course (As per Annexure-I)</td><td colspan="3">100-199</td></tr>
<tr><td>Pre-requisite for the course (if any)</td><td colspan="3">N.A.</td></tr>
<tr><td>Course Learning Outcomes (CLOs):</td><td colspan="3">After completing this course, the learner will be able to:
1. acquire the knowledge about basic concepts of geo-tectonics.
2. understand about the agents and processes of change on the surface of earth.
3. enrich knowledge about atmosphere and its climate.
4. attain knowledge about ocean surface configuration and circulation in oceanic water.
5* attain skills in solving practical problems associated with physical geography.</td></tr>
<tr><td rowspan="2">Credits</td><td>Theory</td><td>Practical</td><td>Total</td></tr>
<tr><td>3</td><td>1</td><td>4</td></tr>
<tr><td>Contact Hours</td><td>3</td><td>3</td><td>5</td></tr>
<tr><td colspan="2">Max. Marks: 100
Internal Assessment Marks: 20+10 = 30
End Term Exam Marks: 50+20 = 70</td><td colspan="2">Time: 03 Hours</td></tr>
</table>

Part B- Contents of the Course		
Instructions for Paper- Setter		
Question 1 is compulsory comprising of five sub parts spread over entire syllabus (two marks for each sub part). There will be eight long questions, two from each unit. The candidate has to answer four long questions, at least one question from each unit. All questions carry equal marks.		
Unit	**Topics**	**Contact Hours**
I	1. Interior of the earth, geological time scale, rocks and their types. 2. Theory of isostasy, continental drift and plate tectonic; earthquakes and volcanoes.	11
II	3. Degradational processes: weathering, mass wasting and resultant landforms. 4. Landforms generated by following geomorphic agents: river, under-ground water, wind and glacier.	11
III	5. Weather and climate: Atmosphere-composition and structure. 6. Atmospheric temperature, pressure and moisture: measurement and distribution.	11
IV	7. Surface configuration of ocean floors: surface relief of the Pacific, Atlantic and Indian Ocean. 8. Circulation of oceanic waters: current of the Pacific, Atlantic and Indian Ocean.	12
V*	Instructions for external practical examiner: There will be three questions in all and candidate has to attempt two exercises. Distribution of marks for evaluation Exercise = 10 marks File record = 5 marks Viva-Voce = 5 marks Practical Record: A project file consisting of 8 exercises on the below mentioned themes: - 1. Identification and collection of rock samples: granite, basalt, laterite, limestone, shale, sandstone, conglomerate, slate, phyllite, schist, gneiss, quartzite (1 exercise). 2. Extraction of physiographic information from Survey of India 1:50000 topographical maps of mountain, plateau	30

	and plain regions (2 exercises). 3. Measurement of weather elements using analogue instruments: temperature (maximum, minimum and mean) relative humidity, rainfall and preparation of climograph, hythergraph and hyetograph (3 exercises). 4. Interpretation of a daily weather map of India: Pre-Monsoon, Monsoon and Post-Monsoon (2 exercises).	
Suggested Evaluation Methods		
Internal Assessment: ➢ **Theory** • Class Participation: **05 Marks** • Seminar/presentation/assignment/quiz/class test etc.: **05 Marks** • Mid-Term Exam: **10 Marks** ➢ **Practicum** • Class Participation: **NIL** • Seminar/Demonstration/Viva-voce/Lab records etc.: **10 Marks** • Mid-Term Exam: **NIL**		**End Term Examination:** **50 Marks** **20 Marks**
Part C-Learning Resources		
Recommended Books/e-resources/LMS: 1. Barry, RG and Chorley, RJ (1998) Atmosphere, Weather and Climate, Routledge, London. 2. Bunnett, RB (1987) Physical Geography in Diagrams, Pearson Education, New Delhi. 3. Critchfield, H (2002) General Climatology, Prentice-Hall of India, New Delhi. 4. Kale, V and Gupta, A (2001) Element of Geomorphology, Oxford University Press, Calcutta. 5. Khullar, DR (2014) Physical Geography, Kalyani Publishers, New Delhi. 6. Monkhouse, FJ (1960) Principles of Physical Geography. Hodder and Stoughton, London. 7. Singh, S (1998) Geomorphology, Prayag Publication, Allahabad. 8. Singh, S (2012) Physical Geography, Prayag Publication, Allahabad. **9.** Thornbury, WD (1969) Principles of Geomorphology, John Wiley and Sons, New York. 10. Trewartha, GT (1981) An Introduction to Climate, Mc-Graw Hill, New York.		

*Applicable for courses having practical component.

MCC-2			
Session: 2023-24			
Part A – Introduction			
Subject	Geography		
Semester	I		
Name of the Course	Fundamentals of Resource Geography		
Course Code	B23-GEO-102		
Course Type: (CC/MCC/MDC/CCM/DSEC/VOC/ DSE/PC/AEC/VAC)	MCC		
Level of the course (As per Annexure-I)	100-199		
Pre-requisite for the course (if any)	NA		
Course Learning Outcomes (CLOs):	After completing this course, the learner will be able to: 1. acquaint with nature, techniques and field of resource geography. 2. enhance knowledge about classification and development process of natural resources. 3. provide knowledge on location, conservation and management methods of resources for sustainable development. 4. provide knowledge about concepts, policies, problems and models of natural resource utilization. 5* attain skills in mapping and monitoring of land, water, forest and mineral resources.		
Credits	Theory	Practical	Total
	3	1	4
Contact Hours	3	2	5
Max. Marks: 100 **Internal Assessment Marks: 20+10 = 30** **End Term Exam Marks: 50+20 = 70**		**Time: 03 Hours**	
Part B- Contents of the Course			
Instructions for Paper- Setter			

Question 1 is compulsory comprising of five sub parts spread over entire syllabus (two marks for each sub part), to be answered in 15-20 words. There will be eight long questions, two from each unit. The candidate has to answer four long questions, at least one question from each unit. All questions carry equal marks.

Unit	Topics	Contact Hours
I	1. Nature, scope, techniques and importance of resource geography. 2. Concepts of resource: exploitation, accumulation, poverty and resource degradation.	11
II	3. Classification of resources: renewable and non-renewable, biotic and abiotic resources. 4. Relationship between natural resources and development process. Role of technology in natural resource development.	11
III	5. Distribution, utilization, problems and management of land and water resources. 6. Distribution, utilization, problems and management of forest and mineral resources.	12
IV	7. Models of natural resources process: Zimmermann's primitive and Kirk's decision models. 8. Sustainable resource development; Policies and challenges of natural resource management.	11
V*	Instructions for external practical examiner: There will be three questions in all and candidate has to attempt two exercises. Distribution of marks for evaluation Exercise = 10 marks File record = 5 marks Viva-Voce = 5 marks Practical Record: A project file consisting of 8 exercises on the below mentioned themes: - 1. Preparation of land use/land cover map of an area from topographical sheets and aerial photographs (2 exercises). 2. Mapping of forest cover of an area from topographical sheets and aerial photographs (2 exercises). 3. Mapping of water bodies of an area from topographical sheets and aerial photographs (2 exercises). 4. Decadal changes in country-wise production of coal and iron ore with comparative decadal changes (2 exercises).	30

Suggested Evaluation Methods	
Internal Assessment: ➢ **Theory** • Class Participation: **05 Marks** • Seminar/presentation/assignment/quiz/class test etc.: **05 Marks** • Mid-Term Exam: **10 Marks** ➢ **Practicum** • Class Participation: **NIL** • Seminar/Demonstration/Viva-voce/Lab records etc.: **10 Marks** • Mid-Term Exam: **NIL**	**End Term Examination:** **50 Marks** **20 Marks**

Part C-Learning Resources

Recommended Books/e-resources/LMS:

1. Barbier, EB (2005) Natural Resources and Economic Development, Cambridge University Press, Cambridge.
2. Bhatta, B (2011) Remote Sensing and GIS, Oxford University Press, New Delhi.
3. Borton, I and Kates, RW (1984) Readings in Resource Management and Conservation, University of Chicago Press, Chicago.
4. Bruce, M (1989) Geography and Resource Analysis, John Wiley and Son, New York.
5. Chiras, DD and Reganold, JP (2009) Natural Resource Conservation: Management for a Sustainable Future, Pearson, New Delhi.
6. Cutter SN, Renwich HL and Renwick W (1991) Exploitation, Conservation, Preservation: A Geographical Perspective on Natural Resources Use, John Wiley and Sons, New York.
7. Gadgil M and Guha R (2005) The Use and Abuse of Nature: Incorporating This Fissured Land: An Ecological History of India and Ecology and Equity, Oxford University Press, USA.
8. Gautam, A (2013) Geography of Resources: Exploitation, Conservation and Management. Sharda Pustak Bhawan, Allahabad.
9. Guha, JL and PR Chattroj (1994) Economic Geography-A Study of Resources, The World Press, Calcutta.
10. Holechek JLC, Richard A, Fisher JT and Valdez R (2003) Natural Resources: Ecology, Economics and Policy, Prentice Hall, New Jersey.
11. Jones G and Hollier G (1997) Resources, Society and Environmental Management, Paul Chapman, London.
12. Klee G (1991) Conservation of Natural Resources, Prentice Hall, Englewood.
13. Lillesand, TM, Kiefer, RW and Chipman, JW (2015) Remote Sensing and Image Interpretation, John Wiley and Sons, New York.
14. Martino, RL (1969) Resource Management. Mc Graw Hill Book Company, London.
15. Mather AS and Chapman K (1995) Environmental Resources, John Wiley and Sons, New York.
16. Mitchell B (1997) Resource and Environmental Management, Longman Harlow, England.

17. Negi, BS (2000) Geography of Resources, Kedar Nath and Ram Nath Publications, Meerut.
18. Owen, OS (1971) Natural Resource Conservation: An Ecological Approach, McMillion, New Delhi.
19. Owen S and Owen PL (1991) Environment, Resources and Conservation, Cambridge University Press, New York.
20. Raja, M (1989) Renewable Resources, Development, Concept Publication, New Delhi.
21. Rees J (1990) Natural Resources: Allocation, Economics and Policy, Routledge, London.
22. Roy, PK (2006) Resource Studies, New Central Book Agency, Calcutta.
23. Shetty, R (2009) An Analysis of World Resources with reference to India, Sarala Raj Ria Publishers, Mysore.
24. Zimmermann, EW (1951) World Resources and Industries, Harper and Brothers, New Delhi.

*Applicable for courses having practical component.

CC-M1			
Session: 2023-24			
Part A - Introduction			
Subject	Geography		
Semester	I		
Name of the Course	General Geography of Haryana		
Course Code	B23-GEO-103		
Course Type: (CC/MCC/MDC/CC-M/DSEC/VOC/DSE/PC/AEC/VAC)	CC-M		
Level of the course (As per Annexure-I	100-199		
Pre-requisite for the course (if any)	NA		
Course Learning Outcomes (CLO):	After completing this course, the learner will be able to: 1. acquaint with physiography and climate of state. 2. understand the agriculture and industrial status of the state. 3. familiarize with population distribution and literacy of the state. 4. gain knowledge of trade and transport of Haryana. 5*. NA		
Credits	Theory	Practical	Total
	02	00	02
Contact Hours	2	-	2
Max. Marks:50 **Internal Assessment Marks:15** **End-Term Exam Marks: 35**		**Time:3 hours**	
Part B- Contents of the Course			
Instructions for Paper-Setter			

Question 1 is compulsory comprising seven sub-parts spread over the entire syllabus (one mark for each sub-part), to be answered in 10-15 words. There will be eight long questions, two from each unit. The candidate has to answer four long questions, at least one question from each unit. All questions carry equal marks.

Unit	Topics	Contact Hours
I	1. Physiography, relief and climate of Haryana. 2. Drainage, soils and natural vegetation.	7
II	3. Agriculture: cropping pattern and challenges. 4. Major industries and industrial centres of Haryana.	8
III	5. Population: distribution, density and growth. 6. Population composition: structure and literacy.	8
IV	7. Pattern of trade and transport. 8. Cultural regions of Haryana.	7
V*	NA	

Suggested Evaluation Methods

Internal Assessment: ➢ **Theory** • Class Participation**: 04 Marks** • Seminar/presentation/assignment/quiz/class test etc**.: 04 Marks** • Mid-Term Exam: **07 Marks** ➢ **Practicum** • Class Participation: **NIL** • Seminar/Demonstration/Viva-voce/Lab records etc.: **NIL** • Mid-Term Exam: **NIL**	**End-Term Examination:** **35 Marks** **NIL**

Part C-Learning Resources

1. Census of India (1981) Regional Division in Haryana.
2. Census of India (2001) Administrative Atlas of Haryana.
3. Deshpande CD (1992) India: A Regional Interpretation, ICSSR and Northern Book Centre.
4. FICCI (2007) State of Infrastructure in Haryana.
5. Singh, Jasbir (1976) Agricultural Geography of Haryana, Vishal Publishers, Kurukshetra.
6. Singh, R.L. (1971) India-A Regional Geography, National Geographical Society, Varanasi

7. Spate OHK and ATA Learmonth (1971) India and Pakistan, Methuen, London.
8. Tirtha R and Gopal Krishna (1996) Emerging India, Rawat Publications, Jaipur.
9. Regional division of Haryana, census of India, Chandigarh

*Applicable for courses having practical components.

MDC-1			
Session: 2023-24			
Part A – Introduction			
Subject	Geography		
Semester	I		
Name of the Course	Physical Geography of India		
Course Code	B23-GEO-104		
Course Type: (CC/MCC/MDC/CC-M/DSEC/VOC/DSE/PC/AEC/VAC)	MDC		
Level of the course (As per Annexure-I	100-199		
Pre-requisite for the course (if any)	N.A.		
Course Learning Outcomes (CLO):	After completing this course, the learner will be able to: 1. understand the geological and physiographic structure of India. 2. enrich skills about drainage system and various hydrological regimes. 3. understand the climate and its characteristics. 4. acquire knowledge about different types of flora and soils found in India. 5* attain skills in solving various practical problem associated with physical aspects of India.		
Credits	Theory	Practical	Total
	2	1	3
Contact Hours	2	2	4
Max. Marks:100 **Internal Assessment Marks: 20+10 =30** **End-Term Exam Marks: 50+20 = 70**		**Time:3 hours**	
Part B- Contents of the Course			

Instructions for Paper-Setter		
Unit	**Topics**	**Contact Hours**
I	1. Geological history and regions of India. 2. Physiographic structure and divisions.	7
II	3. Drainage system and its evolution. 4. Hydrological regimes of Indian rivers.	7
III	5. Climate: distribution of temperature, pressure and rainfall; classification and affecting factors. 6. Monsoon: circulation, mechanism and theories.	8
IV	7. Natural vegetation: classification, distribution and inter-relationships 8. Soils: classification, distribution and inter-relationships.	8
V*	Instructions for external practical examiner: There will be three questions in all and candidate has to attempt two exercises. Distribution of marks for evaluation Exercise = 10 marks File record = 5 marks Viva-Voce = 5 marks _____ Practical Record: A project file consisting of 8 exercises on the below mentioned themes: - 1. Hydrological regimes of peninsular and Himalayan rivers (2 exercises). 2. Annual trend of temperature for more than three decades (maximum, minimum and mean) (2 exercises). 3. Comparative analysis of seasonal variability of rainfall from different climatic reasons of India (2 exercises). 4. Preparation of an inventory of flora and fauna in India (1 exercise). 5. Preparation of an inventory of major geological disasters in past one decade in India (1 exercise).	30

Suggested Evaluation Methods	
Internal Assessment: ➢ **Theory** • Class Participation: **05 Marks** • Seminar/presentation/assignment/quiz/class test etc.: **05 Marks** • Mid-Term Exam: **10 Marks**	**End-Term Examination:** **50 Marks**

➢ **Practicum** • Class Participation: **NIL** • Seminar/Demonstration/Viva-voce/Lab records etc.: **10 Marks** • Mid-Term Exam: **NIL**	**20 Marks**
Part C-Learning Resources	
Recommended Books/e-resources/LMS: 1. Deshpande, C.D. (1992) India-A Regional Interpretation, Northern Book Depot, New Delhi. 2. Hussain Majid (2015) Geography of India, Mc Graw Hill Education. 3. Shafi, M. (2000) Geography of South Asia, McMillan and Company, Calcutta. 4. Singh, Gopal (2006) Geography of India, Atma Ram and Sons, New Delhi. 5. Singh, R.L. (1971) India: A Regional Geography, National Geographical Society, India, Varanasi.	

*Applicable for courses having practical components.

CC-2/MCC-3			
Session: 2023-24			
Part A - Introduction			
Subject	Geography		
Semester	II		
Name of the Course	Human Geography		
Course Code	B23-GEO-201		
Course Type: (CC/MCC/MDC/CC-M/DSEC/VOC/DSE/PC/AEC/VAC)	CC/MCC		
Level of the course (As per Annexure-I	100-199		
Pre-requisite for the course (if any)	N.A.		
Course Learning Outcomes (CLO):	After completing this course, the learner will be able to: 1. gain knowledge about the fundamentals of human geography. 2. enhance the knowledge of race and religion. **3.** understand the organization of space. 4. familiarize with world economic systems. _____ 5* gain knowledge of mapping socio – economic and demographic data.		
Credits	Theory	Practical	Total
	3	1	4
Contact Hours	3	2	5
Max. Marks: 100 **Internal Assessment Marks:20+10=30** **End Term Exam Marks: 50+20=70**		**Time: 03 Hours**	
Part B- Contents of the Course			
Instructions for Paper- Setter			

Question 1 is compulsory consisting of five sub parts spread over entire syllabus (two marks for each sub parts), to be answered in 15-20 words. There will be eight long questions, two from each unit. The candidate has to answer four long questions, at least one question from each unit. All questions carry equal marks.

Unit	Topics	Contact Hours
I	1. Definition, nature and scope of human geography. 2. Development of human geography approaches to study human geography, branches and relation with other social sciences.	11
II	3. Human race: Meaning, classification of races and their global diffusion and distribution. 4. Religion: Meaning, nature and classification. Evolution and global distribution of major religions in the world.	11
III	5. Organization of space: central place theory, agricultural location model and industrial location model. 6. Distribution, density and growth of population: Determinants and world pattern.	11
IV	7. World pattern of development: economy and polity 8. World pattern of migration: streams and determinants	12
V*	Instructions for external practical examiner: There will be three questions in all and candidate has to attempt two exercises. Distribution of marks for evaluation Exercise = 10 marks File record = 5 marks Viva-Voce = 5 marks Practical Record: A project file consisting of 8 exercises on the below mentioned themes: - 1. Composition of major religions of the world (1 exercise). 2. Methods of representing population distribution and density (2excercises). 3. Flow diagram of migration streams of world population (1excercise). 4. Plotting of isotims and isodapane (2 exercises). **5.** Spatial and temporal growth of world population (2 exercises).	30

Suggested Evaluation Methods	
Internal Assessment: ➢ **Theory** • Class Participation: **5 Marks** • Seminar/presentation/assignment/quiz/class test etc**.: 5 Marks** • Mid-Term Exam: **10 Marks** ➢ **Practicum:** • Class Participation: **NIL** • Seminar/Demonstration/Viva-voce/Lab records etc.: **10 Marks** • Mid-Term Exam: **NIL**	**End Term Examination:50** **20 Marks**

Part C-Learning Resources

Recommended Books/e-resources/LMS:

1. Agarwal, A et al (1999) The Citizen's Fifth Citizen's Report, Centre for Science & Environment, New Delhi.
2. Alexander, John. W. (1988) Economic Geography, Prentice Hall of India Ltd., New Delhi.
3. Bergwan, Edward E. (1985) Human Geography: Culture Connections and Landscape, Prentice-Hall, New Jersey.
4. Carr, M. Patterns (1987) Process and Change in Human Geography, McMillan Education, London.
5. Carter, H. (1972) The study of Urban Geography, Edward Arnold, London.
6. Chandna, R.C. (2016) A Geography of Population: Concepts, Determinants and Patterns, Kalyani Publishers, New Delhi.
7. DeBlij, H. J. (1996) Human Geography, Culture, Society and Space, John Wiley, New York.
8. Fellman, J.L. (1997) Human Geography-Landscapes of Human Activities, Brown and Benchman Pub., USA.
9. Hassan, I. ( ) Population Geography: A Systematic Exposition, Routledge, London.
10. Hussain, M. (2018) Human Geography, Rawat, Publication, Jaipur.
11. McBride, P.J. (1996): Human Geography; Systems Patterns and Change, Nelson, UK and Canada.
12. Michael, C. (1996) New Patterns: Process and Change in Human Geography, Nelson.
13. Qazi, S.A. (2010) Population Geography, APH publishers.
14. Ramachandra, R. (1992) Urbanization and Urban System in India, Oxford, London.
15. Sharma, Y.K. (2017). Human Geography, Narain publishers.
16. Singh, N. (2015) A Text Book of Human Geography, Rajesh Publishing.

*Applicable for courses having practical component.

DSEC-1			
Session: 2023-24			
Part A – Introduction			
Subject	Geography		
Semester	II		
Name of the Course	Cartographic Techniques in Geography		
Course Code	B23-GEO-202		
Course Type: (CC/MCC/MDC/CC-M/DSEC/VOC/DSE/PC/AEC/VAC)	DSEC		
Level of the course (As per Annexure-I	100-199		
Pre-requisite for the course (if any)	N.A.		
Course Learning Outcomes (CLO):	After the completion of course, the students will have ability to: 1. understand and differentiate types of map scales. 2. become aware about the applications of map scales. 3. gains the basic understanding of map making and will be able to prepare different kinds of thematic maps. 4. apprehend the knowledge about surveying and survey tools. _____ 5* acquire skills to make use of scales and making thematic maps and diagrams		
Credits	Theory	Practical	Total
	3	1	4
Contact Hours	3	2	5
Max. Marks:100 **Internal Assessment Marks: 20+10 =30** **End-Term Exam Marks: 50+20 = 70**		**Time:3 hours**	

Part B- Contents of the Course		
Instructions for Paper-Setter Question 1 is compulsory comprising five sub-parts spread over the entire syllabus (two marks for each sub-part), to be answered in 15-20 words. There will be eight long questions, two from each unit. The candidate has to answer four long questions, at least one question from each unit. All questions carry equal marks.		
Unit	**Topics**	**Contact Hours**
I	1. Nature and scope of cartography, historical and recent development. 2. Drawing instruments: properties and characteristics; drawing techniques.	11
II	3. Scale: types, significance and applications. 4. Maps: classification, characteristics, significance and limitations.	11
III	5. Basic concepts of surveying and survey equipment's, coordinate system and map: magnetic and true north, polar and rectangular. 6. Techniques of map enlargement and reduction; map producing agencies in India (GSI, SOI, FSI, NATMO, NBBSLUP, NRSC, AISSLUP and IMD).	11
IV	7. Methods and representation of climatic data. 8. Methods and representation of socio-economic data.	12
V*	Instructions for external practical examiner: There will be three questions in all and candidate has to attempt two exercises. Distribution of marks for evaluation Exercise = 10 marks File record = 5 marks Viva-Voce = 5 marks _____ Practical Record: A project file consisting of 8 exercises on the below mentioned themes: - 1. Graphical representation of scales (2 exercises) 2. Construction of thematic maps (3 exercises) 3. Representation of data by one, two and three-dimensional diagrams (3 exercises)	30

Suggested Evaluation Methods	
Internal Assessment: ➢ **Theory** • Class Participation: **05 Marks** • Seminar/presentation/assignment/quiz/class test etc.: **05 Marks** • Mid-Term Exam: **10 Marks** ➢ **Practicum** • Class Participation: **NIL** • Seminar/Demonstration/Viva-voce/Lab records etc.: **10 Marks** • Mid-Term Exam: **NIL**	**End-Term Examination:** **50 Marks** **20 Marks**

Part C-Learning Resources

Recommended Books/e-resources/LMS:

1. Dent, B.D. (1999) Cartography: Thematic Map Design, (Vol. 1), McGraw Hill.
2. Gupta, K.K. and Tyagi, V.C (1992) Working with Maps, Survey of India, DST, New Delhi.
3. Monkhouse, F.J and Wilkinson, H.R (1971) Maps and Diagrams. Methuen and Co. Ltd., London
4. Ramamurthy, K (1982) Map Interpretation, Rex Printers, Madras.
5. Robinson A (1953) Elements of Cartography, John Wiley.
6. Siddhartha, K (2006) Geography through maps, Kisalaya Publications Pvt. Ltd, Delhi
7. Singh, G (2005) Map work and practical geography. Vikas Publishing House Pvt. Ltd., New Delhi
8. Singh, L.R and Singh, R (1973) Map work and practical geography, Central Book Allahabad
9. Singh, R.L (2005) Elements of Practical Geography. Kalyani Publishers, New Delhi. India.

*Applicable for courses having practical components.

CC-M2			
Session: 2023-24			
Part A - Introduction			
Subject	Geography		
Semester	II		
Name of the Course	General Geography of India		
Course Code	B23-GEO-203		
Course Type: (CC/MCC/MDC/CC-M/DSEC/VOC/DSE/PC/AEC/VAC)	CC-M		
Level of the course (As per Annexure-I	100-199		
Pre-requisite for the course (if any)	NA		
Course Learning Outcomes (CLO):	After completing this course, the learner will be able to: 1. understand the location, geographical expansion, and physiography. 2. have acquaintance with the drainage and climate. 3. enrich knowledge about peopling of the nation. 4. internalize the concept of unity in diversity of our nation. 5* NA		
Credits	Theory	Practical	Total
	02	00	02
Contact Hours	2	-	2
Max. Marks:50 **Internal Assessment Marks:15** **End-Term Exam Marks: 35**		**Time:3 hours**	
Part B- Contents of the Course			
Instructions for Paper-Setter Question 1 is compulsory comprising seven sub-parts spread over the entire syllabus (one mark for each sub-part), to be answered in 10-15 words. There will be eight long questions, two from			

each unit. The candidate has to answer four long questions, at least one question from each unit. All questions carry equal marks.

Unit	Topics	Contact Hours
I	1. India: Locational setting and geographical expansion. 2. Physiographic divisions of India.	8
II	3. Drainage system and climate. 4. Soil and natural vegetation.	8
III	5. The Peopling of India. 6. Population distribution, density and growth.	7
IV	7. Population composition: ethnic and socio-cultural attributes (castes and tribes). 8. Unity in diversity in India.	7
V*	NA	

Suggested Evaluation Methods

Internal Assessment: ➢ **Theory** • Class Participation**: 04 marks** • Seminar/presentation/assignment/quiz/class test etc.: **04 marks** • Mid-Term Exam: **7 marks** ➢ **Practicum** • Class Participation: **NIL** • Seminar/Demonstration/Viva-voce/Lab records etc.: **NIL** • Mid-Term Exam: **NIL**	**End-Term Examination:** **35 Marks** **NIL**

Part C-Learning Resources

Recommended Books/e-resources/LMS:

1. Bose, A. et. al. eds (2001) Population in India's Development, 1947-2000, Vikas, New Delhi.
2. Deshpande C. D. (1992) India: A Regional Interpretation, ICSSR, New Delhi.
3. Johnson, B. L. C., ed. (2001) Geographical Dictionary of India. Vision Books, New Delhi.
4. Mandal R. B. (ed.) (1990) Patterns of Regional Geography – An International Perspective. Vol. 3 – Indian Perspective.
5. Sdyasuk Galina and P Sengupta (1967) Economic Regionalisation of India, Census of India
6. Sharma, T. C. (2003) India - Economic and Commercial Geography. Vikas Publ., New Delhi.
7. Singh R. L. (1971) India: A Regional Geography, National Geographical Society of India.
8. Singh, Jagdish (2003) India - A Comprehensive & Systematic Geography, Gyanodaya Prakashan, Gorakhpur.
9. Spate O. H. K. and Learmonth A. T. A. (1967) India and Pakistan: A General and Regional Geography, Methuen

10. Pathak, C. R. (2003) Spatial Structure and Processes of Development in India. Regional Science Assoc., Kolkata.
11. Tirtha, Ranjit (2002) Geography of India, Rawat Publs., Jaipur & New Delhi.

*Applicable for courses having practical components.

MDC-2			
Session: 2023-24			
Part A - Introduction			
Subject	Geography		
Semester	II		
Name of the Course	Human Geography of India		
Course Code	B23-GEO-204		
Course Type: (CC/MCC/MDC/CC-M/DSEC/VOC/DSE/PC/AEC/VAC)	MDC		
Level of the course (As per Annexure-I	200-299		
Pre-requisite for the course (if any)	N.A.		
Course Learning Outcomes (CLO):	After completing this course, the learner will be able to: 1. gain knowledge about population characteristics of India. 2. have understanding about distribution of tribes in India **3.** acquaint with distribution of religion in India 4. gain insight into intricacies of caste structure of India 5* understand the mapping of racial and cultural characteristics of Indian population		
Credits	Theory	Practical	Total
	2	1	3
Contact Hours	2	2	4
Max. Marks: 75 **Internal Assessment Marks:15+05=20** **End Term Exam Marks: 35+20=55**		**Time: 03 Hours**	
Part B- Contents of the Course			
Instructions for Paper- Setter			

Question 1 is compulsory comprising of seven sub parts spread over entire syllabus (one mark for each sub part), to be answered in 10-15 words. There will be eight long questions, two from each unit. All questions carry equal marks.

Unit	Topics	Contact Hours
I	1. Population distribution, density and growth. 2. Population composition, sex ratio and literacy.	11
II	3. Pattern and growth of urbanization. 4. Working population: composition and distribution.	11
III	5. Distribution of scheduled tribe population in India 6. Religion: distribution of major religions in India.	11
IV	7. Linguistic and cultural diversity in India. 8. Unity and diversity in India.	12
V*	Instructions for external practical examiner: There will be three questions in all and candidate has to attempt two exercises. Distribution of marks for evaluation Exercise = 10 marks File record = 5 marks Viva-Voce = 5 marks Practical Record: A project file consisting of 8 exercises on the below mentioned themes: - 1. Age and sex pyramid of Indian population (1 exercise). 2. State wise distribution and composition of working population in India (1 exercises). 3. Map the scheduled tribe population distribution in India (1 exercises). 4. Concentration of urban population by location quotient (1 exercise). 5. Distribution of scheduled caste population (1 exercises). 6. Composition of the major religions in India (1 exercises). 7. Distribution of literacy –rural - urban and male-female (2 exercises).	30

Suggested Evaluation Methods	
Internal Assessment: ➢ **Theory** • Class Participation: **5 Marks** • Seminar/presentation/assignment/quiz/class test etc**.: 5 Marks** • Mid-Term Exam: **5 Marks** ➢ **Practicum:** • Class Participation: **NIL** • Seminar/Demonstration/Viva-voce/Lab records etc.: **5 Marks** • Mid-Term Exam: **NIL**	**End Term Examination:35** **20 Marks**

Part C-Learning Resources

Recommended Books/e-resources/LMS:

1. Agarwal, A et al (1999) The Citizen's Fifth Citizen's Report, Centre for Science & Environment, New Delhi.
2. Alexander, John. W. (1988) Economic Geography, Prentice Hall of India Ltd., New Delhi.
3. Bergwan, Edward E (1985) Human Geography: Culture Connections and Landscape, Prentice-Hall, New Jersey.
4. Carr, M. Patterns (1987) Process and Change in Human Geography, McMillan Education, London.
5. Carter, H. (1972) The study of Urban Geography, Edward Arnold, London.
6. Chandna, R.C. (2016) A Geography of Population: Concepts, Determinants and Patterns, Kalyani Publishers, New Delhi.
7. DeBlij, H. J. (1996) Human Geography, Culture, Society and Space, John Wiley, New York.
8. Fellman, J.L. (1997) Human Geography-Landscapes of Human Activities, Brown and Benchman Pub., USA.
9. Hassan, I. ( ) Population Geography: A Systematic Exposition, Routledge, London.
10. Hussain, M. ( ) Geography of India,
11. Hussain, M. (2018) Human Geography, Rawat, Publication, Jaipur.
12. Khullar, D. R. ( ) India A comprehensive Geography, Kalayani Publisher.
13. McBride, P.J. (1996) Human Geography; Systems Patterns and Change, Nelson, UK and Canada.
14. Michael, C. (1996) New Patterns: Process and Change in Human Geography, Nelson, U.k..
15. Qazi, S.A. (2010) Population Geography, APH publishers.
16. Ramachandra, R. (1992) Urbanization and Urban System in India, Oxford, London.
17. Sharma, Y.K. (2017) Human Geography, Narain publishers.
18. Singh, N. (2015) A Text Book of Human Geography, Rajesh Publishing.

*Applicable for courses having practical component.

CC-3/MCC-4/CC-M3			
Session: 2023-24			
Part A – Introduction			
Subject	Geography		
Semester	III		
Name of the Course	Geography of India		
Course Code	B23-GEO-301		
Course Type: (CC/MCC/MDC/CC-M/DSEC/VOC/DSE/PC/AEC/VAC)	CC/MCC/CC-M		
Level of the course (As per Annexure-I	100-199		
Pre-requisite for the course (if any)	NA		
Course Learning Outcomes (CLO):	After completing this course, the learner will be able to: 1. provide knowledge about the physiography of our nation. 2. understand the agriculture and irrigation system. 3. understand the basic demographic structure and literacy. 4. provide awareness about the resources and industries of our nation. 5* acquire knowledge of socio-economic and demographic data		
Credits	Theory	Practical	Total
	03	01	04
Contact Hours	3	2	5
Max. Marks:100 **Internal Assessment Marks:20+10=30** **End-Term Exam Marks: 50+20=70**		**Time:3 hours**	
Part B- Contents of the Course			

Instructions for Paper-Setter

Question 1 is compulsory comprising five sub-parts spread over the entire syllabus (two marks for each sub-part), to be answered in 15-20 words. There will be eight long questions, two from each unit. The candidate has to answer four long questions, at least one question from each unit. All questions carry equal marks.

Unit	Topics	Contact Hours
I	1. Physical divisions and drainage system. 2. Climate, soils and natural vegetation.	12
II	3. Agricultural crops: major crops and cropping pattern, green revolution and its impacts. 4. Development of irrigation sources - canals and tubewells.	11
III	5. Population: distribution, density and growth. 6. Population composition: sex ratio, rural and urban, literacy, work force, language and religion.	11
IV	7. Resources: Production and distribution of iron ore, coal, petroleum, hydro power, solar and thermal power 8. Industries: iron and steel, sugar and cotton textile; transport and communication	11
V*	Instructions for external practical examiner: There will be three questions in all and candidate has to attempt two exercises. Distribution of marks for evaluation Exercise = 10 marks File record = 5 marks Viva-Voce = 5 marks Practical Record: A project file consisting of 8 exercises on the below mentioned themes: - 1. Identification and delineation of watershed of major rivers on map 2. Landuse pattern of India (pie chart) 3. Occupational structure of India (pie chart) 4. Distribution and population density map of India (choropleth and dot method) 5. Age and sex structure (pyramid diagram) 6. Identification of the major industrial region of India by cartogram 7. Rainfall deviation diagram of at least 20 years 8. Cropping intensity and irrigation intensity (bivariate method)	30

Suggested Evaluation Methods	
Internal Assessment: ➢ **Theory** • Class Participation: **05 marks** • Seminar/presentation/assignment/quiz/class test etc.: **05 marks** • Mid-Term Exam: **10 marks** ➢ **Practicum** • Class Participation: **NIL** • Seminar/Demonstration/Viva-voce/Lab records etc.:**10 Marks** • Mid-Term Exam: **NIL**	**End-Term Examination:** **50 Marks** **20 Marks**

Part C-Learning Resources

Recommended Books/e-resources/LMS:

1. Deshpande C. D. (1992) India: A Regional Interpretation, ICSSR, New Delhi.
2. Hussain M. (1992) Geography of India, Tata McGraw Hill Education
3. Johnson, B. L. C., ed. (2001) Geographical Dictionary of India. Vision Books, New Delhi.
4. Mamoria C. B. (1980) Economic and Commercial Geography of India, Shiva Lal Agarwala.
5. Mandal R. B. (ed.), (1990) Patterns of Regional Geography – An International Perspective. Vol. 3 – Indian Perspective.
6. Sdyasuk Galina and P Sengupta (1967) Economic Regionalisation of India, Census of India
7. Sharma, T. C. (2003) India - Economic and Commercial Geography. Vikas Publ., New Delhi. 6. Singh R. L. (1971) India: A Regional Geography, National Geographical Society of India.
8. Singh, Jagdish (2003) India - A Comprehensive & Systematic Geography, Gyanodaya Prakashan, Gorakhpur.
9. Pathak, C. R. (2003) Spatial Structure and Processes of Development in India. Regional Science Assoc., Kolkata.
10. Sharma, T.C. (2013) Economic Geography of India. Rawat Publication, Jaipur
11. Spate O. H. K. and Learmonth A. T. A. (1967) India and Pakistan: A General and Regional Geography, Methuen.
12. Tirtha, Ranjit (2002) Geography of India, Rawat Publs., Jaipur & New Delhi.
13. Tiwari, R.C. (2007) Geography of India. Prayag Pustak Bhawan, Allahabad

*Applicable for courses having practical components.

MCC-5			
Session: 2023-24			
Part A - Introduction			
Subject	Geography		
Semester	III		
Name of the Course	History and Philosophy of Geography		
Course Code	B23-GEO-302		
Course Type: (CC/MCC/MDC/CC-M/DSEC/VOC/DSE/PC/AEC/VAC)	MCC		
Level of the course (As per Annexure-I	200-299		
Pre-requisite for the course (if any)	N.A.		
Course Learning Outcomes (CLO):	After completing this course, the learner will be able to: 1. develop an understanding on nature and philosophy of geography 2. have geographical knowledge regarding ancient and medieval period 3. acquaint with philosophical development in subject 4. acquire knowledge of modern geographical thinking 5* develop skills of making 3D earth on 2D surface.		
Credits	Theory	Practical	Total
	03	01	04
Contact Hours	3	2	5
Max. Marks:100 **Internal Assessment Marks:20+10=30** **End Term Exam Marks:** 50=20=70		**Time: 3 hours**	
Part B- Contents of the Course			
Question 1 is compulsory comprising five sub-parts spread over the entire syllabus (two marks for each sub-part). There will be eight questions, two from each unit. The candidate has			

to answer four more questions selecting at least one question from each unit. All questions carry equal marks.

Unit	Topics	Contact Hours
I	1. Classification of empirical knowledge and place of geography in the realm of knowledge. 2. Nature of geography as a scientific discipline and its relationship with other sciences.	11
II	3. Contribution of Greeks, Romans and Arabs in geographic knowledge. 4. Modern Geography: contribution of Humboldt and Ritter.	12
III	5. Emergence of geography as chorological science – landerkunde and landschaftkunde. 6. Concepts – environmental determinism and possibilism, areal differentiation.	11
IV	7. Quantitative revolution and development of geography as spatial science. 8. Approaches in contemporary geography – behavioural, welfare and radical.	11
V*	Instructions for external practical examiner: There will be three questions in all and candidate has to attempt two exercises. Distribution of marks for evaluation Exercise = 10 marks File record = 5 marks Viva-Voce = 5 marks Practical Record: A project file consisting of 8 exercises on the below mentioned themes: - 1. Cylindrical: Equal area and Mercator (2 exercises). 2. Conical: one and two standards parallel, Bonne's and Polyconic (4 exercises). 3. Zenithal: equal area and gnomonic projections (2 exercises).	30
Suggested Evaluation Methods		

Internal Assessment:	**End Term Examination:**
➢ **Theory** • Class Participation: **5** • Seminar/presentation/assignment/quiz/class test etc.: **5** • Mid-Term Exam: **10**	50
➢ **Practicum** • Class Participation: NIL • Seminar/Demonstration/Viva-voce/Lab records etc.:**10** • Mid-Term Exam: NIL	20

Part C-Learning Resources

Recommended Books/e-resources/LMS:

1. Dickinson, R. E (1969) The Makers of Modern Geography, London.
2. Dikshit, R.D (1997) Geographical Thought-A Contextual History of Ideas, Prentice Hall of India, New Delhi.
3. Hartshorne, R (1959) Perspectives on the Nature of Geography, Rand MacNelly, Chicago.
4. Harvey David (1989) Explanation in Geography, Edward Arnold, London.
5. Holt-Jonson (2011) Geography, History and Concepts: A Study's Guide, Sage Publications.
6. James P.E and Martin J Geoffrey (1972) All possible Worlds, John Wiley and Sons, New York.
7. Johnston, R.J (1983) Geography and Geographers, Edward Heinemann, London.
8. Peet, Richard (1998) Modern Geographical Thought, Oxford, Blackwell Publishers.

*Applicable for courses having practical components.

MDC-3			
Session: 2023-24			
Part A - Introduction			
Subject	Geography		
Semester	III		
Name of the Course	Resource Geography of India		
Course Code	B23-GEO-303		
Course Type: (CC/MCC/MDC/CCM/DSEC/VOC/ DSE/PC/AEC/VAC)	MDC		
Level of the course (As per Annexure-I)	200-299		
Pre-requisite for the course (if any)	NA		
Course Learning Outcomes (CLOs):	After completing this course, the learner will be able to: 1. understand regional diversity of India with respect to its agriculture, water, energy and mineral resources. 2. enhance knowledge about policies and problems of resource management in India. 3. to develop ideas on different aspects of resources, and the linkages with development issues that geographers usually address. 4. introduce about policies of resource management and its relevance to sustainable development. _____ 5* attain skills in plotting graphs, correlation and time series analysis of resource-based data.		
Credits	Theory	Practical	Total
	2	1	3
Contact Hours	2	2	4
Max. Marks: 75 **Internal Assessment Marks: 15+05 = 20** **End Term Exam Marks: 35+20 = 55**		**Time: 03 Hours**	
Part B- Contents of the Course			

Instructions for Paper- Setter		
Question 1 is compulsory comprising of seven sub parts spread over entire syllabus (one mark for each sub part), to be answered in 10-15 words. There will be eight long questions, two from each unit. The candidate has to answer four long questions, at least one question from each unit. All questions carry equal marks.		
Unit	**Topics**	**Contact Hours**
I	1. Agriculture: Environmental, technological and institutional factors affecting Indian Agriculture and dry land agriculture. 2. Distribution and production of rice, wheat, sugarcane and tea.	3 4
II	3. Water resources: development and means of irrigation, intensity of irrigation. 4. Development and management of water resources, national water mission and policy; Jal Shakti Abhiyan.	3 4
III	5. Economic significance of minerals; production, distribution and trade of metallic minerals (iron ore and bauxite). 6. Production, distribution and trade of non-metallic minerals (mica and limestone); problems of mining industry and conservation of minerals.	3 4
IV	7. Energy resources: production, distribution and trade of coal, and petroleum. 8. Non-conventional energy resources (solar and wind); energy crisis and conservation.	4 5
V*	Instructions for external practical examiner: There will be three questions in all and candidate has to attempt two exercises. 1. Distribution of marks for evaluation 2. Exercise = 10 marks 3. File record = 5 marks 4. Viva-Voce = 5 marks Practical Record: A project file consisting of 8 exercises on the below mentioned themes: - 1. Distribution of net sown area India or Haryana (1 exercises).	30

	2. Proportion of irrigated area by choropleth method (1 exercise). 3. Trend of food grains production (rice, wheat, maize) and pulshes production (gram and Tur or arhar) in India by line and poly graph (2 exercises). 4. Time series analysis of the trend of coal/crude oil/natural gas production in India since 1950-51 using 3/5/10-year moving average method (3 exercises). **5.** Proportional distribution of conventional and non - conventional energy using comparative bar diagram (1exercise).	

Suggested Evaluation Methods

Internal Assessment: ➢ **Theory** • Class Participation: **04 Marks** • Seminar/presentation/assignment/quiz/class test etc.: **04 Marks** • Mid-Term Exam: **07Marks** ➢ **Practicum** • Class Participation: **NIL** • Seminar/Demonstration/Viva-voce/Lab records etc.: **05 Marks** • Mid-Term Exam: **NIL**	**End Term Examination:** **35 Marks** **20 Marks**

Part C-Learning Resources

Recommended Books/e-resources/LMS:

1. Deshpande, CD (1992) India: A Regional Interpretation, ICSSR, New Delhi.
2. Husain, M (2020) Geography of India, McGraw Hill, Chennai.
3. Iyer, RR (2003) Water Perspective, Issues and Concerns, SAGE Publications, New Delhi.
5. Johnson, BLC (2001) Geographical Dictionary of India, Vision Books, New Delhi.
6. Khullar, DR (2011) India-A Comprehensive Geography, Kalyani Publishers, New Delhi.
7. Misra, R (2002) Fresh Water Environment, Anmol Publications, New Delhi.
8. Misra, RP and Sundaram, KV (1979) Rural Area Development: Perspectives and Approaches, Sterling Publications, New Delhi.
9. Pathak, CR (2003) Spatial Structure and Processes of Development in India. Regional Science Association, Kolkata.
10. Saroha, J and Singh, S (2022) Geography of India, Pearson, Noida.
11. Sharma, TC (2003) India: Economic and Commercial Geography, Vikas Publications, New Delhi.
12. Sharma, TC (2013) Economic Geography of India, Rawat Publications, Jaipur.
13. Shetty, R (2009) An Analysis of World Resources with reference to India, Sarala Raj Ria Publishers, Mysore.
14. Singh, RL (1971) India: A Regional Geography, National Geographical Society of

India, Varanasi.
15. Singh, J (2003) India: A Comprehensive and Systematic Geography, Gyanodaya Prakashan, Gorakhpur.
16. Tirtha, R (2002) Geography of India, Rawat Publications, Jaipur.
17. Tiwari, RC (2007) Geography of India, Prayag Pustak Bhawan, Allahabad.

*Applicable for courses having practical component.

SEC-3			
Session: 2023-24			
Part A – Introduction			
Subject	Geography		
Semester	III		
Name of the Course	Geographical Landscapes: Exploration beyond the classroom learning		
Course Code	B23-SEC-325		
Course Type: (CC/MCC/MDC/CCM/DSEC/VOC/ DSE/PC/AEC/VAC)	SEC		
Level of the course (As per Annexure-I)	200-299		
Pre-requisite for the course (if any)	NA		
Course Learning Outcomes (CLOs):	After completing this course, the learner will be able to: 5. understand the nature of physical and cultural landscapes 6. internalize the processes shaping natural and cultural landscapes 7. understand the transformation process of urban and rural landscapes. 8. foster an appreciation for the environment and the role of human interactions in shaping landscapes. _____ 5* enhance students' observational, analytical, and critical thinking about their surrounding environment		
Credits	Theory	Practical	Total
	2	1	3
Contact Hours	2	2	4
Max. Marks: 75 **Internal Assessment Marks: 15+05 = 20** **End Term Exam Marks: 35+20 = 55**		**Time: 03 Hours**	
Part B- Contents of the Course			

Instructions for Paper- Setter		
Question 1 is compulsory comprising of seven sub parts spread over entire syllabus (one mark for each sub part), to be answered in 10-15 words. There will be eight long questions, two from each unit. The candidate has to answer four long questions, at least one question from each unit. All questions carry equal marks.		
Unit	**Topics**	**Contact Hours**
I	1. Landscapes: concept, definition and classification. 2. Major land surface features and divisions: continents and oceans and their characteristics.	3 4
II	3. Natural landscapes characteristics, types and significance. 4. Processes involved in shaping natural landscapes – plate tectonics, weathering and erosional agents.	3 4
III	5. Cultural landscapes and their formation processes. 6. Factors shaping cultural landscapes – physical, historical, social and political.	3 4
IV	7. Urban landscapes – changing characteristics and factors shaping modern cities. 8. Rural landscapes – characteristics and agents of transformation.	4 5
V*	Instructions for external practical examiner: This is field based study and all the students have to prepare a project report individually. The external examiner shall be conducting viva-voce on the project report. Distribution of marks for evaluation; 1. Field based project report = 10 marks 2. Viva-Voce = 10 marks Practical Record: Project report of a landscape by individual students based on field survey focusing on 1. Type and characteristics of the landscape 2. Identification of factors transforming landscape	30
Suggested Evaluation Methods		

Internal Assessment:	**End Term Examination:**
➢ **Theory** • Class Participation: **04 Marks** • Seminar/presentation/assignment/quiz/class test etc.: **04 Marks** • Mid-Term Exam: **07Marks**	**35 Marks**
➢ **Practicum** • Class Participation: **NIL** • Seminar/Demonstration/Viva-voce/Lab records etc.: **05 Marks** • Mid-Term Exam: **NIL**	**20 Marks**

Part C-Learning Resources

Recommended Books/e-resources/LMS:

1. Alanen, A.R. and Melnick, R.Z. (2000) Preserving cultural landscape in America.
2. Hayden, D (1995) The power of place: Urban landscape as public history, The MIT press.
3. Hess, D. (2013) Physical Geography: A landscape appreciation, Pearson.
4. Hoss, T.A. (2016) Appreciating physical landscape: Three hundred years of geo-tourism.
5. Johnson, L.M. and Hunn, E.S. (2010) Landscape ethno ecology (concepts of biotic and physical space).
6. Terry, AG. (1989) The Physical landscape, McGraw-Hill, USA.
7. Sinha, A. (2020) Cultural landscape of India: Imagined, enacted and Reclaimed, University of Pittsburg press, USA.

*Applicable for courses having practical component.

CC-4/MCC-6			
Session: 2023-24			
Part A - Introduction			
Subject	Geography		
Semester	IV		
Name of the Course	Economic Geography		
Course Code	B23-GEO-401		
Course Type: (CC/MCC/MDC/CCM/DSEC/VOC/ DSE/PC/AEC/VAC)	CC/MCC		
Level of the course (As per Annexure-I)	100-199		
Pre-requisite for the course (if any)	N.A.		
Course Learning Outcomes (CLOs):	After completing this course, the learner will be able to: 5. provides knowledge about the fundamental concepts of economic geography. 6. acquisition of knowledge about resources and their conservation. 7. enrichment of knowledge about distribution of crops, minerals and energy resources 8. acquaintance with global industries, transport, communication and trade _____ 5* attain skills in solving practical problems associated with economic geography.		
Credits	Theory	Practical	Total
	3	1	4
Contact Hours	3	2	5
Max. Marks: 100 **Internal Assessment Marks: 20+10 = 30** **End Term Exam Marks: 50+20 = 70**		**Time: 03 Hours**	
Part B- Contents of the Course			
Instructions for Paper- Setter			
Question 1 is compulsory comprising of five sub parts spread over entire syllabus (two marks			

for each sub part). There will be eight long questions, two from each unit. The candidate has to answer four long questions, at least one question from each unit. All questions carry equal marks.

Unit	Topics	Contact Hours
I	1. Nature and scope of economic geography and its relationship with economics. 2. Classification of economic activities and their impact on environment.	11
II	3. Natural resources: types, bases of classification. 4. Utilization and conservation of natural resources.	11
III	5. World distribution of food crops (rice and wheat), commercial crops (cotton and sugarcane) and plantation crops (tea and coffee). 6. World distribution and production of coal, petroleum and natural gas, iron ore and bauxite.	11
IV	7. World distribution and production of iron and steel industry, textile industry, sugar industry and automobile industry. 8. International trade and transport and major oceanic trade routes.	12
V*	Instructions for external practical examiner: There will be three questions in all and candidate has to attempt two exercises. Distribution of marks for evaluation Exercise = 10 marks File record = 5 marks Viva-Voce = 5 marks Practical Record: A project file consisting of 8 exercises on the below mentioned themes: - 1. Choropleth mapping of state-wise variation in GDP and PCI (2 exercises). 2. Computation of rail and road transport network accessibility index (2 exercises). 3. Time series analysis of world food, commercial and plantation crops production and trade using polygraph method (2 exercises). 4. Representation of coal and sugar production of major countries of the world using compound bar diagram (1	30

	exercise). 5. Representation of decadal production of major petroleum and iron and steel producing countries using multiple bar diagram (1 exercise).	
Suggested Evaluation Methods		
Internal Assessment: ➢ **Theory** • Class Participation: **05 Marks** • Seminar/presentation/assignment/quiz/class test etc.: **05 Marks** • Mid-Term Exam: **10 Marks** ➢ **Practicum** • Class Participation: **NIL** • Seminar/Demonstration/Viva-voce/Lab records etc.: **10 Marks** • Mid-Term Exam: **NIL**		**End Term Examination:** **50 Marks** **20 Marks**
Part C-Learning Resources		
Recommended Books/e-resources/LMS: 1. Gautam, A. 2010. Advanced Economic Geography. Sharda Pustak Bhawan, Allahabad. 2. Hartshorne, T. A. and Alexander, J. W. 2001. Economic Geography. Prentice Hall of India. New Delhi. 3. Hudson, R. 2005. Economic Geography. Sage Publication, New Delhi. 4. Jones, C. F. and Drakenwarld, G. G. Economic Geography. The Macmillan and Company. New York. 5. Knowled, R. and Wareing, J. 1992. Economic and Social Geography. Rupa and Company, Calcutta. 6. Knox, P. 2003. The Geography of World Economy. Arnold, London. 7. Saxena, H.M. 2013. Economic Geography. Rawat Publications, Jaipur. 8. Thomas, RS. 1962. The Geography of Economic Activities. McGraw Hill, New York. 9. Wheeler, J.O. and Muller, P.O. 1995. Economic Geography. John Wiley and Sons. New York.		

*Applicable for courses having practical component.

MCC-7			
Session: 2023-24			
Part A - Introduction			
Subject	Geography		
Semester	IV		
Name of the Course	Introduction to Social Geography		
Course Code	B-23-GEO-402		
Course Type: (CC/MCC/MDC/CC-M/DSEC/VOC/DSE/PC/AEC/VAC)	MCC		
Level of the course (As per Annexure-I	200-299		
Pre-requisite for the course (if any)	N.A.		
Course Learning Outcomes (CLO):	After completing this course, the learner will be able to: 1. acquaint with social structure in spatial context. 2. gain knowledge about ethnic and social groups in India. 3. understand the social structure and religious diversity of India. 4. be well versed with concept of well-being and its indicators. 5* develop the skill to process social data.		
Credits	Theory	Practical	Total
	03	01	04
Contact Hours	3	2	5
Max. Marks: 100 **Internal Assessment Marks: 20+10=30** **End Term Exam Marks: 50+20=70**		**Time: 3 hours**	
Part B- Contents of the Course			
Question 1 is compulsory and comprise five sub-parts spread over the entire syllabus (two			

marks for each sub-part). There will be eight questions, two from each unit. The candidate has to answer four questions from these by selecting at least one question from each unit. All questions carry equal marks.

Unit	Topics	Contact Hours
I	1. Definition, nature and scope of social geography. 2. Development of social geography and approaches to study.	12
II	3. Social Structure and Processes: Tribes, and their spatial distribution. 4. Caste: origin, form and its distribution.	11
III	5. Language and dialects: origin and linguistic diversity. 6. Religion: major religion and religious plurality in India.	11
IV	7. Social problems: geography of poverty and human development index. 8. Gender inequality and gender development index	11
V*	Instructions for external practical examiner: There will be three questions in all and candidate has to attempt two exercises. Distribution of marks for evaluation Exercise = 10 marks File record = 5 marks Viva-Voce = 5 marks Practical Record: A project file consisting of 8 exercises on the below mentioned themes: - 1. Computation and mapping of human development index (1 exercise) 2. Computation and mapping of gender development index (1 exercise). 3. Concentration of S.C. population: Location Quotient & dissimilarity index (2 exercises). 4. Graphical representation of income inequality: Lorenz curve (2 exercises). 5. Construction of composite index by ranking and standardization method (2 exercises).	30

Suggested Evaluation Methods	
Internal Assessment: ➢ **Theory** • Class Participation: 5 • Seminar/presentation/assignment/quiz/class test etc.:5 • Mid-Term Exam: 10 ➢ **Practicum** • Class Participation: NIL • Seminar/Demonstration/Viva-voce/Lab records etc.:10 • Mid-Term Exam: NIL	**End Term Examination:** **70** **30**

Part C-Learning Resources

Recommended Books/e-resources/LMS:

1. Ahmad, A. (1993) Social Structure and Regional Development, Rawat Publications, Jaipur
2. Ahmad, A. (1999) Social Geography, Rawat Publications, Jaipur
3. Ahmad, A. (2012) Social Geography of India, Concept Publishing Company, New Delhi
4. Knox, P. L. (1975) Social Wellbeing- A Spatial Perspective, Oxford University Press, London
5. Pain, R., Barke, M., Fuller, D., Gough, J., MacFarlane, R. and Mowl, G. (2001) Introducing Social Geographies, Arnold and Oxford University Press, New York
6. Panelli, R. (2004) Social Geographies: From Difference to Action, Sage Publications, London
7. Sopher, D. (1980) An Exploration of India: Geographical Perspectives on Society and Culture, Cornell Press, New York
8. Smith, D.M. (1977) Human Geography: A Welfare Approach, Arnold Heinemann.
9. Smith, D.M. (1973) The Geography of Social Well-being in the United States. McGraw Hill, New York.
10. Smith, D.M. (1977) Where the Grass is Greener: Geographical Perspectives on Inequality, Penguin.

*Applicable for courses having practical component.

MCC-8			
Session: 2023-24			
Part A - Introduction			
Subject	Geography		
Semester	IV		
Name of the Course	Geography of Settlements		
Course Code	B23-GEO-403		
Course Type: (CC/MCC/MDC/CC-M/DSEC/VOC/DSE/PC/AEC/VAC)	MCC		
Level of the course (As per Annexure-I	200-299		
Pre-requisite for the course (if any)	NA		
Course Learning Outcomes (CLO):	After completing this course, the learner will be able to: 1. provide knowledge about the fundamentals of settlements geography. 2. enrich knowledge about the distribution of rural and urban settlements. 3. familiarized with the types and patterns of rural and urban settlements. 4. acquaint with the issues and policies regarding settlement. 5* develop skill of mapping socio-economic and demographic data.		
Credits	Theory	Practical	Total
	03	01	04
Contact Hours	3	2	5
Max. Marks:100 **Internal Assessment Marks:20+10=30** **End-Term Exam Marks: 70**		**Time:3 hours**	

Part B- Contents of the Course

Instructions for Paper-Setter

Question 1 is compulsory comprising five sub-parts spread over the entire syllabus (two marks for each sub-part), to be answered in 15-20 words. There will be eight long questions, two from each unit. The candidate has to answer four long questions, at least one question from each unit. All questions carry equal marks.

Unit	Topics	Contact Hours
I	1. Definition, nature, scope, significance and approaches to study settlement geography. 2. Theories of evolution and development of settlements.	12
II	3. Geographical factors affecting the growth of settlements distribution, importance of settlement studies in geography 4. Types of settlement: rural and urban rural-urban dichotomy and continuum.	11
III	5. Rural settlement: shape, site, types and pattern. 6. Urban settlement: Characteristics of ancient and medieval cities.	11
IV	7. Hierarchy of urban settlement: rank-size rule and primate city. 8. Issues and policies in settlements.	11
V*	Instructions for external practical examiner: There will be three questions in all and candidate has to attempt two exercises. Distribution of marks for evaluation Exercise = 10 marks File record = 5 marks Viva-Voce = 5 marks Practical Record: A project file consisting of 8 exercises on the below mentioned themes: - 1. Location and distribution of urban and rural settlements using toposheets (1 exercises). 2. Graphical representation of rank size rule (1 exercise). 3. Identification of settlement pattern (2 exercises). 4. Traffic flow diagram (1 exercise). 5. Diagrammatic distribution of different class towns (1 exercise).	30

	6. Composition of urban & rural population (1 exercise). 7. Distribution of types of houses by bar diagram (1 exercise).	

Suggested Evaluation Methods

Internal Assessment: ➢ **Theory** • Class Participation**: 05 marks** • Seminar/presentation/assignment/quiz/class test etc.: **05 Marks** • Mid-Term Exam: **10 Marks** ➢ **Practicum** • Class Participation: **NIL** • Seminar/Demonstration/Viva-voce/Lab records etc.: **10 Marks** • Mid-Term Exam: **NIL**	**End-Term Examination:** **50 Marks** **20 Marks**

Part C-Learning Resources

Recommended Books/e-resources/LMS:

1. Desphpande, C. D. (2005) "Cities: A Geographical Study", Translated by V. G. Amrita, Manan Prakashan, Mumbai
2. Gharpure, V. (2013) "Nagari Bhugol", (Marathi) Pimpalapure and Company Publishers, Nagpur
3. Gharpure, V. (2013) "Vasti Bhugol", (Marathi) Pimpalapure and Company Publishers, Nagpur
4. Gharpure, V. (2017) "Manavi Bhugol", (Marathi) Pimpalapure and Company Publishers, Nagpur
5. Ghosh. S. (2015) "Introduction to Settlement Geography", Orient Blackswan Private Limited, Hyderabad
6. Jyptirmoy Sen (2007) A Text Book of Social and Cultural Geography," Kalyani Publishers, New Delhi.
7. Knowles, R, and Wareing, J. (1996) "Economic and Social Geography", the Made Simple Series, Rupa & Co., Calcutta
8. Leong, Goh-Cheng and Morgan, G. (1994) "Human and Economic Geography", Oxford University Press, Oxford
9. Misra, R. P. & Misra, K. eds. (1998) Million Cities of India, Sustainable Development Foundation, New Delhi.
10. Siddhartha, K and Mukherjee, S. (2016) "Cities, Urbanisation and Urban Systems (Settlement Geography)", Kitab Mahal, Allahabad
11. Singh, L. R. (2009) "Fundamentals of Human Geography", Sharda Pustak Bhawan, Allahabad
12. Singh, R. Y. (2012) "Geography of Settlements", Rawat Publications, Jaipur
13. Thakur S. A. (2012) "Settlement Geography"/ Vasti Bhugol- Konkan Geographers, Publication
14. Tiwari, R. C. (2016) "Geography of India", Pravalika Publications, Allahabad

*Applicable for courses having practical components.

DSE-1			
Session: 2023-24			
Part A - Introduction			
Subject	Geography		
Semester	IV		
Name of the Course	Fundamentals of Biogeography		
Course Code	B23-GEO-404		
Course Type: (CC/MCC/MDC/CC-M/DSEC/VOC/DSE/PC/AEC/VAC)	DSE		
Level of the course (As per Annexure-I	200-299		
Pre-requisite for the course (if any)	N.A.		
Course Learning Outcomes (CLO):	After completing this course, the learner will be able to: 1. understand the basic ecological principles. **2.** enrich understanding about distribution of plants and animals' life on the earth. 3. aware about conservation of biotic resources and effects of industrial effluents on ecosystems. 4. acquaint with environmental hazards and bio reserves. 5* develop the skill of mapping ecological areas, flora and fauna.		
Credits	Theory	Practical	Total
	3	1	4
Contact Hours	3	2	5
Max. Marks: 100 **Internal Assessment Marks: 20+10=30** **End Term Exam Marks: 50+20=70**		**Time: 03 Hours**	
Part B- Contents of the Course			
Instructions for Paper- Setter			

Question 1 is compulsory consisting of five sub parts spread over entire syllabus (two marks for each sub parts), to be answered in 15-20 words. There will be eight long questions, two from each unit. The candidate has to answer four long questions, at least one question from each unit. All questions carry equal marks.

Unit	Topics	Contact Hours
I	1. Nature, scope and significance of biogeography. 2. Basic ecological principles: Bio-energy cycle in territorial ecosystem; energy budget of the earth; trophic levels and food web.	11
II	3. Distribution of plant life on the earth and its relation to soil, climate and human activities. 4. Geographical distribution of animal life on the earth and its relation to vegetation types, climate and human activities.	12
III	5. Communities: nature of communities and ecosystems: bio-diversities; human induced communities' change; habitat decay and conservation of biotic resources. 6. Industrial effluent and its effect on fresh water and marine biology.	11
IV	7. Environmental hazards: ecological consequences; human perception and adjustment with respect to flood, drought and earthquake. 8. Bio-Reserves in India; distribution and characteristics.	11
V*	Instructions for external practical examiner: There will be three questions in all and candidate has to attempt two exercises. Distribution of marks for evaluation Exercise = 10 marks File record = 5 marks Viva-Voce = 5 marks Practical Record: A project file consisting of 8 exercises on the below mentioned themes: - 1. Identification of natural vegetation of neighborhood environment and interpretation of their characteristics. 2. Identification of wild animals of neighborhood environment and interpretation of their characteristics. 3. Mapping of forest area and percent of forest to geographical area of selected individual countries.	30

	4. Trend in population of selected wild animal species. 5. Trends in flood frequency and casualties in India for at least 2-3 decades. 6. Mapping of national parks and sanctuaries of India by suitable method. 7. Mapping the ecological hot spots of the world and interpretation of their characteristics. 8. Mapping the water bodies based on topographical sheets of an area. 9. Mapping the frequency or intensity of earthquakes and casualties of a geographical area. 10. Comparative analysis of seasonal variability of rainfall from different climatic reasons of India.	

Suggested Evaluation Methods

Internal Assessment: ➢ **Theory** • Class Participation: **05 Marks** • Seminar/presentation/assignment/quiz/class test etc.:**05 Marks** • Mid-Term Exam: **10 Marks** ➢ **Practicum:** • Class Participation: **NIL** • Seminar/Demonstration/Viva-voce/Lab records etc.: **10 Marks** • Mid-Term Exam: **NIL**	**End Term Examination:** **50 Marks** **20 Marks**

Part C-Learning Resources

Recommended Books/e-resources/LMS:

1. Chandna R. C., (2002) Environmental Geography, Kalyani, Ludhiana.
2. Cox, C.D. and Moore, P.D. (1993) Biogeography: An Ecological and Evolutionary Approach, Blackwell.
3. Cunninghum W. P. and Cunninghum M. A., (2004) Principals of Environmental Science, McGraw hill, London.
4. Huggett, R.J. (1998) Fundamentals of Biogeography. Routledge, U.S.A.
5. Khushoo, T.N. and Sharma, M. (1991) Indian Geosphere-Biosphere Har-Anand Publication, Delhi.
6. Lllies, J. (1974) Introduction of Zoogeography, McMillan. London.
7. Mathur, H.S. (1998) Essentials of Biogeography, Anuj Printers, Jaipur.
8. MOEF (2006) National Environmental Policy-2006, Ministry of Environment and Forests, Government of India.
9. Odum, E. P. et al. (2005) Fundamentals of Ecology, Ceneage Learning India.
10. Pears, N. (1985) Basic Biogeography, Longman, London.
11. Simmon, I.G. (1974) Biogeography, Natural and Cultural, Longman, London.
12. Singh S. (1997) Environmental Geography, Prayag Pustak Bhawan. Allahabad.

13. Tivy, J. (1992) Biogeography: A study of Plants in Ecosphere, Oliver and Boyd, U.S.A.
14. UNEP (2007) Global Environment Outlook: GEO4: Environment for Development,
15. United Nations Environment Programme.

Hindi Reading List

16. Singh, Savindra (2001) Paryavaran Bhugol, Prayag Pustak Bhawan, Allahabad.
17. Singh, Shri Narayan (1993) Vatavaran Bhugol, Tara Book Agency.

*Applicable for courses having practical component.

DSE-1			
Session: 2023-24			
Part A – Introduction			
Subject	Geography		
Semester	IV		
Name of the Course	Geography of Tourism		
Course Code	B23-GEO-405		
Course Type: (CC/MCC/MDC/CC-M/DSEC/VOC/DSE/PC/AEC/VAC)	DSE		
Level of the course (As per Annexure-I	200-299		
Pre-requisite for the course (if any)	NA		
Course Learning Outcomes (CLO):	After completing this course, the learner will be able to: 1. familiarization with the fundamentals of tourism geography 2. understand the types of tourism and their trend 3. acquaintance with tourism infrastructure and its impact 4. provide awareness of the carrying capacity of tourism destinations 5* attain skills in solving practical problems associated with tourism.		
Credits	Theory	Practical	Total
	03	01	04
Contact Hours	3	2	5
Max. Marks:100 **Internal Assessment Marks:20+10=30** **End-Term Exam Marks:50+20=70**		**Time: 3 hours**	
Part B- Contents of the Course			
Instructions for Paper-Setter			

Question 1 is compulsory comprising five sub-parts spread over the entire syllabus (two marks for each sub-part), to be answered in 15-20 words. There will be eight long questions, two from each unit. The candidate has to answer four long questions, at least one question from each unit. All questions carry equal marks.

Unit	Topics	Contact Hours
I	1. Tourists and tourism. Nature, scope, approaches and significance of tourism. 2. Travel and tourism through ages. Role of geography in tourism industry.	11
II	3. Types of tourism and its importance. Development of tourism in India and other major tourist countries. 4. Trends of international and domestic tourism. Tourism motivation and tourism demand.	11
III	5. Tourism infrastructure; transport, accommodation, hospitality and other facilities. 6. Positive and negative impact of tourism: economic, political, socio-cultural and environmental.	11
IV	7. Carrying capacity: a tool for sustainable development 8. Tourism planning and policies.	12
V*	Instructions for external practical examiner: There will be three questions in all and candidate has to attempt two exercises. Distribution of marks for evaluation Exercise = 10 marks File record = 5 marks Viva-Voce = 5 marks Practical Record: A project file consisting of 8 exercises on the below mentioned themes: - 1. State-wise distribution of tourists (Bar diagram). 2. Development of accommodations in India (comparative bar diagram). 3. Composition of tourists - states wise or of different tourist destinations (comparative bar). 4. Total, domestic, and foreign tourists (Compound bar diagram). 5. Tourism infrastructure (Trend graph). 6. Location and characteristics of highway tourism	30

	resorts of Haryana (dot method). 7. Tourist-population pressure (Bivariate method). 8. Explored and unexplored tourist destinations (Point method).	
Suggested Evaluation Methods		
Internal Assessment: ➢ **Theory** • Class Participation**: 05 Marks** • Seminar/presentation/assignment/quiz/class test etc.: **05 Marks** • Mid-Term Exam: **10 Marks** ➢ **Practicum** • Class Participation: **NIL** • Seminar/Demonstration/Viva-voce/Lab records etc.: **10 Marks** • Mid-Term Exam: **NIL**		**End-Term Examination:** 50 Marks 20 Marks
Part C-Learning Resources		
Recommended Books/e-resources/LMS: 1. Bhatia, A. K., (1991) International Tourism: Fundamentals and Practices, Sterling Publishers, New Delhi. 2. Dhar, P.N. (2006) International Tourism: Emerging Challenges and Future Prospects. Kanishka, New Delhi. 3. Kaul R. N. ( ) Dynamics of Tourism: Sterline Publisher Ltd. 4. Shinde S.B. ( ) Geography of Tourism, Phadke Prakashan, Kolhapur. 5. Hall, M. and Stephen, P. (2006) Geography of Tourism and Recreation – Environment, Place and Space, Routledge, London. 6. Kamra, K. K. and Chand, M. (2007) Basics of Tourism: Theory, Operation and Practise, Kanishka Publishers, Pune. 7. Muluk, Musmade, Doke, More, (2021) Geography of Tourism-I, Nirali Publication, Pune. 8. Page, S. J. (2011) Tourism Management: An Introduction, Butterworth-Heinemann USA. Chapter 2. 9. Singh Jagbir (2014) "Eco-Tourism" Published by - I.K. International Pvt. Ltd. S-25, Green Park Extension, Uphaar Cinema Market, New Delhi, India (www.ikbooks.com). 10. Seth P.N. (1985) Successful Tourism Management: Sterling Publisher Ltd., New Delhi.		

*Applicable for courses having practical components.

CC-M4 (V)			
Session: 2023-24			
Part A - Introduction			
Subject	Geography		
Semester	IV		
Name of the Course	Introduction to Geographical Information System (GIS)		
Course Code	B23-VOC-226		
Course Type: (CC/MCC/MDC/CC-M/DSEC/VOC/DSE/PC/AEC/VAC)	VOC		
Level of the course (As per Annexure-I	200-299		
Pre-requisite for the course (if any)	Elementary Knowledge of computer		
Course Learning Outcomes (CLO):	After completing this course, the learner will be able to: 1. understand what is GIS 2. the spatial and non-spatial data 3. the principle of making maps 4. integration of data into GIS and real time mapping 5*develop skills of computer map making		
Credits	Theory	Practical	Total
	03	01	04
Contact Hours	3	2	5
Max. Marks:100 **Internal Assessment Marks:30** **End Term Exam Marks:** 70		**Time: 3 hours**	
Part B- Contents of the Course			
Question 1 is compulsory and comprise five sub-parts spread over the entire syllabus (two marks for each sub-part). There will be eight questions, two from each unit. The candidate has to answer four questions from these by selecting at least one question from each unit. All			

questions carry equal marks.		
Unit	**Topics**	**Contact Hours**
I	1. Geographical Information System (GIS): Definition, historical development and significance. 2. Components of GIS- Hardware, software, data and sources of data.	06 05
II	3. The basis of GIS mapping: map projections, datum and coordinate systems 4. GIS data type (spatial and non-spatial) and data sources	06 05
III	5. Data models: vector and raster. 6. Data capture: input; editing and error correction.	06 06
IV	7. Application of GIS in resource mapping. 8. Application of GIS in monitoring and management of resources.	06 05
V*	Instructions for external practical examiner: There will be three questions in all and candidate has to attempt two exercises. Distribution of marks for evaluation Exercise = 10 marks File record = 5 marks Viva-Voce = 5 marks Practical Record: A project file consisting of 8 exercises on the below mentioned themes: - 1. Spatial data input in GIS format- Scanning and Geo-referencing (1 exercise). 2. digitization and creation of layers: Point, line and polygon (3 exercises). 3. Entry of non-spatial/ attribute data (1 exercise). 4. linking of spatial and non-spatial data (labelling) (1 exercise). 5. Display of data by choropleth method (1 exercise) 6. Making of layout (1 exercise).	30
Suggested Evaluation Methods		

Internal Assessment:	**End Term Examination:**
➢ **Theory** • Class Participation: • Seminar/presentation/assignment/quiz/class test etc.: • Mid-Term Exam:	**70**
➢ **Practicum** • Class Participation: • Seminar/Demonstration/Viva-voce/Lab records etc.: • Mid-Term Exam:	**30**

Part C-Learning Resources

Recommended Books/e-resources/LMS:

1. Bhatta, B. (2010) Remote Sensing and GIS, Oxford University Publications.
2. Burrough, P.A., and McDonnell, R.A. (2000) Principles of Geographical Information System-Spatial Information System and Geo-statistics. Oxford University Press
3. Chauniyal, D.D. (2010) Sudur Samvedan evam Bhogolik Suchana Pranali, Sharda Pustak Bhawan, Allahabad
4. Heywoods, I., Cornelius, S and Carver, S. (2006) An Introduction to Geographical Infromation system. Prentice Hall.
5. Jha, M.M. and Singh, R.B. (2008) Land Use: Reflection on Spatial Informatics Agriculture and Development, New Delhi: Concept.
6. Nag, P. (2008) Introduction to GIS, Concept India, New Delhi.

*Applicable for courses having practical component.

VAC-4			
Session: 2023-24			
Part A - Introduction			
Subject	Geography		
Semester	IV		
Name of the Course	Disaster Management		
Course Code	B23-VAC-415		
Course Type: (CC/MCC/MDC/CCM/DSEC/VOC/ DSE/PC/AEC/VAC)	VAC		
Level of the course (As per Annexure-I)	200-299		
Pre-requisite for the course (if any)	NA		
Course Learning Outcomes (CLOs):	After completing this course, the learner will be able: 1. understand the meaning of hazard and disaster and its approaches and classification. 2. acquire knowledge about various fundamental concepts of hazard and disaster including technological interventions in the field. 3. develop an awareness regarding management of common hydrological disasters occurring in and around. 4. develop an understanding about the consequences and management of frequently occurring man-made hazards. 5* NA		
	Theory	Practical	Total
	2	0	2
Contact Hours	2	0	2
Max. Marks: 50 **Internal Assessment Marks: 15 = 15** **End Term Exam Marks: 35= 35**		**Time: 03 Hours**	
Part B- Contents of the Course			

Instructions for Paper- Setter		
Question 1 is compulsory comprising of seven sub parts spread over entire syllabus (one mark for each sub part), to be answered in 10-15 words. There will be eight long questions, two from each unit. The candidate has to answer four long questions, at least one question from each unit. All questions carry equal marks.		
Unit	**Topics**	**Contact Hours**
I	1. Natural hazards and disasters: definition and approaches of study; classification of disasters. 2. Disaster profile of India and world.	3 4
II	3. Concepts of disaster vulnerability and mitigation. 4. Preventive measures and preparedness for disasters.	3 4
III	5. Flood: factors, vulnerability, consequences and management. 6. Drought: Definition, nature, mitigation measures and management.	4 4
IV	7. Industrial disasters: major industrial disasters and their causes and consequences. 8. Epidemics: Causes and consequences, Covid-19 a case study.	4 4
V*	NA	
Suggested Evaluation Methods		
Internal Assessment: ➢ **Theory** • Class Participation: **04 Marks** • Seminar/presentation/assignment/quiz/class test etc.: **04 Marks** • Mid-Term Exam: **07Marks** ➢ **Practicum** • Class Participation: **NIL** • Seminar/Demonstration/Viva-voce/Lab records etc.: **NIL** • Mid-Term Exam: **NIL**		**End Term Examination:** **35 Marks** **NIL**
Part C-Learning Resources		

Recommended Books/e-resources/LMS:

1. Coch, NK (1994) Geohazards: Natural and Human, Pearson, New Delhi.
2. Cutter, SL (2006) Hazards Vulnerability and Environmental Justice, Routledge, London.
3. Gupta, HK (2013) Disaster Management, University Press, New Delhi.
4. Kapur, A (2010) Vulnerable India: A Geographical Study of Disasters, Sage Publication, New Delhi.
5. Modh, S (2010) Managing Natural Disaster: Hydrological, Marine and Geological Disasters, Macmillan, New Delhi.
6. Pine, JC (2014) Hazards Analysis: Reducing the Impact of Disasters, CRC Press, New Delhi.
7. Sinha, A (2001) Disaster Management: Lessons Drawn and Strategies for Future, New United Press, New Delhi.
8. Smith, K (2013) Environmental Hazards: Assessing Risk and Reducing Disaster, Routledge, London.
9. Singh, RB (2006) Natural Hazards and Disaster Management: Vulnerability and Mitigation, Rawat Publications, New Delhi.
10. Singh, S (2000): Environmental Geography, Prayag Pustak Bhavan, Allahabad.
11. Stoltman, JP (2004) International Perspectives on Natural Disasters, Kluwer Academic Publications. Dordrecht.
12. Turk, J (1985) Introduction to Environmental Studies, Saunders Publications, Tokyo, Japan.

*Applicable for courses having practical component.

KURUKSHETRA UNIVERSITY KURUKSHETRA

Scheme of Examination and Syllabus for

Under-Graduate

(Subject: Biotechnology)

Under Multiple Entry-Exit, Internship and CBCS-LOCF in accordance to NEP-2020 w.e.f. 2023-24 (in phased manner)

DEPARTMENT OF BIOTECHNOLOGY, KURUKSHETRA UNIVERSITY, KURUKSHETRA
Scheme of Examination for Under-Graduate Program
Under Multiple Entry-Exit, Internship and CBCS-LOCF in accordance to NEP-2020
w.e.f. 2023-24 (in phased manner), Subject: Biotechnology

FIRST YEAR: SEMESTER-1									
Remarks	**Course**	**Paper(s)**	**Nomenclature of Paper**	**Credits**	**Hours/ Week**	**Internal marks**	**External Marks**	**Total Marks**	**Exam Duration**
Scheme A & C	**CC-1 MCC-1 4 credit**	B23-BTY-101	Introduction of Biotechnology	3	3	20	50	70	3 hrs.
			Practical	1	2	10	20	30	4 hrs.
Scheme C only	**MCC-2 4 credit**	B23-BTY-102	Basics of Bio-molecules	3	3	20	50	70	3 hrs.
			Practical	1	2	10	20	30	4 hrs.
Scheme A	**CC-M1 2 credit**	B23-BTY-103	Laboratory Techniques & Practices	1	1	10	20	30	3 hrs.
			Practical	1	2	5	15	20	4 hrs.
Scheme A & C	**MDC-1 3 credits**	B23-BTY-104	Biology-I	2	2	15	35	50	3 hrs.
			Practical	1	2	5	20	25	4 hrs.
Scheme C only	**CC-M1 4 credit**	From Available CC-M1 of 4 credits as per NEP							
Scheme A & C	**AEC-1 2 credit**	From Available AEC-1 of two credits as per NEP							
	SEC-1 3 credit	From Available SEC-1 of three credits as per NEP							
	VAC-1 2 credit	From Available VAC-1 of two credits as per NEP							
FIRST YEAR: SEMESTER-2									
Remarks	**Course**	**Paper(s)**	**Nomenclature of Paper**	**Credits**	**Hours/ Week**	**Internal marks**	**External Marks**	**Total Marks**	**Exam Duration**
Scheme A & C	**CC-2 MCC-3 4 credit**	B23-BTY-201	General Microbiology	3	3	20	50	70	3 hrs.
			Practical	1	2	10	20	30	4 hrs.
Scheme C only	**DSEC-1 4 credit**	B23-BTY-202	Diagnostic Laboratory techniques	3	3	20	50	70	3 hrs.
			Practical	1	2	10	20	30	4 hrs.
Scheme A only	**CC-M2 2 credit**	B23-BTY-203	Introduction of Biological chemistry	1	1	10	20	30	3 hrs.
			Practical	1	2	5	15	20	4 hrs.
Scheme A & C	**MDC-2 3 credits**	B23-BTY-204	Biology-II	2	2	15	35	50	3 hrs.
			Practical	1	2	5	20	25	4 hrs.
Scheme C only	**CC-M2 4 credit**	From Available CC-M2 of 4 credits as per NEP							
Scheme A & C	**AEC-2 2 credit**	From Available AEC-2 of two credits as per NEP							
	SEC-2 3 credit	From Available SEC-2 of three credits as per NEP							
	VAC-2 2 credit	From Available VAC-2 of two credits as per NEP							
Internship of 4 credits of 4-6 weeks duration after 2nd Semester									

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SECOND YEAR: SEMESTER-3									
Remarks	**Course**	**Paper(s)**	**Nomenclature of Paper**	**Credits**	**Hours/ Week**	**Internal marks**	**External Marks**	**Total Marks**	**Exam Duration**
Scheme A, B & C	**CC-3 MCC-4 4 credit**	B23-BTY-301	Cell Biology	3	3	20	50	70	3 hrs.
			Practical	1	2	10	20	30	4 hrs.
Scheme B & C	**MCC-5 4 credit**	B23-BTY-302	Genetics	3	3	20	50	70	3 hrs.
			Practical	1	2	10	20	30	4 hrs.
Scheme A, B & C	**MDC-3 3 credits**	B23-BTY-303	Biology-III	2	2	15	35	50	3 hrs.
			Practical	1	2	5	20	25	4 hrs.
Scheme A & C	**CC-M3 4 credits**	From Available CC-M3 of 4 credits as per NEP							
Scheme B only	**CC-M3 (V) 4 credits**	From Available CC-M3(V) of 4 credits as per NEP							
Scheme A, B & C	**AEC-3 2 credit**	From Available AEC-3 of two credits as per NEP							
	SEC-3 3 credit	From Available SEC-3 of three credits as per NEP							
Scheme C only	**VAC-3 2 credits**	From Available VAC-3 of two credits as per NEP							
Scheme B only	**MCC-3**	**MCC-2 FROM SCHEME C OF FIRST SEMESTER**							
SECOND YEAR: SEMESTER-4									
Remarks	**Course**	**Paper(s)**	**Nomenclature of Paper**	**Credits**	**Hours/ Week**	**Internal marks**	**External Marks**	**Total Marks**	**Exam Duration**
Scheme A, B & C	**CC-4 MCC-6 4 credit**	B23-BTY-401	Recombinant DNA Technology-I	3	3	20	50	70	3 hrs.
			Practical	1	2	10	20	30	4 hrs.
Scheme B & C	**MCC-7 4 credit**	B23-BTY-402	Bioinformatics-I	3	3	20	50	70	3 hrs.
			Practical	1	2	10	20	30	4 hrs.
Scheme B & C	**MCC-8 4 credit**	B23-BTY-403	Metabolism	3	3	20	50	70	3 hrs.
			Practical	1	2	10	20	30	4 hrs.
Scheme B & C	**DSE-1 4 credit Select one option**	B23-BTY-404	IPR, Biosafety and Bioethics	3	3	20	50	70	3 hrs.
			Practical	1	2	10	20	30	4 hrs.
		B23-BTY-405	Foundations of Forensic Biotechnology	3	3	20	50	70	3 hrs.
			Practical	1	2	10	20	30	4 hrs.
Scheme A, B & C	**CC-M4 (V) 4 credits**	From Available CC-M4(V) of 4 credits as per NEP							
	AEC-4 2 credit	From Available AEC-3 of two credits as per NEP							
Scheme C only	**VAC-4 2 credits**	From Available VAC-4 of two credits as per NEP							
Scheme A & B	**VAC-3 2 credits**	From Available VAC-3 of two credits as per NEP							
Internship of 4 credits of 4-6 weeks duration after 4th Semester (if not done after second semester)									

DEPARTMENT OF BIOTECHNOLOGY, KURUKSHETRA UNIVERSITY, KURUKSHETRA

THIRD YEAR: SEMESTER-5									
Remarks	**Course**	**Paper(s)**	**Nomenclature of Paper**	**Credits**	**Hours/ Week**	**Internal marks**	**External Marks**	**Total Marks**	**Exam Duration**
Scheme A, B & C	**CC-5 MCC-9 4 credit**	B23-BTY-501	Immunology	3	3	20	50	70	3 hrs.
			Practical	1	2	10	20	30	4 hrs.
Scheme B & C	**MCC-10 4 credit**	B23-BTY-502	Microbial Genetics	3	3	20	50	70	3 hrs.
			Practical	1	2	10	20	30	4 hrs.
Scheme B & C	**DSE-2 4 credit Select one Option**	B23-BTY-503	Fundamentals of Enzymology	3	3	20	50	70	3 hrs.
			Practical	1	2	10	20	30	4 hrs.
		B23-BTY-504	Fermented foods	3	3	20	50	70	3 hrs.
			Practical	1	2	10	20	30	4 hrs.
Scheme B & C	**DSE-3 4 credit Select one Option**	B23-BTY-505	Foundations of Environment and Ecology	3	3	20	50	70	3 hrs.
			Practical	1	2	10	20	30	4 hrs.
		B23-BTY-506	Foundations of Nano-Biotechnology	3	3	20	50	70	3 hrs.
			Practical	1	2	10	20	30	4 hrs.
Scheme A & C	**CC-M5 (V) 4 credits**	From Available CC-M5(V) of 4 credits as per NEP							
Scheme A, B & C	**Internship 4 credits**	Internship#4 credit after 4th semester							
THIRD YEAR: SEMESTER-6									
Remarks	**Course**	**Paper(s)**	**Nomenclature of Paper**	**Credits**	**Hours/ Week**	**Internal marks**	**External Marks**	**Total Marks**	**Exam Duration**
Scheme A, B & C	**CC-6 MCC-11 4 credit**	B23-BTY-601	Microbial Technology	3	3	20	50	70	3 hrs.
			Practical	1	2	10	20	30	4 hrs.
Scheme B & C	**MCC-12 4 credit**	B23-BTY-602	Bio-analytical Techniques	3	3	20	50	70	3 hrs.
			Practical	1	2	10	20	30	4 hrs.
Scheme B & C	**DSE-4 4 credit Select one Option**	B23-BTY-603	Medical Microbiology	3	3	20	50	70	3 hrs.
			Practical	1	2	10	20	30	4 hrs.
		B23-BTY-604	Molecular medicine and gene therapy	3	3	20	50	70	3 hrs.
			Practical	1	2	10	20	30	4 hrs.
Scheme B & C	**DSE-5 4 credit Select one Option**	B23-BTY-605	Biostatistics	3	3	20	50	70	3 hrs.
			Practical	1	2	10	20	30	4 hrs.
		B23-BTY-606	Bio-entrepreneurship	3	3	20	50	70	3 hrs.
			Practical	1	2	10	20	30	4 hrs.
Scheme A only	**CC-M6 4 credits**	From Available CC-M6 of 4 credits as per NEP							
Scheme A only	**CC-M7(V) 4 credits**	From Available CC-M7(V) of 4 credits as per NEP							
Scheme B only	**CC-M5(V) 4 credits**	**From Available CC-M5(V) of 4 credits as per NEP**							
Scheme C only	**CC-M6(V) 4 credits**	**From Available CC-M6(V) of 4 credits as per NEP**							
Scheme C only	**SEC-4 2 credit**	From Available SEC-4 of two credits as per NEP							

DEPARTMENT OF BIOTECHNOLOGY, KURUKSHETRA UNIVERSITY, KURUKSHETRA
FOURTH YEAR

FOURTH YEAR: SEMESTER-7 (FOR HONOURS/HONOURS WITH RESEARCH IN BIOTECHNOLOGY)									
Remarks	**Course**	**Paper(s)**	**Nomenclature of Paper**	**Credits**	**Hours/ Week**	**Internal marks**	**External Marks**	**Total Marks**	**Exam Duration**
Honours in biotechnology /Honours with Research in Biotechnology (For Scheme B & C)	**CC-H1 4 credit**	B23-BTY-701	Recombinant DNA Technology-II	4	4	30	70	100	3 hrs.
	CC-H2 4 credit	B23-BTY-702	Pharmaceutical Biotechnology	4	4	30	70	100	3 hrs.
	CC-H3 4 credit	B23-BTY-703	Molecular Cell Biology	4	4	30	70	100	3 hrs.
	DSE-H1 4 credit Select one Option	B23-BTY-704	Molecular diagnostics	4	4	30	70	100	3 hrs.
		B23-BTY-705	Biotechnology in Environment Protection	4	4	30	70	100	3 hrs.
	PC-H1 4 credit	B23-BTY-706	Practical Based on B23-BTY-701 TO 704/705	4	8	30	70	100	6 hrs.
	CC-HM1 4 credit	From Available Minor of 4 credits as per NEP							
SEMESTER-8 (FOR HONOURS IN BIOTECHNOLOGY)									
Remarks	**Course**	**Paper(s)**	**Nomenclature of Paper**	**Credits**	**Hours/ Week**	**Internal marks**	**External Marks**	**Total Marks**	**Exam Duration**
Honours in Biotechnology (For Scheme B & C)	**CC-H4 4 credit**	B23-BTY-801	*In vitro* culture techniques - Animal	4	4	30	70	100	3 hrs.
	CC-H5 4 credit	B23-BTY-802	*In vitro* culture techniques - Plant	4	4	30	70	100	3 hrs.
	CC-H6 4 credit	B23-BTY-803	Enzyme Technology	4	4	30	70	100	3 hrs.
	DSE-H2 4 credit Select one option	B23-BTY-804	Bioinformatics-II	4	4	30	70	100	3 hrs.
		B23-BTY-805	Mathematics and calculations in Biotechnology	4	4	30	70	100	3 hrs.
	PC-H2 4 credit	B23-BTY-806	Practical Based on B23-BTY-801 TO 804/805	4	8	30	70	100	6 hrs.
	CC-HM2 4 credit	From Available Minor of 4 credits as per NEP							
OR SEMESTER-8 (FOR HONOURS WITH RESEARCH IN BIOTECHNOLOGY)									
Remarks	**Course**	**Paper(s)**	**Nomenclature of Paper**	**Credits**	**Hours/ Week**	**Internal marks**	**External Marks**	**Total Marks**	**Exam Duration**
Honours with Research in Biotechnology (For Scheme B & C)	**CC-H4 4 credit**	B23-BTY-801	*In vitro* culture techniques - Animal	4	4	30	70	100	3 hrs.
	CC-H5 4 credit	B23-BTY-802	*In vitro* culture techniques - Plant	4	4	30	70	100	3 hrs.
	Project/Dissertation 12 credit	B23-BTY-807	Project/Dissertation	8+4	-	-	-	-	-
	CC-HM2 4 credit	From Available Minor of 4 credits as per NEP							

Session: 2023-24			
Part A - Introduction			
Subject	**Biotechnology**		
Semester	**I**		
Name of the Course	**Introduction of Biotechnology**		
Course Code	**B23-BTY-101**		
Course Type: (CC/MCC/MDC/CC-M /DSEC/VOC/DSE/PC/AEC/VAC)	**CC-1 / MCC -1**		
Level of the course (As per Annexure-I	**100-199**		
Pre-requisite for the course (if any)	NA		
Course Learning Outcomes(CLO): (CLOs 1-4 of theory and 5th of practical)	After completing this course, the learner will be able to: 1. Understand the concepts in biotechnology 2. Gain the knowledge of scope and applications of plant biotechnology 3. Gain the knowledge of scope and applications of animal biotechnology 4. Get an insight of scope and applications of biotechnology in environment, food and chemical industries 5. Gain knowledge of structure, working, maintenance/calibration and safety measures during handling of biotech lab instruments and biochemicals. Also get insight of maintenance of hygiene/ aseptic conditions and proper disposal of biochemicals.		
Credits	Theory	Practical	Total
	3	1	4
Contact Hours	3	2	5
Max. Marks:100 **Internal Assessment Marks: 30** (20 Theory + 10 Practical) **End Term Exam Marks:70** (50 Theory + 20 Practical)		**Time: 3h (theory), 4h (practical)**	
Part B- Contents of the Course			
Instructions for Paper- Setter Nine questions will be set in all. Question No.1 comprising of objective/short answer type questions from the entire syllabus, will be compulsory. The remaining eight questions will be set taking two questions from each unit. The candidates will be required to attempt Q.No.1 & four others selecting			

one question from each unit. All questions carry equal marks.		
Unit	**Topics**	**Contact Hours**
I	Introduction to biotechnology – an interdisciplinary pursuit; Main areas of application of biotechnology; Biotechnology research in India and biotechnology in context of developing world; Public perception of biotechnological products; Brief account of safety guidelines, risk assessment and ethics in biotechnology; Very brief account of intellectual property rights; Substrates (raw materials) and the future of biotechnology. In brief scope and techniques of preservation. Introduction of fermentation technology.	12
II	Introduction of animal tissue culture (brief of history, culture media, substrate surfaces, culture procedures, primary cultures, cell lines, organ culture and tissue engineering etc.). Introduction of plant tissue culture (in brief history, culture media, explants, totipotency, dedifferentiation and types of cell & tissue culture etc.). Scope and applications of animal biotechnology and plant biotechnology. Brief account of immunotechnology: immune system (immune cells, types of immunity and general structure of immunoglobulins), hybridoma technology and monoclonal antibodies. *In vitro* fertilization and embryo transfer technology in brief.	12
III	Genetics and Biotechnology: Introduction of genetic engineering, gene and genomes, proteins and proteome, history of genetic manipulations, DNA fingerprinting and forensic analysis. Industrial genetics, Potential laboratory biohazards of genetic engineering. Introduction to molecular markers and genetic mapping; Introduction of enzyme technology: nature of enzymes, application of enzymes and immobilized enzymes.	11
IV	Environmental Biotechnology: An overview, scope and market of biological control of environment. Brief account on bioremediation and waste treatment biotechnology, microbial insecticides, biofertilizers, microbes in oil recovery and bioleaching. Application of biotechnology in medicine (pharmaceutical industry, vaccines, antibiotics etc.), food industry, biofuels and chemical industry.	10
V*	List of Practical: 1. Study of structure and working of laminar air flow cabinets. 2. Study of working, maintenance and safety measures during handling of autoclaves. 3. To study working, maintenance/calibration and precautions during handling of pH-meter, weighing balance, microscopes and other miscellaneous biotech lab instruments. 4. To study maintenance of hygiene/ aseptic conditions of biotech labs, instruments and glassware /plasticwares. 5. Precautions in handling of biochemicals and study of their proper	30

	disposal after use.	

Suggested Evaluation Methods

Internal Assessment: ➢ **Theory-20** • Class Participation: 5 • Seminar/presentation/assignment/quiz/class test etc.:5 • Mid-Term Exam: 10 ➢ **Practicum -10** • Class Participation: • Seminar/Demonstration/Viva-voce/Lab records etc.:10 • Mid-Term Exam: NA	**End Term Examination: 50 (Theory); 20 (Practical)-** Evaluation of the practical skill will be done by an external examiner.

Part C-Learning Resources

Recommended Books/e-resources/LMS:

1. Elements of Biotechnology - PK Gupta
2. Gene Biotechnology - S.N. Jogdand
3. Biotechnology 5th Edition (Cambridge) - John E. Smith
4. Biotechnology for beginners – Reinhard Renneberg Academic Press

MCC -2

Session: 2023-24			
Part A - Introduction			
Subject	**Biotechnology**		
Semester	**I**		
Name of the Course	**Basics of Biomolecules**		
Course Code	**B23-BTY-102**		
Course Type: (CC/MCC/MDC/CC-M /DSEC/VOC/DSE/PC/AEC/VAC)	**MCC -2**		
Level of the course (As per Annexure-I	**100-199**		
Pre-requisite for the course (if any)	NA		
Course Learning Outcomes(CLO): (CLOs 1-4 of theory and 5th of practical)	After completing this course, the learner will be able to: 1. Understand physical and chemical basis of biomolecules involved in life processes. 2. Demonstrate the knowledge of chemical basis of biomolecules, Classify, define, draw structures and correlate to various properties, functions of carbohydrates. 3. Classify, draw structures and correlate the chemical structures of lipids, amino acids, and nucleic acids to their organization, properties and functions. 4. Gain fundamental knowledge of proteins biochemistry. 5*. Practically analyze the samples qualitatively and quantitatively for the presence of various biomolecules.		
Credits	Theory	Practical	Total
	3	1	4
Contact Hours	3	2	5
Max. Marks:100 **Internal Assessment Marks: 30** (20 Theory + 10 Practical) **End Term Exam Marks: 70** (50 Theory + 20 Practical)		**Time: 3h (theory), 4h (practical)**	

Part B- Contents of the Course

Instructions for Paper- Setter

Nine questions will be set in all. Question No.1 comprising of objective/short answer type questions from the entire syllabus, will be compulsory. The remaining eight questions will be set taking two questions from each unit. The candidates will be required to attempt Q.No.1 & four others selecting one question from each unit. All questions carry equal marks.

Unit	Topics	Contact Hours
I	**Carbohydrates**: Definition, classification, nomenclature of carbohydrates. Structure, Function and properties of Monosaccharides, Disaccharides and Polysaccharides. Homo & Hetero Polysaccharides, Mucopolysaccharides, Glycoproteins and their biological functions.	12
II	**Lipids**: Classification, nomenclature and properties of fatty acids. Essential fatty acids. Structure and properties of phospholipids, sphingolipids, glycolipids, gangliosides, prostaglandins. Terpenoids and isoprenoids - definition and representative structures, steroids. Concept of acid value, saponification value and iodine value.	11
III	**Amino Acids and Proteins:** Common structural features of amino acids. Classification by R group, Zwitter ion structures, acid-base properties and titration curves of amino acids.Essential amino acids. Physico-chemical properties of amino acids (solubility, boiling and melting points, reactions like Edman's, Sanger's, ninhydrin). Basic introduction to terms: domains & motifs. Forces that stabilize the protein's structure (electrostatic forces, hydrogen and disulfide bonds, hydrophobic associations). Primary, secondary, tertiary & quaternary structures of proteins. Determination of amino acid sequences of proteins.	12
IV	**Nucleic acids**:Chemical structure and base composition of nucleic acids, Chargaff's rules, Watson Crick Model (B-DNA) and other forms of DNA (A- and Z-DNA). Nucleosides & Nucleotides. Biologically important nucleotides. Structural polymorphism of RNA. Denaturation and renaturation of DNA.	10
V*	List of Practical: 1. Quantitative estimation of proteins by Biuret method/ Lowry's method. 2. Estimation of DNA by Diphenylamine method. 3. Estimation of RNA by Orcinol method. 4. Estimation of amino acids using ninhydrin reaction. 5. Qualitative analysis of sugars and proteins. 6. Quantitative estimation of sugars (Dinitrosalicylic acid method). 7. Extraction and quantification of total lipids. 8. Determination of saponification value of fats. 9. Determination of acid value of fats. 10. Determination of iodine value of fats.	30
Suggested Evaluation Methods		

Internal Assessment: ➢ **Theory-20** • Class Participation: 5 • Seminar/presentation/assignment/quiz/class test etc.:5 • Mid-Term Exam: 10 ➢ **Practicum -10** • Class Participation: • Seminar/Demonstration/Viva-voce/Lab records etc.:10 • Mid-Term Exam: NA	**End Term Examination:** **50 (Theory);** **20 (Practical)-** Evaluation of the practical skill will be done by an external examiner.

Part C-Learning Resources

Recommended Books/e-resources/LMS:

1. Lehninger: Principles of Biochemistry, 7th edition, by David L. Nelson and M.M.Cox (2017) Maxmillan/Worth publishers/W.H. Freeman &Company
2. Biochemistry, 5th edition, by R.H. Garrett and C.M. Grisham (2012). Michal Sabat, University ofVirginia.
3. Outlines of Biochemistry by E.E.Conn, P.K.Stumpf, G. Bruenimg and Ray H.Doi (1987), John Wiley
4. Biochemistry: Internationals edition by Jeremy M Berg, John L Tymoczko and LubertStryer. (2015). W.H. Freeman & Co.,N.Y.
5. Biochemistry by J.L. Jain, S. Chand & Co.
6. Essentials of Biochemistry, 5th edition by Satyanarayana and Chakrapani. (2019) Elsevier,India
7. Chemistry of Biomolecules: An Introduction, by R. J. Simmonds. Royal Society of Chemistry

Session: 2023-24			
Part A - Introduction			
Subject	**Biotechnology**		
Semester	**I**		
Name of the Course	**Laboratory Techniques & Practices**		
Course Code	**B23-BTY-103**		
Course Type: (CC/MCC/MDC/CC-M /DSEC/VOC/DSE/PC/AEC/VAC)	**CC-M1**		
Level of the course (As per Annexure-I	**100-199**		
Pre-requisite for the course (if any)	NA		
Course Learning Outcomes(CLO): (CLOs 1-4 of theory and 5th of practical)	After completing this course, the learner will be able to: 1. Acquire knowledge of analytical tools and techniques of biotechnology & understanding of good laboratory practices. 2. Handle general & specific problems while processing of experimental material and learn to devise solution by choosing appropriate methodology/biotechnique for processing of biomaterials/products. 3. Exhibit the knowledge of testing the potency of antibiotics / disinfectants / antiseptics and learn aseptic conditions for working in Biotechnology Lab. 4. Understand the biochemical and microbiological techniques essential for working in a biotechnological laboratory. _____ 5*. Acquire knowledge of working and hands-on training of tools and techniques of biotechnology labs.		
Credits	Theory	Practical	Total
	1	1	**2**
Contact Hours	1	2	3
Max. Marks: 50 **Internal Assessment Marks: 15 (**10 Theory + 5 Practical) **End Term Exam Marks: 35 (**20 Theory + 15 Practical)		**Time: Theory- 3h; Practical-4h**	
Part B- Contents of the Course			

Instructions for Paper- Setter

Nine questions will be set in all. Question No.1 comprising of objective/short answer type questions from the entire syllabus, will be compulsory. The remaining eight questions will be set taking two questions from each unit. The candidates will be required to attempt Q.No.1 & four others selecting one question from each unit. All questions carry equal marks.

Unit	Topics	Contact Hours
I	Lab rules and safety measures to be taken in Biotechnology Lab., Commonly used equipments for Biotechnological work- Laminar air-flow, Centrifuge, pH meter, Incubator, Fermenter, Colony-counter, Autoclave, Inoculating loop and needle, Use of bright-field microscope, Colorimeter and spectrophotometer.	3
II	Qualitative and quantitative estimation of various biomolecules- sugars, proteins; determination of various metabolites in given biological samples, Preparation of standard curve, Preparation of buffers, Preparation of normal, molar, percent solutions, buffer solutions and determination of their pH, Thin-layer, Paper and Two-dimensional Chromatography, Paper electrophoresis.	3
III	Sterilization techniques followed in biotechnology lab.-dry and wet sterilization techniques, Preferred method of sterilization for different materials, Biological indicators for checking the efficiency of sterilization process, Evaluation of different disinfectants and antiseptics and their usage.	3
IV	Microorganisms, Preparation of cotton plugs and different types of culture media for growth of microorganisms, animal and plant cell culture media, Preparation of dilutions and isolation of micro-organisms from air, water and soil, sub-culturing/ Picking off technique- streaking, pour-plate, spread plate methods.	3
V*	List of Practical: 1. Lab rules and safety measures to be taken in Biotechnology Lab. 2. Sterilization techniques followed in biotechnology lab. 3. Paper and Thin Layer Chromatography. 4. Preparation of media for cultivation of bacteria. 5. Preparation of dilutions and isolation of micro-organisms. 6. Sub-culturing/ Picking off technique. 7. Evaluation of different disinfectants and antiseptics.	8
Suggested Evaluation Methods		

Internal Assessment: ➢ **Theory-10** • Class Participation: 4 • Seminar/presentation/assignment/quiz/class test etc.: NA • Mid-Term Exam: 6 ➢ **Practicum -5** • Class Participation: • Seminar/Demonstration/Viva-voce/Lab records etc.:5 • Mid-Term Exam: NA	**End Term Examination:** **20 (Theory);** **15 (Practical)-** Evaluation of the practical skill will be done by an external examiner.

Part C-Learning Resources

Recommended Books/e-resources/LMS:

1. Elements of Biotechnology; Gupta PK, Rastogi Publications, Meerut.
2. Gene Biotechnology - S.N. Jogdand
3. Berg, J. M., Tymoczko, J. L. and Stryer, L. (2006). Biochemistry. VI Edition. W.H Freeman and Co.
4. Buchanan, B., Gruissem, W. and Jones, R. (2000) Biochemistry and Molecular Biology of Plants.American Society of Plant Biologists.
5. Nelson, D.L., Cox, M.M. (2004) Lehninger Principles of Biochemistry, 4th Edition, WH Freeman and Company, New York, USA
6. Mahajan, R., Sharma, J., Mahajan, R.K. (2010). Practical Manual of Biotechnology, Vayu Education of India.

Session: 2023-24			
Part A - Introduction			
Subject	**Biotechnology**		
Semester	**I**		
Name of the Course	**Biology-I**		
Course Code	**B23-BTY-104**		
Course Type: (CC/MCC/MDC/CC-M /DSEC/VOC/DSE/PC/AEC/VAC)	**MDC-1**		
Level of the course (As per Annexure-I	**100-199**		
Pre-requisite for the course (if any)	NA		
Course Learning Outcomes(CLO): (CLOs 1-4 of theory and 5th of practical)	After completing this course, the learner will be able to: 1. Understand the structures and purposes of basic components of prokaryotic and eukaryotic cells, especially macromolecules, membranes, and organelles. 2 Know about features of biodiversity in the living world and their biological classification describing the principal theories of taxonomy 3. Describe the unique characteristics of Kingdom Plantae and classify Kingdom Plantae into different groups. 4. Demonstrate knowledge of the principles of animal nomenclature and terminology by explaining the process, procedures, and purpose of the scientific classification of animals. 5*. Learn practical skills on basic Biology practical like parts of microscope, slide preparation, identify plants and animals using models and specimens.		
Credits	Theory	Practical	Total
	2	1	**3**
Contact Hours	2	2	4
Max. Marks:75 **Internal Assessment Marks: 20** (15 Theory+ 5 Practical) **End Term Exam Marks: 55** (35 Theory+ 20 Practical)		**Time: Theory- 3h; Practical-4h**	

Part B- Contents of the Course		
Instructions for Paper- Setter Nine questions will be set in all. Question No.1 comprising of objective/short answer type questions from the entire syllabus, will be compulsory. The remaining eight questions will be set taking two questions from each unit. The candidates will be required to attempt Q.No.1 & four others selecting one question from each unit. All questions carry equal marks.		
Unit	**Topics**	**Contact Hours**
I	**Cell: Structure and Function:** Cell theory and cell as the basic unit of life, structure of prokaryotic and eukaryotic cells; Plant cell and animal cell; cell envelope; cell membrane, cell wall; cell organelles - structure and function; endomembrane system, endoplasmic reticulum, golgi bodies, lysosomes, vacuoles, mitochondria, ribosomes, plastids, microbodies; cytoskeleton, cilia, flagella, centrioles (ultrastructure and function); nucleus, Cell cycle, mitosis, meiosis and their significance.	10
II	**The Living World Biodiversity**: Need for classification; three domains of life; taxonomy and systematics; concept of species and taxonomical hierarchy; binomial nomenclature. **Biological Classification**: Five kingdom classification, salient features and classification of Monera, Protista and Fungi into major groups; Lichens, Viruses and Viroids.	9
III	**Plant Kingdom:** Classification of plants into major groups; Salient and distinguishing features and a few examples of Algae, Bryophyta, Pteridophyta, Gymnosperms, Angiosperms, Plant Life Cycle and Alternation of Generations.	8
IV	**Animal Kingdom**: Salient features and classification of animals, levels of organization (cellular/tissue/organ), symmetry (radial, bilateral), phylum, porifera, Coelenterata, Ctenophora, Platyhelminthes, Aschelminthes, Annelida, Arhropoda, Mollusca, Echinodermata, hemichordata, chordata.	8
V*	List of Practical: A: List of Experiments 1. Study and describe locally available common flowering plants, from family Solanaceae, Poaceae, Asteraceae or Brassicaceae. 2. Dissection and display of floral whorls, anther and ovary to show number of chambers (floral formulae and floral diagrams), 3. Study of types of roots (tap and adventitious). 4. Study of types of stem (herbaceous and woody); 5. Study of leaf (arrangement, shape, venation, simple and compound). 6. Isolation of Chlamydomonas, paramecium and spirogyra from nearby pond and study its structure and movement under microscope.	20

	7. Study of structure of algae under microscope 8. Study of different part of fungi B: Study and Observe the following (spotting): 1. Parts of a compound microscope. 2. Specimens/slides/models and identification with reasons - Bacteria, *Oscillatoria, Spirogyra, Rhizopus*, mushroom, yeast, liverwort, moss, fern, pine, one monocotyledonous plant, one dicotyledonous plant and one lichen. 3. Virtual specimens/slides/models and identifying features of - *Amoeba*, *Hydra*, liver fluke, *Ascaris*, leech, earthworm, prawn, silkworm, honey bee, snail, starfish, shark, rohu, frog, lizard, pigeon and rabbit.	

Suggested Evaluation Methods

Internal Assessment: ➢ **Theory-15** • Class Participation: 4 • Seminar/presentation/assignment/quiz/class test etc.:4 • Mid-Term Exam: 7 ➢ **Practicum -5** • Class Participation: • Seminar/Demonstration/Viva-voce/Lab records etc.:5 • Mid-Term Exam: NA	**End Term Examination:** **35 (Theory);** **20 (Practical)-** Evaluation of the practical skill will be done by an external examiner.

Part C-Learning Resources

Suggested Readings:

1. Biology Text Book for class XI published by NCERT.https://ncert.nic.in/textbook.php?kebo1=0-19
2. Pradeep's A Text Book of Biology for Class 11 (Vol. 1 & 2) - Examination 2022/23 Paperback – by P.S. Dhami , G. Chopra, H.N. Srivastava.
3. S. Chand's Biology for XI by P.S. Verma and B.P. Pandey.
4. I.S.C. Practical Biology (Including Viva-Voce & Project Work) Class- XIby V.P. Aggarwal and S.C. Maheshwari
5. Fundamentals of Biology: CBSE Class 11 published by Wiley

Session: 2023-24			
Part A - Introduction			
Subject	**Biotechnology**		
Semester	**II**		
Name of the Course	**General Microbiology**		
Course Code	**B23-BTY-201**		
Course Type: (CC/MCC/MDC/CC-M /DSEC/VOC/DSE/PC/AEC/VAC)	**CC-2 /MCC -3**		
Level of the course (As per Annexure-I	**200-299**		
Pre-requisite for the course (if any)	NA		
Course Learning Outcomes (CLO): CLOs 1-4 of theory and 5th of practical)	After completing this course, the learner will be able to: 1 Illustrate the knowledge of history, scope, classification and various approaches of study of microbes. Compare and characterize prokaryotic and eukaryotic cells based on morphology, different groups of microorganisms based on their structures. 2 Illustrate the knowledge of microbial growth, reproduction and exhibit skill of isolation, purification, and preservation of microbial cultures. 3 Gain the knowledge of characteristics of viruses, their types and mode of multiplication. Also understand the various control measures of microbes. 4 Understand the role of micro-organisms in the environment, for making industrially important fermented foods and also gain the knowledge of spoilage of food and food borne diseases. 5. Exhibit practical skills in preparation of media and staining of microbes, Isolate bacteria from different sources and determine their count and cell size. Testing of antibiotic sensitivity and MICvalue.		
Credits	Theory	Practical	Total
	3	1	**4**
Contact Hours	3	2	5

Max. Marks:100 **Internal Assessment Marks: 30** (20 Theory +10 Practical) **End Term Exam Marks:70** (50 Theory + 20 Practical)	**Time: Theory- 3h; Practical-4h**

Part B- Contents of the Course

Instructions for Paper- Setter

Nine questions will be set in all. Question No.1 comprising of objective/short answer type questions from the entire syllabus, will be compulsory. The remaining eight questions will be set taking two questions from each unit. The candidates will be required to attempt Q.No.1 & four others selecting one question from each unit. All questions carry equal marks.

Unit	Topics	Contact Hours
I	History and evolution of microbiology with special reference to the contribution of the scientists: A. V. Leeuwenhoek, Louis Pasteur, Robert Koch, Edward Jenner and Alexander Fleming. Introduction to classification of microorganisms: Microbial taxonomy, different criteria including molecular approaches, Microbial phylogeny and current classification of bacteria. **Stains and staining procedures**: Acidic, basic and neutral stains, Gram staining, Acid fast staining, Flagella staining, Endospore staining. **Distribution and characterization**: Prokaryotic and Eukaryotic cells, Morphology and cell structure of major groups of microorganisms eg. Bacteria, Algae, Fungi and Protozoa.	13
II	**Cultivation and Maintenance of microorganisms**: Nutritional requirements of microorganisms. Methods of isolation, purification and preservation of microorganisms. **Microbial growth:** Study of growth curve, generation time, quantitative measurement of growth and factors affecting growth of bacteria. **Bacterial Reproduction**: Transformation, Transduction and Conjugation. Endospores and sporulation in bacteria.	12
III	**Viruses:** General characteristics of viruses, difference between virus and typical microbial cell, structure, different shapes and symmetries with one example of each type, classification of viruses on the basis of nucleic acids, phage and animal cell viruses, example of each and their importance. Brief idea of lytic cycle and lysogeny. **Control of microorganisms:** By physical and chemical antimicrobial agents including antibiotics and their mode of action.	10
IV	**Food and Water Microbiology:** Bacterial pollutants of water, coliforms and non coliforms. Sewage composition and its disposal. Microbial spoilage of foods. Major food born infections and intoxications. Microbiology of fermented Foods. **Microbial ecology**: Microenvironment & Niche. **Soil microbiology**: Types & functions of microorganisms in soil.	10

V*	**List of Practical:** 1. Lab rules and safety measures in microbiology lab. 2. Isolation of bacteria from different sources. 3. Study of different staining methods: simple staining, Gram staining, spore staining, negative staining etc. 4. Determination of bacterial cell size by micrometry. 5. Enumeration of microorganism - total & viable count. 6. Measurement of the growth of microbial culture. 7. Study of thermal death point and thermal death time of microbes. 8. Antibiotic sensitivity test and MIC value. 9. Pure culture of micro-organisms. 10. Study of growth curve of bacteria.	30

Suggested Evaluation Methods

Internal Assessment: ➢ **Theory-20** • Class Participation: 5 • Seminar/presentation/assignment/quiz/class test etc.:5 • Mid-Term Exam: 10 ➢ **Practicum -10** • Class Participation: • Seminar/Demonstration/Viva-voce/Lab records etc.:10 • Mid-Term Exam: NA	**End Term Examination:** **50 (Theory);** **20 (Practical)-** Evaluation of the practical skill will be done by an external examiner.

Part C-Learning Resources

Recommended Books/e-resources/LMS:

1. Alexopoulos CJ, Mims CW, and Blackwell M. (1996). Introductory Mycology. 4 th edition. John and Sons, Inc.
2. Jay JM, Loessner MJ and Golden DA.(2005). Modern Food Microbiology.7thedition, CBS Publishers and Distributors, Delhi, India.
3. Kumar HD. (1990). Introductory Phycology.2nd edition.Affiliated East Western Press.
4. Madigan MT, Martinko JM and Parker J. (2009). Brock Biology of Microorganisms.12th edition.Pearson/Benjamin Cummings.
5. Pelczar MJ, Chan ECS and Krieg NR.(1993). Microbiology.5th edition. McGraw Hill Book Company.
6. Stanier RY, Ingraham JL, Wheelis ML, and Painter PR. (2005). General Microbiology. 5th edition. McMillan.
7. Tortora, G. J., Funke, B. R. and Case, C. L. (2016) Microbiology: An introduction, PearsonEducation.
8. Willey, J., Sherwood, L. and Woolverton, C. J. (2017) Prescott's microbiology, McGraw-HillEducation

DESC-1

Session: 2023-24			
Part A - Introduction			
Subject	**Biotechnology**		
Semester	**II**		
Name of the Course	**Diagnostic Laboratory techniques**		
Course Code	**B23-BTY-202**		
Course Type: (CC/MCC/MDC/CC-M /DSEC/VOC/DSE/PC/AEC/VAC)	**DESC-1**		
Level of the course (As per Annexure-I	**200-299**		
Pre-requisite for the course (if any)	NA		
Course Learning Outcomes(CLO): CLOs 1-4 of theory and 5th of practical)	After completing this course, the learner will be able to: 1. Comprehensive introduction to various laboratory techniques used in diagnostics. 2. To learn essential skills, specimen collection and handling. 3. Microscopy, hematology, clinical biochemical tests, microbiology and infectious disease testing, as well as point-of-care testing and emerging technologies. 4. The course emphasizes hands-on laboratory experience, safety protocols, and quality control measures to ensure accurate and reliable diagnostic results. 5. Hands-on laboratory experience, safety protocols, and quality control measures to ensure accurate and reliable diagnostic results.		
Credits	Theory	Practical	Total
	3	1	**4**
Contact Hours	3	2	5
Max. Marks:100 **Internal Assessment Marks: 30** (20 Theory +10 Practical) **End Term Exam Marks:70** (50 Theory + 20 Practical)		**Time: Theory- 3h; Practical-4h**	
Part B- Contents of the Course			
Instructions for Paper- Setter Nine questions will be set in all. Question No.1 comprising of objective/short answer type			

questions from the entire syllabus, will be compulsory. The remaining eight questions will be set taking two questions from each unit. The candidates will be required to attempt Q.No.1 & four others selecting one question from each unit. All questions carry equal marks.

Unit	Topics	Contact Hours
I	Overview of diagnostic laboratory techniques and their significance in healthcare. Basic principles of diagnostics: sensitivity, specificity, accuracy, precision. Quality control and assurance in diagnostic laboratories. Laboratory skills, safety guidelines and procedures. Laboratory equipment and instrumentation. Pipetting techniques and measurement accuracy. Laboratory documentation and record-keeping.	11
II	Specimen Collection and Handling Different types of clinical specimens and their collection methods. Specimen transportation and storage. Quality assessment of specimens. Biosafety precautions during specimen handling. Future trends and advancements in diagnostics.	10
III	Hematology and Coagulation Tests. Blood cell morphology and identification. Hematological tests (e.g., complete blood count, erythrocyte sedimentation rate) Coagulation tests and interpretation. Automated hematology analyzers and coagulation instruments. Clinical Chemistry and Biochemical Tests. Basics of clinical chemistry and biochemical analysis Common biochemical tests (e.g., liver function tests, kidney function tests). Enzyme assays and immunoassays.	12
IV	Microscopy and Staining Techniques. Light microscopy and its applications in diagnostics. Basic principles of staining techniques (e.g., Gram stain, acid-fast stain). Microscopic examination and interpretation of stained specimens. Digital imaging and image analysis in microscopy. Microbiology and Infectious Disease Testing. Microbiological culture techniques. Identification of pathogens using biochemical and molecular methods. Antimicrobial susceptibility testing. Rapid diagnostic tests for infectious diseases.	12
V*	**List of Practical:** 1. To learn various sterilization techniques necessary during sampling and working conditions in laboratory. 2. To learn various collection methods of clinical samples (Urine, blood, sputum, stool, CSF, Tissue biopsy Precautions). 3. Hematological tests: Automated hematology analyzers and coagulation instruments.	30
Suggested Evaluation Methods		

Internal Assessment:	End Term Examination:
➢ **Theory-20** • Class Participation: 5 • Seminar/presentation/assignment/quiz/class test etc.:5 • Mid-Term Exam: 10 ➢ **Practicum -10** • Class Participation: • Seminar/Demonstration/Viva-voce/Lab records etc.:10 • Mid-Term Exam: NA	**50 (Theory);** **20 (Practical)-** Evaluation of the practical skill will be done by an external examiner.

Part C-Learning Resources

Recommended Books/e-resources/LMS:

1. "Textbook of Medical Laboratory Technology" by Praful B. Godkar and Darshan P. Godkar.
2. "Practical Clinical Biochemistry: Methods and Interpretations" by S. Ashfaq Ahmed.
3. “Clinical Pathology and Clinical Biochemistry" by Abhijit B. Chaudhari.
4. “Clinical Biochemistry: Theory and Practical" by Dr. B. Ramesh, Dr. R. Nandini, and Dr. R. Anuradha.

Session: 2023-24			
Part A - Introduction			
Subject	**Biotechnology**		
Semester	**II**		
Name of the Course	**Introduction of Biological Chemistry**		
Course Code	**B23-BTY-203**		
Course Type: (CC/MCC/MDC/CC-M /DSEC/VOC/DSE/PC/AEC/VAC)	**CC-M2**		
Level of the course (As per Annexure-I	**200-299**		
Pre-requisite for the course (if any)	NA		
Course Learning Outcomes(CLO): CLOs 1-4 of theory and 5th of practical)	After completing this course, the learner will be able to: 1 Gain a firm foundation in fundamentals of chemistry. 2. Understand chemical reactions and energy changes during reactions. 3. Exhibit knowledge of light and matter interactions, chemical bonding, states of matter, acids, bases and buffers. 4. Understand types of organic reactions, concept of isomerism and redox reactions. _____ 5 Hands-on chemistry laboratory experience and safety protocols along with preparation of chemicals stocks and working solutions		
Credits	Theory	Practical	Total
	1	1	**2**
Contact Hours	1	2	3

Max. Marks: 50 **Internal Assessment Marks: 15 (**10 Theory + 5 Practical) **End Term Exam Marks: 35 (**20 Theory + 15 Practical)	**Time: Theory- 3h; Practical-4h**

Part B- Contents of the Course

Instructions for Paper- Setter

Nine questions will be set in all. Question No.1 comprising of objective/short answer type questions from the entire syllabus, will be compulsory. The remaining eight questions will be set taking two questions from each unit. The candidates will be required to attempt Q.No.1 & four others selecting one question from each unit. All questions carry equal marks.

Unit	Topics	Contact Hours
I	Basic constituents of matter - elements, atoms, isotopes, atomic weights, atomic numbers, basics of mass spectrometry, molecules, Avogadro number, Molarity, Molality, Normality, gas constant, molecular weights, structural and molecular formulae, ions and polyatomic ions.	3
II	Chemical reactions, reaction stoichiometry, rates of reaction, rate constants, order of reactions, Arrhenious equation, Maxwell Boltzmann distributions, rate-determining steps, catalysis, free-energy, entropy and enthalpy changes during reactions; kinetic versus thermodynamic controls of a reaction, reaction equilibrium (equilibrium constant).	3
III	Light and matter interactions (optical spectroscopy, fluorescence, bioluminescence); Chemical bonds (ionic, covalent, Van der Walls forces); States of matter - vapor pressure, surface tension, boiling and melting points, solubility, capillary action, suspensions, colloids and solutions; Acids, Bases and pH - Arrhenious theory, Ionic product of water, weak acids and bases, conjugate acid-base pairs, buffers.	3
IV	Types of organic reactions (Substitution, Addition, Elimination, Rearrangement etc.). Concept of isomerism: Types of isomerism, Optical isomerism, elements of symmetry, molecular chirality, enantiomers, chiral and achiral molecules. Geometric isomerism: Configuration of geometric isomers. Cis-Trans nomenclature. Redox reactions and electrochemistry - oxidation-reduction reactions.	3
V*	**List of Practical:** 1. Preparing various stock solutions of different molarities and working solutions that will be needed for the course. 2. To prepare an Acetic-Na Acetate Buffer and validate the Henderson-Hasselbach equation. 3. To prepare phosphate buffer of pH 7.0. 4. To determine an unknown protein concentration by plotting a standard graph of BSA using UV-Vis Spectrophotometer and validating the Beer- Lambert's Law. 5. Titration of Amino Acids and separation of aliphatic, aromatic and polar amino acids by thin layer chromatography. 6. Identification of an unknown sample as DNA, RNA or protein using available laboratory tools. 7. Analyze green fluorescence using green fluorescent proteins. 8. Conductometric titration (determination of the strength of a solution of hydrochloric acid (or other acids) by a standard solution of sodium-hydroxide. 9. Study of the role of emulsifying agents in stabilizing the	8

	emulsion of different oils. 10. Study of reaction rates of any one of the following: (i) Reaction of Iodide ion with Hydrogen Peroxide at room temperature using different concentrations of Iodide ions. (ii) Reaction between Potassium Iodate, (KIO3) and Sodium Sulphite: (Na2SO3) using starch solution as an indicator (clock reaction). 11. Separation of pigments from extracts of leaves and flowers by paper chromatography and determination of Rf values.	

Suggested Evaluation Methods

Internal Assessment: ➢ **Theory-10** • Class Participation: 4 • Seminar/presentation/assignment/quiz/class test etc.: NA • Mid-Term Exam: 6 ➢ **Practicum -5** • Class Participation: • Seminar/Demonstration/Viva-voce/Lab records etc.:5 • Mid-Term Exam: NA	**End Term Examination:** **20 (Theory);** **15 (Practical)-** Evaluation of the practical skill will be done by an external examiner.

Part C-Learning Resources

Recommended Books/e-resources/LMS:

1. 1. Ebbing, D. D., &Wrighton, M. S. (1990). General Chemistry. Boston: Houghton Mifflin.
2. Averill, B., & Eldredge, P. (2007). Chemistry: Principles, Patterns, and Applications. San Francisco: Benjamin Cummings.
3. Mahan, B. H. (1965). University Chemistry. Reading, MA: Addison-Wesley Pub.
4. Cantor, C. R., & Schimmel, P. R. (2004). Biophysical Chemistry. San Francisco: W.H. Freeman.
5. Lehninger: Principles of Biochemistry, 3rd edition, by David L. Nelson and M.M. Cox (2000) Maxmillan/ Worth publishers.
6. Outlines of Biochemistry by E.E.Conn, P.K.Stumpf, G. Bruenimg and Ray H.Doi (1987), John Wiley.

Session: 2023-24			
Part A - Introduction			
Subject	**Biotechnology**		
Semester	**II**		
Name of the Course	**Biology - II**		
Course Code	**B23-BTY-204**		
Course Type: (CC/MCC/MDC/CC-M /DSEC/VOC/DSE/PC/AEC/VAC)	**MDC-2**		
Level of the course (As per Annexure-I	**200-299**		
Pre-requisite for the course (if any)	NA		
Course Learning Outcomes(CLO): (CLOs 1-4 of theory and 5th of practical)	After completing this course, the learner will be able to: 1. Students will understand the physiological processes taking place at the level of the cell, organ and the whole plant, will get knowledge of Interaction of light with green plant parts, preparation of food etc. 2. Students will describe how plants obtain the reactants needed for respiration, including the role of the roots and the stomata, functions of various plant hormones in plant development. 3. Students will learn the structure of major human organs surrounding respiratory, circulatory and excretory systems and explain their role in the maintenance of healthy individuals 4. Students will learn the structure of major human organs surrounding musculoskeletal and nervous system and explain their role in the maintenance of healthy individuals. _____ 5*. Students will be able to learn practical skills on basic Biology practical like root slide preparation, chromatography, biochemical tests, mitosis and various models.		
Credits	Theory	Practical	Total
	2	1	**3**
Contact Hours	2	2	4

Max. Marks:75 Internal Assessment Marks: 20 (15 Theory+ 5 Practical) End Term Exam Marks: 55 (35 Theory+ 20 Practical)	Time: Theory- 3h; Practical-4h

Part B- Contents of the Course

Instructions for Paper- Setter

Nine questions will be set in all. Question No.1 comprising of objective/short answer type questions from the entire syllabus, will be compulsory. The remaining eight questions will be set taking two questions from each unit. The candidates will be required to attempt Q.No.1 & four others selecting one question from each unit. All questions carry equal marks.

Unit	Topics	Contact Hours
I	**Plant Physiology: Plant water relations**; osmosis, plamolysis, imbibition, mineral nutrition; plant nutrients, micro and macro nutrients, role of nutrients. **Photosynthesis in Higher Plants**: Photosynthesis as a means of autotrophic nutrition; site of photosynthesis, pigments involved in photosynthesis ; photochemical and biosynthetic phases of photosynthesis; cyclic and non-cyclic photophosphorylation; chemiosmotic hypothesis; photorespiration; C3 and C4 pathways; factors affecting photosynthesis.	8
II	**Respiration in Plants :** Exchange of gases; cellular respiration - glycolysis, fermentation (anaerobic), TCA cycle and electron transport system (aerobic); energy relations - number of ATP molecules generated; amphibolic pathways; respiratory quotient. **Plant - Growth and Development** :Seed germination; phases of plant growth and plant growth rate; conditions of growth; differentiation, dedifferentiation and redifferentiation; sequence of developmental processes in a plant cell; growth regulators - auxin, gibberellin, cytokinin, ethylene, ABA;	8
III	**Human Physiology: Breathing and Exchange of Gases**: Respiratory organs in animals (recall only); Respiratory system in humans; mechanism of breathing and its regulation in humans - exchange of gases, transport of gases and regulation of respiration, respiratory volume; disorders related to respiration - asthma, emphysema, occupational respiratory disorders. **Body Fluids and Circulation**: Composition of blood, blood groups, coagulation of blood; composition of lymph and its function; human circulatory system - Structure of human heart and blood vessels; cardiac cycle, cardiac output, ECG; double circulation; regulation of cardiac activity; disorders of circulatory system - hypertension, coronary artery disease, angina pectoris, heart failure. **Excretory Products and their Elimination:** Modes of excretion - ammonotelism,	10

	ureotelism, uricotelism; human excretory system – structure and function; urine formation, osmoregulation; regulation of kidney function - renin - angiotensin, atrial natriuretic factor, ADH and diabetes insipidus; role of other organs in excretion; disorders - uremia, renal failure, renal calculi, nephritis; dialysis and artificial kidney, kidney transplant.	
IV	**Locomotion and Movement** Types of movement - ciliary, flagellar, muscular; skeletal muscle, contractile proteins and muscle contraction; skeletal system and its functions; joints; disorders of muscular and skeletal systems - myasthenia gravis, tetany, muscular dystrophy, arthritis, osteoporosis, gout**. Neural Control and Coordination:** Neuron and nerves; Nervous system in humans - central nervous system; peripheral nervous system and visceral nervous system; generation and conduction of nerve impulse. **Chemical Coordination and Integration** : Endocrine glands and hormones; human endocrine system - hypothalamus, pituitary, pineal, thyroid, parathyroid, adrenal, pancreas, gonads; mechanism of hormone action (elementary idea); role of hormones as messengers and regulators, hypo - and hyperactivity and related disorders; dwarfism, acromegaly, cretinism, goiter, exophthalmic goitre, diabetes, Addison's disease. Note: Diseases related to all the human physiological systems to be taught in brief.	9
V*	**PRACTICALS** **A. List of Experiments:** 1. Preparation and study of T.S. of dicot and monocot roots and stems (primary). 2. Study of osmosis by potato osmometer. 3. Study of plasmolysis in epidermal peels (e.g. Rhoeo/lily leaves or flashy scale leaves of onion bulb). 4. Study of distribution of stomata on the upper and lower surfaces of leaves. 5. Comparative study of the rates of transpiration in the upper and lower surfaces of leaves. 6. Test for the presence of sugar, starch, proteins and fats in suitable plant and animal materials. 7. Separation of plant pigments through paper chromatography. 8. Study of the rate of respiration in flower buds/leaf tissue and germinating seeds. 9. Test for presence of urea in urine. 10. Test for presence of sugar in urine. 11. Test for presence of albumin in urine. 12. Test for presence of bile salts in urine. **B. Study and Observe the following (spotting):** 1. Mitosis in onion root tip cells and animals cells	20

	(grasshopper) from permanent slides. 2. Human skeleton and different types of joints with the help of virtual images/models only. 3. Differentiate between monocot and dicot plants on the basis of venation patterns. 4. Rib cage 5. Heart Model 6. Calendar of circulatory, muscular and excretory system. 7. Process of plasmolysis in onion cells 8. Study of transpiration in leaves	

Suggested Evaluation Methods

Internal Assessment: ➢ **Theory-15** • Class Participation: 4 • Seminar/presentation/assignment/quiz/class test etc.:4 • Mid-Term Exam: 7 ➢ **Practicum -5** • Class Participation: • Seminar/Demonstration/Viva-voce/Lab records etc.:5 • Mid-Term Exam: NA	**End Term Examination:** **35 (Theory);** **20 (Practical)-** Evaluation of the practical skill will be done by an external examiner.

Part C-Learning Resources

1. Biology Text Book for class XI published by NCERT. https://ncert.nic.in/textbook.php?kebo1=0-19
2. Pradeep's A Text Book of Biology for Class 11 (Vol. 1 & 2) Paperback – by P.S. Dhami , G. Chopra, H.N. Srivastava.
3. S. Chand's Biology for XI by P.S. Verma and B.P. Pandey.
4. I.S.C. Practical Biology (Including Viva-Voce & Project Work) Class- XI by V.P. Aggarwal and S.C. Maheshwari
5. Fundamentals of Biology: CBSE Class 11 published by Wiley

Session: 2023-24			
Part A - Introduction			
Subject	**Biotechnology**		
Semester	**III**		
Name of the Course	**Cell Biology**		
Course Code	**B23-BTY-301**		
Course Type: (CC/MCC/MDC/CC-M /DSEC/VOC/DSE/PC/AEC/VAC)	**CC-3/** **MCC-4**		
Level of the course (As per Annexure-I	**300-399**		
Pre-requisite for the course (if any)	NA		
Course Learning Outcomes(CLO): (CLOs 1-4 of theory and 5th of practical)	After completing this course, the learner will be able to: 1. Understand the structures and functions of basic components of plant and animal cell, especially macromolecules, membranes and organelles. 2. Understand how these cellular components are synthesized and degraded in cells 3. Explain the structure and function of prokaryotic cell & its components 4. Describe the various models and solute transporter systems belonging to cell membrane and will explain cell cycle and apoptosis _____ 5*. Prepare slides of animal and plant cells and cell division and conduct the morphomatric analysis of chromosomes.		
Credits	Theory	Practical	Total
	3	1	4
Contact Hours	3	2	5
Max. Marks:100 **Internal Assessment Marks: 30** (20 Theory + 10 Practical) **End Term Exam Marks: 70** (50 Theory + 20 Practical)		**Time: 3h (theory), 4h (practical)**	
Part B- Contents of the Course			
Instructions for Paper- Setter Nine questions will be set in all. Question No.1 comprising of objective/short answer type questions from the entire syllabus, will be compulsory. The remaining eight questions will be			

set taking two questions from each unit. The candidates will be required to attempt Q.No.1 & four others selecting one question from each unit. All questions carry equal marks.

Unit	Topics	Contact Hours
I	**Basics of Cell Biology** – Discovery of cell and Cell Theory; Comparison between plant and animal cells; Structure and function of Protoplasm, Cell wall, Plasma membrane, Modification of plasma membrane and intracellular junctions, Cytoskeleton, Mitochondria, Chloroplast, ER, Golgi complex.	10
II	Structure and function of Lysosome, endosome and microbodies, Ribosome, Centriole, Nucleus, Chromosomes, Chemical components of a cell, Catalysis and use of energy by cells. **Biogenesis of Cellular organelles** – Biogenesis of mitochondria, chloroplast, ER, Golgi complex, Biosynthetic process in ER and Golgi apparatus, Protein synthesis and folding in the cytoplasm, Degradation of cellular components.	11
III	**Structure and function of Prokaryotic cell and its components** - The Slime and the cell wall of bacteria containing peptidoglycan and related molecules; the outer membrane of Gram-negative bacteria, the cytoplasmic membrane. Water and ion transport, mesosomes, flagella, Pilus, fimbriae, ribosomes, carboxysomes, sulfur granules, glycogen, polyphosphate bodies, fat bodies, gas vesicles; endospores, exospores, cysts. Mycelia of fungi and Actinomycetes, Cytoskeleton filament, heterocysts and akinets of Cyanobacteria, Gliding and motility.	12
IV	**Membrane structure and transport** – Models of membrane structure, Membrane lipids, proteins and carbohydrates; Solute transport by Simple diffusion, Facilitated diffusion and Active transport **Cell cycle -** An overview of cell cycle, Components of cell cycle control system, Intracellular and Extra-cellular control of cell division, Programmed cell death (Apoptosis).	12
V*	List of Practical: 1. 1. Cell division: Permanent slides of animal and plant cells and cell division; 2. Mitotic studies in onion root tip 3. meiotic studies in grasshopper testes/flower buds 4. Chromosomes: Mounting of polytene chromosomes 5. Effect of different osmotic concentration solutions on animal and plant cells 6. Buccal smear – Barr bodies	30
Suggested Evaluation Methods		

Internal Assessment: ➢ **Theory-20** • Class Participation: 5 • Seminar/presentation/assignment/quiz/class test etc.:5 • Mid-Term Exam: 10 ➢ **Practicum -10** • Class Participation: • Seminar/Demonstration/Viva-voce/Lab records etc.:10 • Mid-Term Exam: NA	**End Term Examination:** **50 (Theory);** **20 (Practical)-** Evaluation of the practical skill will be done by an external examiner.

Part C-Learning Resources

Recommended Books/e-resources/LMS:

1. Molecular Biology of cell – Bruce Alberts et al, Garland publications
2. Animal Cytology & Evolution – MJD, White Cambridge University Publicatins
3. Molecular Cell Biology – Daniel , Sceintific American Books.
4. Cell Biology – Jack D.Bruke, The William Twilkins Company.
5. Cell Biology – Ambrose &DorouthyMEasty, ELBS Publications.
6. Fundamentals of Cytology – Sharp, Mc Graw Hill Company
7. Cytology – Wilson &Marrision, Reinform Publications
8. Molecular Biology – Smith Faber & Faber Publications
9. Cell Biology & Molecular Biology – EDP Roberties& EMF Roberties, Sauder College.

MCC -5

Session: 2023-24			
Part A - Introduction			
Subject	**Biotechnology**		
Semester	**III**		
Name of the Course	**Genetics**		
Course Code	**B23-BTY-302**		
Course Type: (CC/MCC/MDC/CC-M /DSEC/VOC/DSE/PC/AEC/VAC)	**MCC -5**		
Level of the course (As per Annexure-I	**300 - 399**		
Pre-requisite for the course (if any)	NA		
Course Learning Outcomes(CLO): (CLOs 1-4 of theory and 5th of practical)	After completing this course, the learner will be able to: 1. Exhibit conceptual understanding of laws of inheritance, genetic basis of loci and their linkage. 2. Develop critical understanding of allelic variation and cytoplasmic inheritance 3. Comprehend the effect of chromosomal abnormalities leading to genetic disorders. 4. Analyze the effect of mutations on gene functions, dosage and their interactions at population and evolutionary levels. 5. Identify various stages of mitotic and meiotic cell cycles, analyze the effect of mutations on gene functions, karyotype analysis, chromosome mapping and pedigree analysis.		
Credits	Theory	Practical	Total
	3	1	**4**
Contact Hours	3	2	5
Max. Marks:100 **Internal Assessment Marks: 30** (20 Theory + 10 Practical) **End Term Exam Marks: 70** (50 Theory + 20 Practical)		**Time: 3h (theory), 4h (practical)**	
Part B- Contents of the Course			
Instructions for Paper- Setter Nine questions will be set in all. Question No.1 comprising of objective/short answer type questions from the entire syllabus, will be compulsory. The remaining eight questions will be set taking two questions from each unit. The candidates will be required to attempt Q.No.1 & four others selecting one question from each unit. All questions carry equal marks.			

Unit	Topics	Contact Hours
I	**Genetics** - Definition, history and scope **Mendelism & Chromosome Theory** – Mendel's principles, applications of Mendel's principles, Chromosome Theory of Heredity (Sutton-Boveri), Inheritance patterns, phenomenon of Dominance, Inheritance patterns in Human (Sex-linked, Autosomal, Mitochondrial, Unifactorial, Multi-factorial). Deviation from Mendel's Dihybrid phenotype, Linkage, Sutton's view on linkage, Morgan's view on linkage, Bateson & Punnet's Coupling & Repulsion hypothesis. **Linkage & Crossing over** - Chromosome theory of Linkage, kinds of linkage, linkage groups, types of Crossing over, mechanism of Meiotic Crossing over, kinds of Crossing over, theories about the mechanism of Crossing over, cytological detection of Crossing over, significance of Crossing over.	12
II	**Allelic Variation & Gene function –** Multiple allele, Genetic interaction, Epistatic interactions, Non-Epistaticinter-allelic genetic interactions, Atavism/Reversion, Penetrance (complete & incomplete), Expressivity, Pleiotropism, Modifier/Modifying genes. **Non-Mendelian inheritance** – Evidences for Cytoplasmic factors, cytoplasmic inheritance, extranuclear inheritance (mitochondrial, chloroplast)	10
III	**Chromosomal variation in Number & Structure** – Euploidy, Non-disjunction & Aneuploidy, Aneuploid segregation in plants, Polyploidy in Plants & Animals, Induced Polyploidy, applications of Polyploidy, Chromosomal Mosaics, Giant chromosome, Deletion, Duplication, Inversion, Translocation, Position Effect, Centromeric & Non-centromeric breaks in chromosomes, chromosomal rearrangements in Human being, Chromosomal aberrations & evolution. Gene Mutation **Chromosome Mapping** - Haploid mapping (2 point & 3 point cross), Diploid mapping (Tetrad analysis), determination of linkage groups, determination of map distance, determination of gene order, cytological mapping.	12
IV	**Human Cyto-Genetics** – Human karyotype, Banding techniques, classification, use of Human Cyto-genetics in Medical science, Chromosomal abnormalities in spontaneous abortions, viable monosomies & trisomies, chromosomal deletions & duplications, genetics of chromosomal inversions & translocations, human traits, Genomic position effects on Gene expression, In born diseases **Pedigree analysis** – Symbols of Pedigree, Pedigrees of Sex-linked & Autosomal (dominant & recessive), Mitochondrial, Incomplete dominance & Penetrance.	11

V*	**List of Practical:** **1.** Cell division: Permanent slides of animal and plant cells and cell division. **2.** Mitotic and meiotic studies in grasshopper testes, onion root tips and flower buds **3.** Chromosomes: Mounting of polytene chromosomes **4.** Buccal smear – Barr bodies **5.** Karyotype analysis – Man and Onion **6.** Man – Normal and Abnormal – Down and Turner's syndromes (with the help of slides) **7.** Simple genetic problems (Problems and Interaction of genes) **8.** Chromosome mapping using three-point test cross; tetrad analysis. **9.** Induction and detection of mutations through genetic tests. **10.** Pedigree analysis in humans.	30

Suggested Evaluation Methods

Internal Assessment: ➢ **Theory-20** • Class Participation: 5 • Seminar/presentation/assignment/quiz/class test etc.:5 • Mid-Term Exam: 10 ➢ **Practicum -10** • Class Participation: • Seminar/Demonstration/Viva-voce/Lab records etc.:10 • Mid-Term Exam: NA	**End Term Examination:** **50 (Theory);** **20 (Practical)-** Evaluation of the practical skill will be done by an external examiner.

Part C-Learning Resources

Recommended Books/e-resources/LMS:

1. Principles of Gene Manipulations – Old & Primrose, Black Well Scientific Publications.
2. Elements of Genetics – PK Gupta, Rastogi Publications
3. Molecular Biology and Genetic Engineering – PK Gupta
4. Cytogentics, Evolution and Plant Breeding – PK Gupta
5. Gardner, E.J., Simmons, M.J., Snustad, D.P. (2006).
6. Principles of Genetics. VIII Edition John Wiley & Sons. 2. Snustad, D.P., Simmons, M.J. (2009).
7. Klug, W.S., Cummings, M.R., Spencer, C.A. (2009). Concepts of Genetics. IX Edition. Benjamin Cummings.
8. Russell, P. J. (2009). Genetics- A Molecular Approach. III Edition. Benjamin Cummings.

Griffiths, A.J.F., Wessler, S.R., Lewontin, R.C. and Carroll, S.B. IX Edition. Introduction to Genetic Analysis, W. H. Freeman & Co.

Session: 2023-24			
Part A – Introduction			
Subject	**Biotechnology**		
Semester	**III**		
Name of the Course	**Biology – III**		
Course Code	**B23-BTY-303**		
Course Type: (CC/MCC/MDC/CC-M /DSEC/VOC/DSE/PC/AEC/VAC)	**MDC-3**		
Level of the course (As per Annexure-I	**300 – 399**		
Pre-requisite for the course (if any)	NA		
Course Learning Outcomes(CLO): CLOs 1-4 of theory and 5th of practical)	After completing this course, the learner will be able to: 1. Identify and explain the two types of reproduction; sexual and asexual and explain each stage of fertilization in plants and animals. 2. Demonstrate the ability to predict outcomes in monohybrid and dihybrid crosses using Mendelian genetics, a basic understanding of DNA mutation and of horizontal gene transfer and their role in evolution. 3. Learn the role of pathogens in different diseases, role of microbes in sewage treatment, biogas production, preparation of antibiotics, biofertilizers etc. 4. Demonstrate a comprehensive understanding of the world's biodiversity and the importance of its conservation. 5*. Learn practical skills on basic Biology practical like pollen germination, quadrant method, meiosis, slide preparation and studying models etc.		
Credits	Theory	Practical	Total
	2	1	**3**
Contact Hours	2	2	4
Max. Marks:75 **Internal Assessment Marks: 20** (15 Theory+ 5 Practical) **End Term Exam Marks: 55** (35 Theory+ 20 Practical)		**Time: Theory- 3h; Practical-4h**	
Part B- Contents of the Course			
Instructions for Paper- Setter Nine questions will be set in all. Question No.1 comprising of objective/short answer type			

questions from the entire syllabus, will be compulsory. The remaining eight questions will be set taking two questions from each unit. The candidates will be required to attempt Q.No.1 & four others selecting one question from each unit. All questions carry equal marks.

Unit	Topics	Contact Hours
I	**Reproduction**; **Sexual Reproduction in Flowering Plants**: Flower structure; development of male and female gametophytes; pollination - types, agencies and examples; out breeding devices; pollen-pistil interaction; double fertilization; post fertilization events - development of endosperm and embryo, development of seed and formation of fruit; special modes- apomixis, parthenocarpy, polyembryony; Significance of seed dispersal and fruit formation. **Human Reproduction** : Male and female reproductive systems; microscopic anatomy of testis and ovary; gametogenesis - spermatogenesis and oogenesis; menstrual cycle; fertilisation, embryo development upto blastocyst formation, implantation; pregnancy and placenta formation (elementary idea); parturition (elementary idea); lactation (elementary idea).	9
II	**Genetics and Evolution: Heredity and variation**: Mendelian inheritance; deviations from Mendelism – incomplete dominance, co-dominance, multiple alleles and inheritance of blood groups, pleiotropy; elementary idea of polygenic inheritance; chromosome theory of inheritance; chromosomes and genes; Sex determination - in humans, birds and honey bee; linkage and crossing over; sex linked inheritance - haemophilia, colour blindness; Mendelian disorders in humans - thalassemia; chromosomal disorders in humans; Down's syndrome, Turner's and Klinefelter's syndromes. **Molecular Basis of Inheritance:** Search for genetic material and DNA as genetic material; Structure of DNA and RNA; DNA packaging; DNA replication; Central Dogma; transcription, genetic code, translation; gene expression and regulation - lac operon; Genome, Human and rice genome projects; DNA fingerprinting. **Evolution**: Origin of life; biological evolution and evidences for biological evolution (paleontology, comparative anatomy, embryology and molecular evidences); Darwin's contribution, modern synthetic theory of evolution; mechanism of evolution - variation (mutation and recombination) and natural selection with examples, types of natural selection; Gene flow and genetic drift; Hardy - Weinberg's principle; adaptive radiation; human evolution.	10
III	**Biology and Human Welfare: Human Health and Diseases**: Pathogens; parasites causing human diseases	8

	(malaria, dengue, chikungunya, filariasis, ascariasis, typhoid, pneumonia, common cold, amoebiasis, ring worm) and their control; Basic concepts of immunology - vaccines; cancer, HIV and AIDS; Adolescence - drug and alcohol abuse**.Microbes in Human Welfare :**Microbes in food processing, industrial production, sewage treatment, energy generation andmicrobes as bio-control agents and bio-fertilizers. Antibiotics; production and judicious use.	
IV	**Ecology and Environment: Organisms and Populations:** Population interactions - mutualism, competition, predation, parasitism; population attributes - growth, birth rate and death rate, age distribution, Organism and its Environment, Major Aboitic Factors, Responses to Abioitic Factors, Adaptations), **Ecosystem** : Ecosystems: Patterns, components; productivity and decomposition; energy flow; pyramids of number, biomass, energy (Topics excluded: Ecological Succession and Nutrient Cycles), **Biodiversity and its Conservation**: Biodiversity-Concept, patterns, importance; loss of biodiversity; biodiversity conservation; hotspots, endangered organisms, extinction, Red Data Book, Sacred Groves, biosphere reserves, national parks, wildlife, sanctuaries and Ramsar sites.	8
V*	**PRACTICALS** **A) List of Experiments:-** 1. Prepare a temporary mount to observe pollen germination. 2. Study the plant population density by quadrat method. 3. Study the plant population frequency by quadrat method. 4. Prepare a temporary mount of onion root tip to study mitosis. 5. Isolate DNA from available plant material such as spinach, green pea seeds, papaya, etc. **B) Study and observe the following (Spotting):** 1. Flowers adapted to pollination by different agencies (wind, insects, birds). 2. Pollen germination on stigma through a permanent slide or scanning electron micrograph. 3. Identification of stages of gamete development, i.e., T.S. of testis and T.S. of ovary through permanent slides (from grasshopper/mice). 4. Meiosis in onion bud cell or grasshopper testis through permanent slides. 5. T.S. of blastula through permanent slides (Mammalian). 6. Mendelian inheritance using seeds of different colour/sizes of any plant. 7. Prepared pedigree charts of any one of the genetic traits	20

	such as rolling of tongue, blood groups, ear lobes, widow's peak and colour blindness. 8. Controlled pollination - emasculation, tagging and bagging. 9. Common disease causing organisms like *Ascaris, Entamoeba, Plasmodium*, any fungus causing ringworm through permanent slides, models or virtual images or specimens. Comment on symptoms of diseases that they cause. 10. Models specimen showing symbolic association in root modules of leguminous plants, Cuscuta on host, lichens. 11. Flash cards models showing examples of homologous and analogous organs.	

Suggested Evaluation Methods

Internal Assessment: ➢ **Theory-15** • Class Participation: 4 • Seminar/presentation/assignment/quiz/class test etc.:4 • Mid-Term Exam: 7 ➢ **Practicum -5** • Class Participation: • Seminar/Demonstration/Viva-voce/Lab records etc.:5 • Mid-Term Exam: NA	**End Term Examination:** **35 (Theory);** **20 (Practical)-** Evaluation of the practical skill will be done by an external examiner.

Part C-Learning Resources

1. Biology Text Book for class XI published by NCERT. https://ncert.nic.in/textbook.php?kebo1=0-19
2. Pradeep's A Text Book of Biology for Class 11 (Vol. 1 & 2) - Examination 2022/23 Paperback – by P.S. Dhami , G. Chopra, H.N. Srivastava.
3. S. Chand's Biology for XI by P.S. Verma and B.P. Pandey.
4. I.S.C. Practical Biology (Including Viva-Voce & Project Work) Class- XI by V.P. Aggarwal and S.C. Maheshwari
5. Fundamentals of Biology: CBSE Class 11 published by Wiley

Session: 2023-24			
Part A - Introduction			
Subject	**Biotechnology**		
Semester	**III**		
Name of the Course	**Food Processing**		
Course Code	**B23-VOC-119**		
Course Type: (CC/MCC/MDC/CC-M /DSEC/VOC/DSE/PC/AEC/VAC)	**VOC -1**		
Level of the course (As per Annexure-I	**100 - 199**		
Pre-requisite for the course (if any)	NA		
Course Learning Outcomes(CLO): (CLOs 1-4 of theory and 5th of practical)	After completing this course, the learner will be able to: 1. Explain how different foods are deteriorated and how they can be processed/preserved. 2. Apply various processing/preservation techniques to different foods. 3. Analyze the effect of various preservation techniques on processed foods 4. Develop novel techniques/methods of food preservation and to evaluate their effect on food properties 5. Gets hands on training of tools and technique of food processing.		
Credits	Theory	Practical	Total
	3	1	**4**
Contact Hours	3	2	5
Max. Marks:100 **Internal Assessment Marks: 30** (20 Theory + 10 Practical) **End Term Exam Marks: 70** (50 Theory + 20 Practical)		**Time: 3h (theory), 4h (practical)**	
Part B- Contents of the Course			
Instructions for Paper- Setter Nine questions will be set in all. Question No.1 comprising of objective/short answer type questions from the entire syllabus, will be compulsory. The remaining eight questions will be set taking two questions from each unit. The candidates will be required to attempt Q.No.1 &			

four others selecting one question from each unit. All questions carry equal marks.		
Unit	**Topics**	**Contact Hours**
I	**Introduction:** Status of food processing - India *vs* developed world; Principles of food preservation; Causes of food deterioration; Water activity and its relation with food spoilage **Processing and preservation by heat:** Heat resistance of microorganisms; Protective effect of food constituents; Blanching; Pasteurization; Sterilization and UHT processing; Effect on foods	12
II	**Processing and preservation by low temperature:** Refrigeration vs Freezing; Refrigeration system; Freezing curve; Factors affecting freezing rate; Freezing methods and equipment; Effects on foods. **Processing and preservation by dehydration:** Drying curve; Drying methods and equipment; Changes in food due to drying; Intermediate moisture foods (IMF). Packaging of dried foods, Deterioration of dried foods, Factors affecting drying rate.	12
III	**Novel and emerging technologies for food preservation:** High pressure processing; Pulsed electric field; Hurdle technology; Ozone application; Ohmic heating; Microwave heating; Technologies for sous-vide ready meals; Membrane technology - RO, NF, UF, MF and Electrodialysis; Membrane materials, Configuration and modules.	10
IV	**Processing of foods:** Concept and science of post-harvest technology, Fruits and vegetables processing and preservation, meat and poultry processing. **Concentration:** Methods; Equipment; Changes in Food during concentration **Irradiation in food preservation:** Source; Dose; Direct and indirect effects responsible for death/inactivation of microorganisms; Effect on foods.	11
V*	**List of Practical:** 1. Determination of water activity. 2. Canning of fruits and vegetables (Beverages). 3. Dehydration of fruits and vegetables 4. Use of flame photometry in the estimation of trace metals 5. Use of Refractometer for determination of TSS 6. Preparation of tomato products (Sauces, Soup, ketch up,) 7. Determination of chemical preservatives in fruits and vegetables products 8. Physic-chemical and rheological examination of wheat and its products 9. Determination of microbial counts: Total viable,	20

	Psychrotrophic, Thermophilic, 10. Aerobic & Anaerobic spore farmers, Coliform counts, Yeast and mold count. 11. Detection of pathogen/ toxins and antibiotic 12. Determination of thermal resistance of enzymes and microorganisms. 13. Platform test of milk 14. Determination of moisture in food 15. Determination of pH and acidity of foods.	

Suggested Evaluation Methods

Internal Assessment: ➢ **Theory-20** • Class Participation: 5 • Seminar/presentation/assignment/quiz/class test etc.:5 • Mid-Term Exam: 10 ➢ **Practicum -10** • Class Participation: • Seminar/Demonstration/Viva-voce/Lab records etc.:10 • Mid-Term Exam: NA	**End Term Examination:** **50 (Theory);** **20 (Practical)-** Evaluation of the practical skill will be done by an external examiner.

Part C-Learning Resources

Recommended Books/e-resources/LMS:

1. AK Haghi, Food Science: Research and Technology. Academic Press (2011).
2. D Singh, Food Processing and Preservation. Shree Publisher (2015).
3. DW Sun (2020) Thermal food processing new technology and quality issues, CRC Press.
4. F Chemat, Green Food Processing Techniques: Preservation Transformation and Extraction, Academic Press (2019).
5. G Saravakos and AK Kostaropoulos, Handbook of Food Process Equipment. Springer (2016).
6. GV Barbosa-canovas and Gould GW, Innovation in Food Processing. CRC Press (2017).
7. HS Ramaswamy and M Marcotte, Food Processing Principle and Application. Taylorand Francis (2006).
8. HW Xiao et al., Recent developments and trends in thermal blanching - A comprehensive review. Information Processing in Agriculture. Volume 4, 101-127 (2017).
9. J Boye, Green Technology in Food Production, CRC Press (2012).
10. J. Ahmed, Novel Food Processing, CRC Press (2018).
11. JS Smith and YH Hui, Food Processing. Wiley (2014).
12. K Kai, Innovative Food Processing Technologies. WP Publisher (2016).
13. M Regier, The Microwave Processing of Foods. Academic Press, (2017).
14. MC Knirsch (2010) Ohmic heating–a review. Trends in Food Science & Technology,21, 436-441.
15. NN Potter, Food Science. CBS Publishers (2007).
16. P Fellows, Food Processing Technology Principles and Practice. CRC Press (2005).
17. P Putnik, JM Lorenzo, FJ Barba et al., Novel food processing and

extraction technologies of high-added value compounds from plant materials. Foods, 7(7), 106(2018).
18. RL Shewfelt, Introducing Food Science. CRC (2013).
19. S Edelstein, Food Science, Jones & Bartlett Learning (2018).
20. T Varzakasand and C Tzia, Handbook of Food Processing. CRC Press (2016).

SEC-3

Session: 2023-24			
Part A – Introduction			
Subject	**Biotechnology**		
Semester	**III**		
Name of the Course	**Dairy Processing**		
Course Code	**B23-SEC-308**		
Course Type: (CC/MCC/MDC/CC-M /DSEC/VOC/DSE/PC/AEC/VAC)	**SEC-3**		
Level of the course (As per Annexure-I	**300 – 399**		
Pre-requisite for the course (if any)	NA		
Course Learning Outcomes(CLO): CLOs 1-4 of theory and 5th of practical)	After completing this course, the learner will be able to: 1. To have knowledge of collection and standaization of milk, also study mechanical separation methods. 2. To have knowledge of traditional Indian dairy products 3. To suggest the dairy industry personnel regarding the formulation of cleaning agents and sanitizers which would help in efficient cleaning and sanitization of dairy equipment 4. To suggest the principles and methods of dairy processing and preservation. 5*. Know methodologies/ techniques used in quality check and preparation of different dairy products.		
Credits	Theory	Practical	Total
	2	1	**3**
Contact Hours	2	2	4
Max. Marks:75 **Internal Assessment Marks: 20** (15 Theory+ 5 Practical) **End Term Exam Marks: 55** (35 Theory+ 20 Practical)		**Time: Theory- 3h; Practical-4h**	
Part B- Contents of the Course			
Instructions for Paper- Setter Nine questions will be set in all. Question No.1 comprising of objective/short answer type questions from the entire syllabus, will be compulsory. The remaining eight questions will be			

set taking two questions from each unit. The candidates will be required to attempt Q.No.1 & four others selecting one question from each unit. All questions carry equal marks.		
Unit	**Topics**	**Contact Hours**
I	Collection and Transportation of milk: Organization of milk collection routes, practices for collection of milk, preservation at farm, refrigeration, natural microbial inhibitor, reception, chilling, classification and storage; Standardization of milk: Addition or removal of milk fat to make different milk products, Mechanical Separation: Sedimentation, Filtration, Centrifugal separation, Bactofugation; Homogenization; Pasteurization.	10
II	Classification of traditional Indian dairy products; Preparation of pasteurized milk; standardized milk; flavoured milk; burfi, khoa, kalakand, milk cake, paneer, kheer, srikhand, ghee, butter oil etc. Manufacture of different varieties of Cheese: Cheddar, Gouda, Swiss, Mozzarella, Cottage, Pizza cheese etc.; Frozen dairy products. Refrigeration and Air Conditioning: The basic refrigeration cycles and concepts required for the various kinds of milk.	9
III	Cleaning and Sanitation : Cleaning agents, CIP & COP ii) Working & maintenance of can washer, crate washer and bottle washer iii) Sanitary milk pump & fittings, types of pumps iv) Boiler; Refrigeration . vi) Dairy Plant layout : Selection of site, layout of liquid and composite milk plant.	8
IV	Basic principles and methods of dairy processing and preservation. Emerging Technologies in dairy processing. Packaging machines: Pouch filling machine pre-pack and aseptic filling bulk handling system; Mixing and agitation: Theory and purpose of mixing, Ultrafiltration of milk; Process technology for manufacture of evaporated milk, condensed milk, dried milk, malted milk, infant and baby foods, ice-cream, cheese, butter, fermented milk and indigenous dairy products.	8
V*	**PRACTICALS** 1. Familiarization with equipment for reception of milk in plant, platform test. 2. Cream separation: parts of a separator and the process. 3. Preparation of special milk: toned and double toned milk. 4. Detection of adulterants and preservatives in milk. 5.Testing purity of starter cultures by Gram's staining, catalase test; creatine test 6. Testing starter activity by dye reduction tests, Horrell-Elliker, White Head & Cox test.	20

	7. Preparation of sterilized reconstituted skim milk and propagation of starter cultures. 8. Preservation of starter cultures by freeze-drying techniques. 9. Preparation of Indian dairy products like paneer, khoa, butter milk and lassi tc.	

Suggested Evaluation Methods

Internal Assessment: ➢ **Theory-15** • Class Participation: 4 • Seminar/presentation/assignment/quiz/class test etc.:4 • Mid-Term Exam: 7 ➢ **Practicum -5** • Class Participation: • Seminar/Demonstration/Viva-voce/Lab records etc.:5 • Mid-Term Exam: NA	**End Term Examination:** **35 (Theory);** **20 (Practical)-** Evaluation of the practical skill will be done by an external examiner.

Part C-Learning Resources

1. Ahmed, T. 1985. Dairy Plant System Engineering. Kitab Mahal, K.L. Agencies Pvt. ltd., New Delhi.
2. Tamime, A Y. and Robinson, R. K. (1999). Yoghurt Science and Technology, 2nd ed. Woodhead Publ. Ltd. and CRC Press LLC, USA.
3. Ahmed, T. 1990. Dairy Plant System Engineering and Management. Kitab Mahal, K.L. Agencies Pvt. ltd., New Delhi.
4. Anantakrishnan, C.P. and Simha, N. N. 1987. Technology and Engineering of Dairy Plant Operations. Laxmi Publ., Delhi.
5. Food Engineering and Dairy Technology. V. A. Kessler Publ., Freising, Germany.1981.

Session: 2023-24			
Part A - Introduction			
Subject	**Biotechnology**		
Semester	**IV**		
Name of the Course	**Recombinant DNA Technology-I**		
Course Code	**B23-BTY-401**		
Course Type: (CC/MCC/MDC/CC-M /DSEC/VOC/DSE/PC/AEC/VAC)	**CC-4 /MCC -6**		
Level of the course (As per Annexure-I	**400-499**		
Pre-requisite for the course (if any)	NA		
Course Learning Outcomes(CLO): (CLOs 1-4 of theory and 5th of practical)	After completing this course, the learner will be able to: 1.Understand concept and scopes of Genetic Engineering and central role of recombinant DNA technology in all fields of Biotechnology. 2.Acquire the knowledge of basic concepts and different methodologies used for isolation, purification and manipulation of nucleic acids, gene cloning, transformation, selection of desired clones. 3.Understand the concepts and methodology of PCR and its uses in diverse fields of life sciences. 4.Work in the latest research areas of biotechnology like microbial, industrial, plant, animal, environmental, health etc. using genetic engineering techniques. 5. Get acquainted with different tools and techniques used in Genetic Engineering experiments and manipulate DNA for its diverse use in different Biotechnology areas.		
Credits	Theory	Practical	Total
	3	1	**4**
Contact Hours	3	2	5
Max. Marks:100 **Internal Assessment Marks: 30** (20 Theory + 10 Practical) **End Term Exam Marks: 70** (50 Theory + 20 Practical)		**Time: 3h (theory), 4h (practical)**	
Part B- Contents of the Course			
Instructions for Paper- Setter			

Nine questions will be set in all. Question No.1 comprising of objective/short answer type questions from the entire syllabus, will be compulsory. The remaining eight questions will be set taking two questions from each unit. The candidates will be required to attempt Q.No.1 & four others selecting one question from each unit. All questions carry equal marks.

Unit	Topics	Contact Hours
I	**Genetic Engineering** Introduction and scope of Genetic Engineering, Miles stones in Genetic engineering, Central role of E.coli in genetic engineering. **Nucleic Acids** Purification of total cell DNA, plasmid DNA, phage DNA, Yield Analysis Nucleic acid blotting- Blotting techniques, Southern blotting, northern blotting, western blotting Hybridization techniques- In-situ hybridization, FISH.	10
II	**Gene Modifying Enzymes**: DNA polymerase, Polynucleotide kinase, Alkaline phosphatase, Nucleases, Methylases Terminal deoxynucleotidy1 transferase, Reverse transcriptase, Restriction endonucleases (R.E.) - Host controlled restriction and modification, Nomenclature, types, Recognition sequence, blunt and sticky ends, applications, Ligases, Linker, Adaptor, Homopolymer tailing, Nick translation system **Gene Cloning Vectors** General features, Types of cloning vectors- Plasmid, bacteriophage, phagemid, cosmid Plasmid Biology: Structural and Functional Organization of Plasmids, Plasmid Replication, Stringent and Relaxed Plasmids, Incompatibility of Plasmid Maintenance, Ti plasmids, Biology of Bacteriophage Lambda: Lambda Phage as a natural *in vivo* vector, *in vitro* construction of lambda vector, Bacteriophage (ssDNA Phages), Cauliflower Mosaic Virus, Artificial chromosomes (YAC, BAC, PAC)	12
III	**Gene Recombination and Gene transfer**: Construction of recombinant DNA, Preparation of competent cell, Episomes, Gene transfer using Plasmids and other cloning vectors, Other techniques of gene transfer: Microinjection, Electroporation, Ultrasonication **Cloning and Subcloning Strategy**: - Transformation, Transfection, Selection of transformed cells, Selection and Screening of Recombinants (bacteria and phages); Cloning strategies in yeast, *E. coli* and *B. subtilis* **Cloning of Specific Gene** Direct selection, Preparation and comparison of Genomic and cDNA library, identification from a gene- genomic library, cDNA library. **Methods for Clone Identification** Screening strategies- Probes, Colony and plaque hybridization.	12

IV	**Polymerase Chain reaction** Principle and applications of Polymerase chain reaction (PCR), primer-design, and RT- (Reverse transcription) PCR **Applications of Genetic Engineering** Applications of Genetic Engineering: Genetic engineering in animals, Genetic engineering in plants, Therapeutic products produced by genetic engineering-blood proteins, human hormones, immune modulators and vaccines (one example each), DNA Fingerprinting, Gene therapy. Restriction mapping, Genome mapping.	11
V*	**List of practical:** **1.** To perform plasmid isolation from *E.Coli* and its quality determination by agarose gel electrophoresis. **2.** Isolation of genomic DNA from bacteria and plants. **3.** Designing primers in Gene Runner for PCR. **4.** To perform PCR with given template and primers. **5.** Demonstrate about RT-PCR **6.** To perform Restriction digestion of given DNA sample. **7.** Performing ligation reaction of two DNA fragments. **8.** Transformation of E.coli with foreign DNA.	30

Suggested Evaluation Methods

Internal Assessment: ➢ **Theory-20** • Class Participation: 5 • Seminar/presentation/assignment/quiz/class test etc.:5 • Mid-Term Exam: 10 ➢ **Practicum -10** • Class Participation: • Seminar/Demonstration/Viva-voce/Lab records etc.:10 • Mid-Term Exam: NA	**End Term Examination:** **50 (Theory);** **20 (Practical)-** Evaluation of the practical skill will be done by an external examiner.

Part C-Learning Resources

Recommended Books/e-resources/LMS:

1. Singh B.D. Biotechnology: Expanding Horizon (2010)3rd edition. Kalyani Publishers.
2. Gupta P.K. Biotechnology and Genomics (2013) 1st Edition. Rastogi publishers
3. Clark D.V and Pazdernik,N.J Applying Genetic Revolution(2009) Academic Press
4. Gene cloning and DNA analysis – An Introduction (2015) 7th edition, T.A Brown, Blackwell publisher.
5. Essential genes (2006), Benzamin Lewin, Pearson education international.
6. Genome-3 (2007) T.A Brown. Garland science, Taylor & Francis, NewYork.
7. Principles of gene manipulation and Genomics (2006) 7th edition, S.B Primose and R.M Twyman, Blackwell publishing.
8. Principles of Genetic Engineering (2009), Mousumi Debnath, pointer publisher, Jaipur.
9. Molecular Biotechnology-Principles and Applications of Recombinant DNA (2003) 3rd

edition, Bernard R Glick and Jack J pasternak. ASM press, Washington.
10. Human Molecular Genetics (2004) 3rd edition, Tom Strachan & Andrew P Read, Garland science.
11. Molecular Biology of Gene (2008) 6th edition, Watson, Baker, Bell. Gann, Levine and Losick, Pearson education Inc.
12. Biotechnology-Applying the genetic Revolution (2009), Clark and Pazdernik, Academic Press
13. Molecular Cloning: A Laboratory Manual (2000), J. Sambrook, E.F. Fritsch and T. Maniatis, Cold Spring Harbor Laboratory Press, New York
14. DNA Cloning: A Practical Approach (1995) , D.M. Glover and B.D. Hames, IRL Press, Oxford.

Session: 2023-24			
Part A - Introduction			
Subject	**Biotechnology**		
Semester	**IV**		
Name of the Course	**Bioinformatics-I**		
Course Code	**B23-BTY-402**		
Course Type: (CC/MCC/MDC/CC-M/DSEC/VOC/DSE/PC/AEC/VAC)	**MCC -7**		
Level of the course (As per Annexure-I	**400 -499**		
Pre-requisite for the course (if any)	NA		
Course Learning Outcomes(CLO): (CLOs 1-4 of theory and 5th of practical)	After completing this course, the learner will be able to: 1. Understand the basic principles and concepts of bioinformatics. 2. Conceptulization in applying bioinformatics tools to solve biological problems. 3. Critically evaluate bioinformatics research papers and studies. 4. Understanding of various databases available to explicit further research in Biology. 5. To develop familiarity with various interfaces, search functionalities, and data retrieval processes. It will enhance the skills in accessing and interpreting biological information, which is essential for research and analysis in the field of biology.		
Credits	Theory	Practical	Total
	3	1	**4**
Contact Hours	3	2	5
Max. Marks:100 **Internal Assessment Marks: 30** (20 Theory + 10 Practical) **End Term Exam Marks: 70** (50 Theory + 20 Practical)		**Time: 3h (theory), 4h (practical)**	
Part B- Contents of the Course			
Instructions for Paper- Setter Nine questions will be set in all. Question No.1 comprising of objective/short answer type questions from the entire syllabus, will be compulsory. The remaining eight questions will be set taking two questions from each unit. The candidates will be required to attempt Q.No.1 &			

four others selecting one question from each unit. All questions carry equal marks.

Unit	Topics	Contact Hours
I	Overview of bioinformatics: history, scope, and detailed applications. Introduction to biological databases and data types, Bioinformatics resources and tools. Detailed Overview of NCBI Homepage. Virtual libraray.	12
II	Basic structural introduction of Biomolecules studied in Bioinformatics (polynucleotide, polypeptides, Gene, Protein). Format of Sequence databases, Introduction to Pairwise Sequence Analysis and Sequence alignment ,Introduction and applications of Multiple sequence alignment.	12
III	Basic introduction to following terms: *In silico* drug design, Genomics, proteomics, transcriptomics, metabolomics, chemoinformatics, pharmacogenomics.	10
IV	Introduction to various biological techniques required for Bioinformatic analysis.(DNA,RNA,Protein- isolation and sequencing etc). Human Genome Project objectives and applications.	11
V*	**List of practical:** 1. Visit NCBI homepage / URL is: https://www.ncbi.nlm.nih.gov/ 2. -Familiarize with the different sections on the homepage to provide access to various databases and resources related to biomedical research and information. 3. Study the, Human Genome Project/ NHGRI website, navigate to the Human Genome Project section to understand the goals, history, and achievements of the project. 4. Visit PubMed database. Explore search based on various criteria and using Boolean Operators.	30

Suggested Evaluation Methods

Internal Assessment: ➢ **Theory-20** • Class Participation: 5 • Seminar/presentation/assignment/quiz/class test etc.:5 • Mid-Term Exam: 10 ➢ **Practicum -10** • Class Participation: • Seminar/Demonstration/Viva-voce/Lab records etc.:10 • Mid-Term Exam: NA	**End Term Examination:** **50 (Theory);** **20 (Practical)-** Evaluation of the practical skill will be done by an external examiner.

Part C-Learning Resources

Recommended Books/e-resources/LMS:

1. "Bioinformatics: Principles and Applications" by Zhumur Ghosh and Bibekanand Mallick.
2. "Introduction to Bioinformatics" by S. Jawahar and S. Arumugam.
3. "Bioinformatics: A Practical Handbook" by Rashmi S. Shenoy and Ajay S. Verma.
4. "Bioinformatics: Concepts, Skills, and Applications" by Rastogi S. C.
5. "Practical Bioinformatics" by B. Jayaram and R. K. Shyamasundar.
6. "Bioinformatics For Dummies" by Jean-Michel Claverie and Cedric Notredame.
7. "Introduction to Bioinformatics" by Arthur M. Lesk
8. "Understanding Bioinformatics" by Marketa J. Zvelebil and Jeremy O. Baum.
9. "Bioinformatics for Beginners: Genes, Genomes, Molecular Evolution, Databases and Analytical Tools" by Supratim Choudhuri.

MCC -8

Session: 2023-24			
Part A - Introduction			
Subject	**Biotechnology**		
Semester	**IV**		
Name of the Course	**Metabolism**		
Course Code	**B23-BTY-403**		
Course Type: (CC/MCC/MDC/CC-M /DSEC/VOC/DSE/PC/AEC/VAC)	**MCC -8**		
Level of the course (As per Annexure-I	**400 - 499**		
Pre-requisite for the course (if any)	NA		
Course Learning Outcomes(CLO): (CLOs 1-4 of theory and 5th of practical)	After completing this course, the learner will be able to: 1. Apply the knowledge of biological redox reactions, coupled reactions, energy rich compounds and the energy transactions in studying metabolism. 2. Describe the metabolic pathways *i.e.* glycolysis (catabolism), gluconeogensis (anabolism), and TCA cycle and their regulations. Discuss the reactions, regulation and importance of pentose phosphate pathway, glycogen metabolism, glyoxylate. 3. Describe ETC and apply the concept of oxidative phosphorylation to calculate energy production by oxidation of carbohydrates. Describe the reactions and regulation of lipid biosynthesis and catabolism by beta, alpha and omega oxidative pathways: ketone bodies metabolism and integration to the metabolism of other biomolecules. 4. Analyse how amino acid catabolism leads to formation of diverse type molecules including ketone bodies, glucose, urea: discuss the catabolism and anabolism of nucleic acids and porphyrins. 5. Isolation and determination of biomolecules from the samples quantitatively.		
Credits	Theory	Practical	Total
	3	1	**4**
Contact Hours	3	2	5

Max. Marks:100 Internal Assessment Marks: 30 (20 Theory + 10 Practical) End Term Exam Marks: 70 (50 Theory + 20 Practical)	Time: 3h (theory), 4h (practical)

Part B- Contents of the Course

Instructions for Paper- Setter

Nine questions will be set in all. Question No.1 comprising of objective/short answer type questions from the entire syllabus, will be compulsory. The remaining eight questions will be set taking two questions from each unit. The candidates will be required to attempt Q.No.1 & four others selecting one question from each unit. All questions carry equal marks.

Unit	Topics	Contact Hours
I	**Bioenergetics:** Concept of free energy, standard free energy, relation between equilibrium constant and standard free energy change and coupled reactions. Biological oxidation-reduction: redox potentials, relation between standard reduction potentials and free energy change (numericals included). High-energy compounds: phosphate group transfer potential, free energy of hydrolysis of ATP, PEP and glucose-6 phosphate along with reasons for high ΔG.	10
II	**Carbohydrate Metabolism:** Reactions and energetics of glycolysis. Alcoholic and lactic acid fermentations.Feeder pathways, Entry of fructose into glycolysis.Reactions and energetics of TCA cycle.Regulation of glycolysis and TCA cycle.Gluconeogenesis.Glycogenesis and glycogenolysis.Reactions and physiological significance of pentose phosphate pathway.	11
III	**Electron Transport Chain and Oxidative Phosphorylation**: Structure of mitochondria, organization and sequence of electron carriers, sites of ATP production, inhibitors of electron transport chain. Oxidative phosphorylation: chemiosmotic theory, structure of ATP synthase, Inhibitors and uncouplers of oxidative phosphorylation. Transport of reducing equivalents from cytosol into mitochondria. **Lipid Metabolism:** Introduction, hydrolysis of triacylglycerols, activation of fatty acids, transport of fatty acyl CoA into mitochondria, beta-oxidation of saturated, and odd chain fatty acidss. ATP yield from fatty acid oxidation. Biosynthesis of saturated fatty acids.triglycerides.Metabolism of ketone bodies.	12
IV	**Amino acid Metabolism:** General reactions of amino acid metabolism: transamination, oxidative and non-oxidative deamination and decarboxylation. Urea cycle.Glycogenic and ketogenic amino acids.Biosynthesis of aromatic amino acids.Glucose-Alanine cycle. **Nucleotide Metabolism:** Sources of the atoms in the purine and pyrimidine molecules, denovo biosynthesis and degradation of purine and pyrimidine nucleotides, Regulation	12

	of purine and pyrimidine biosynthesis. Salvage pathways of purines and pyrimidines.	
V*	**List of practical:** **1.** Estimation of nitrogen by micro-Kjeldahl method. **2.** Estimation of blood glucose by colorimetrically. **3.** Estimation of ascorbic acid by titrimetric method. **4.** Preparation of starch from potato and determination of achromatic point by salivary amylase **5.** Isolation of total lipids by Folch method and determine acid value. **6.** Isolation of casein from milk and determination of isoelectric pH.	30

Suggested Evaluation Methods

Internal Assessment: ➢ **Theory-20** • Class Participation: 5 • Seminar/presentation/assignment/quiz/class test etc.:5 • Mid-Term Exam: 10 ➢ **Practicum -10** • Class Participation: • Seminar/Demonstration/Viva-voce/Lab records etc.:10 • Mid-Term Exam: NA	**End Term Examination:** **50 (Theory);** **20 (Practical)-** Evaluation of the practical skill will be done by an external examiner.

Part C-Learning Resources

Recommended Books/e-resources/LMS:

1. Lehninger: Principles of Biochemistry, 3rd edition, by David L. Nelson and M.M. Cox (2000) Maxmillan/ Worth publishers.
2. Fundamentals of Biochemistry by Donald Voet and Judith G Voet (1999). John Wiley & Sons, NY
3. Biochemistry, 2nd edition, by R.H. Garrett and C.M. Grisham (1999). Saunders College Publishing, NY.
4. Outlines of Biochemistry by E.E.Conn, P.K.Stumpf, G. Bruenimg and Ray H.Doi (1987). John Wiley & Sons, NY
5. Biochemistry, 2nd edition, by Laurence A. Moran, K.G. Scrimgeour, H. R. Horton, R.S. Ochs and J. David Rawn (1994), Neil Patterson Publishers Prentice Hall.

Session: 2023-24			
Part A - Introduction			
Subject	**Biotechnology**		
Semester	**IV**		
Name of the Course	**IPR, Biosafety & Bioethics**		
Course Code	**B23-BTY-404**		
Course Type: (CC/MCC/MDC/CC-M /DSEC/VOC/DSE/PC/AEC/VAC)	**DSE -1**		
Level of the course (As per Annexure-I	**400 - 499**		
Pre-requisite for the course (if any)	NA		
Course Learning Outcomes(CLO): (CLOs 1-4 of theory and 5th of practical)	After completing this course, the learner will be able to: 1. Gain Knowledge about Intellectual Property Rights to protect biological inventions. 2. Understand process of filing a patent, about different treaties, rights and duties of Patent owner. 3. Gain Knowledge of working principles in a laboratory taking all safety measures, handling of pathogenic cultures, disposal of infectious waste, care of the equipment requiring safety audit. 4. Get an insight into Biosafety guidelines and Analyse and Manage the Risks involved with GMOs. 5. Understand the Process involved in Patenting, Patent Search and the protocols for ethical permissions and procedures for use of animals in research, gene therapy etc.		
Credits	Theory	Practical	Total
	3	1	**4**
Contact Hours	3	2	5
Max. Marks:100 **Internal Assessment Marks: 30** (20 Theory + 10 Practical) **End Term Exam Marks: 70** (50 Theory + 20 Practical)		**Time: 3h (theory), 4h (practical)**	
Part B- Contents of the Course			
Instructions for Paper- Setter Nine questions will be set in all. Question No.1 comprising of objective/short answer type questions from the entire syllabus, will be compulsory. The remaining eight questions will be set taking two questions from each unit. The candidates will be required to attempt Q.No.1 &			

four others selecting one question from each unit. All questions carry equal marks.		
Unit	**Topics**	**Contact Hours**
I	**INTRODUCTION TO INTELLECTUAL PROPERTY RIGHTS**: Introduction to Intellectual Property, Patents, Trademarks, Copyright , Trade secrets, Industrial Design and Rights, Traditional Knowledge, Geographical Indications - importance of IPR – patentable and non patentable – patenting life – legal protection of biotechnological inventions – World Intellectual Property Rights Organization (WIPO).	10
II	**GRANT OF PATENT, PATENTING AUTHORITIES AND TREATIES**: Types of patent applications: Ordinary, Conventional, Divisional and Patent of Addition; An introduction to Patent Filing Procedures; Patent licensing and agreement; Patent infringement- meaning, scope, litigation, case studies, Rights and Duties of patent owner. Agreements and Treaties: PCT, GATT, TRIPS Agreements; Budapest Treaty; UPOV & Brene conventions etc.	11
III	**BIOSAFETY:** Introduction of biosafety issues; Biological Safety Cabinets & their types; Primary Containment for Biohazards; Biosafety Levels of Specific Microorganisms. Biosafety guidelines and regulations (National and International); GMOs/LMOs- Concerns and Challenges; Role of Institutional Biosafety Committees (IBSC), RCGM, GEAC etc., Environmental release of GMOs; Risk Analysis; Risk Assessment and management ,Overview of International biosafety agreements.	12
IV	**BIOETHICS:** Ethical issues related to use of Animals in Research and Testing, Alternatives for Animals in Research and testing; Animal Cloning, Human Cloning and their Ethical Aspects; Gene therapy - ethical and social issues; Organ transplantation- ethical and legal implications;Testing of Drugs on Human Volunteers and its ethical concerns; Ethics, Pros and Cons of IP protection and its impact on biodiversity rich developing countries.	12
V*	**List of practical:** • Case study of Intellectual property rights in Biotechnology , Biopiracy and Bioprospecting • To perform different Patent Search methods, Patent Databases & Libraries, online tools, Country-wise patent searches (USPTO, EPO, India etc.), patent mapping • Case studies of different types of patent applications: Ordinary, PCT, Conventional, Divisional and Patent of Addition • Study of Biotechnology and Patent laws: patenting living beings , Patents for Chemicals, Pharmaceuticals • To operate Biosafety cabinets and understand GLP- Good Laboratory biosafety Practices.	30

	• Protocols of ethical concerns related to gene therapy, ethics in patient care, human volunteers for Clinical research, Informed consent performa etc. • Permissions and Procedures in Animal Cloning, Human cloning, Risks and hopes	

Suggested Evaluation Methods

Internal Assessment: ➢ **Theory-20** • Class Participation: 5 • Seminar/presentation/assignment/quiz/class test etc.:5 • Mid-Term Exam: 10 ➢ **Practicum -10** • Class Participation: • Seminar/Demonstration/Viva-voce/Lab records etc.:10 • Mid-Term Exam: NA	**End Term Examination:** **50 (Theory);** **20 (Practical)-** Evaluation of the practical skill will be done by an external examiner.

Part C-Learning Resources

Recommended Books/e-resources/LMS:

1. Introduction to Plant Biotechnology, H S Chawla
2. M K Sateesh .Bioethics and Biosafety. Kindle Edition
3. Shomini Parashar, Deepa Goel IPR, Biosafety and Bioethics Pearson India 2013
4. Private Power, Public Law: The Globalization of Intellectual Property Rights By Susan K. Sell Cambridge University Press, 2000
5. Essentials of Intellectual Property: Law, Economics, and Strategy By Alexander I. Poltorak; Paul J. Lerner Wiley, 2011 (2nd edition)
6. Diane O. Fleming, Debra L. Hunt Biological Safety: Principles and Practices, 4th Edition. ASM 2006.
7. Singh, I. and Kaur, B., Patent law and Entrepreneurship, Kalyani Publishers (2006).
8. Goel and Prashar, IPR, Biosafety and Bioethics, Pearson education, India (2013)

Important Web Links: http://www.w3.org/IPR/
http://www.wipo.int/portal/index.html.en
http://www.ipr.co.uk/IP_conventions/patent_cooperation_treaty.html
www.patentoffice.nic.in
www.iprlawindia.org
http://www.cbd.int/biosafety/background.shtml

Session: 2023-24			
Part A - Introduction			
Subject	**Biotechnology**		
Semester	**IV**		
Name of the Course	**Foundations of Forensic Biotechnology**		
Course Code	**B23-BTY-405**		
Course Type: (CC/MCC/MDC/CC-M/DSEC/VOC/DSE/PC/AEC/VAC)	**DSE -1**		
Level of the course (As per Annexure-I	**400 - 499**		
Pre-requisite for the course (if any)	NA		
Course Learning Outcomes(CLO): (CLOs 1-4 of theory and 5th of practical)	After completing this course, the learner will be able to: 1. Understand the basic concept, meaning, significance and development of Forensic science. 2. To elucidate research methodologies and techniques used in the formation of research design on a specific problem. 3. To understand the Concept of gene and sequence variation. 4. To learn the techniques used in DNA Profiling. 5. Gain the knowledge of methodologies/ techniques (Microscopy, Chromatography, Spectroscopy, Electrophoresis, PCR and other biological & biochemical analysis tools) and also learn about the methods and significance of collecting biological and serological samples.		
Credits	Theory	Practical	Total
	3	1	**4**
Contact Hours	3	2	5
Max. Marks:100 **Internal Assessment Marks: 30** (20 Theory + 10 Practical) **End Term Exam Marks: 70** (50 Theory + 20 Practical)		**Time: 3h (theory), 4h (practical)**	

Part B- Contents of the Course		
Instructions for Paper- Setter Nine questions will be set in all. Question No.1 comprising of objective/short answer type questions from the entire syllabus, will be compulsory. The remaining eight questions will be set taking two questions from each unit. The candidates will be required to attempt Q.No.1 & four others selecting one question from each unit. All questions carry equal marks.		
Unit	**Topics**	**Contact Hours**
I	Introduction to Forensic Science: What is Forensic Science? Need, Scope, Concepts, Significance and Limits of Forensic Science, History and Development of Forensic Science, Laws and Basic principles of Forensic Science, Applications and branches of forensic science, Organizational set-up of a Forensic Science Laboratory of Centre and State, NCRB and NICFS.	10
II	**Tools and techniques in Forensic Science:** General principles of Biological/ Bio-chemical Analysis, pH and buffers, Physiological solution, cell and tissue culture, Cell fractionation, Biological variations etc. Centrifugation Techniques, Basic principles of microscopy, spectroscopy, chromatography. Electrophoresis, Enzyme- Linked Immunosorbent Assay (ELISA), Radio Immuno Assay (RIA).	11
III	**DNA in Forensics:** Introduction to DNA, Concept of gene, Nature and structure of human genome and its diversity ,Concept of DNA Polymorphism - VNTRs, STRs, Mini STRs , SNPs. Detection techniques - RFLP, PCR amplifications, Amp-FLP, sequence polymorphism, Y-STR, Mitochondrial DNA. Generation and assessment of DNA profiles, Statistical interpretation of DNA profiles, evaluation and presentation of DNA evidence, DNA Profiling of Other Species, Kinship testing and lineage markers**,** DNA databanks and their utility in various criminal investigations.	12
IV	**Recent Trends in Forensic Science**: Environmental Forensics: Definition, Legal processes involving environmental forensic science. Geo-forensics: Global Positioning System; Basic principles and applications. Biometrics in Personal Identification: Introduction, Concepts of Biometric Authentication, Role in person Identification, Techniques and Technologies (Finger Print Technology, Face Recognition, IRIS, Retina Geometry, Hand Geometry, Speaker Recognition, Signature Verification and other forensic related techniques). Bioterrorism: Definition, Concepts of Biosecurity and microbial forensics, Weapons of mass destruction (WMD), mass-casualty weapons (MCW), NBC and CBRNE, Dirty Bombs.	12

V*	**List of practical:** • Isolation and instrumental analysis of different toxic substances and drugs. • Microscopy of various physical and biological evidences • TLC and spot test of alkaloids of drugs of abuse and toxic substances. • Thin layer chromatography of explosive substances • UV-Visible Spectroscopic analysis of Drugs • To estimate the quantity of protein by UV-absorption method • To estimate the activity of amylase enzyme in serum/urine, saliva • Examination of blood, saliva, semen, urine and its stains: Chemical and crystal tests • Identification of spermatozoa by differential staining method • Determination of blood group types. • Isolation of DNA from blood – purification • Amplification of DNA using PCR • Quantitative estimation of DNA, RNA & proteins • Electrophoresis of DNA, RNA & proteins • Restriction Digestion of DNA	30

Suggested Evaluation Methods

Internal Assessment: ➢ **Theory-20** • Class Participation: 5 • Seminar/presentation/assignment/quiz/class test etc.:5 • Mid-Term Exam: 10 ➢ **Practicum -10** • Class Participation: • Seminar/Demonstration/Viva-voce/Lab records etc.:10 • Mid-Term Exam: NA	**End Term Examination:** **50 (Theory);** **20 (Practical)-** Evaluation of the practical skill will be done by an external examiner.

Part C-Learning Resources

Recommended Books/e-resources/LMS:

1. Houck, M.M & Siegel, J.A; Fundamentals of Forensic Science, Acadamic Press, London, 2006.

2. Sharma, B.R; Forensic Science in Criminal Investigation & Trials, Universal Publishing Co., New Delhi, 2003

3. Nanda B.B and Tewari, R.K; Forensic Science in India- A vision for the Twenty First Century, Select Publisher, New Delhi, 2001.

4. James, S.H and Nordby, J.J; Forensic Science- An Introduction to Scientific and Investigative Techniques, CRC Press, USA, 2003.

5. Saferstein; Criminalistics- An Introduction of Forensic Science, Prentice Hall Inc,

USA,2007. 6. Barry, A.J. Fisher; Techniques of Crime Scene Investigation, 7th Ed, CRC Press, NewYork, 2003.
7. Mordby, J. & Reckoning, D; The Art of Forensic Detection, CRC Press NewYork, 2003.
8. G.R. Chatwal; Analytical Spectroscopy 2nd Edn, Himalaya Publishing House New Delhi,2002. 9. Aitken and Stoney; The Use of Statistics in Forensic Science, Ellis Horwood, New York, 1991.
9. Brown, T; Gene cloning and DNA analysis: An Introduction , 5th ed. Blackwell publishing, London, 2006 .
10. Butler, J; Advanced Topics in Forensic DNA Typing: Methodology, 1st Ed., Academic Press, London, 2009.
11. Easteal, S. McLeod, N. & Reed, K; DNA Profiling: Principles, Pitfalls and Potential, Harwood Academic Publishers, New Jersey, 1991.
12. Primorac, D. & Schanfield, M; Forensic DNA Applications: An Interdisciplinary Perspective, CRC Press, New York, 2014.
13. Rudin, N. & Inman, K; An Introduction to Forensic DNA Analysis, Second Ed.,CRC press, New York, 2001.
14. Spencer, C; Genetic testimony: a guide to forensic DNA profiling, Pearson, New Delhi, 2004.

KURUKSHETRA UNIVERSITY KURUKSHETRA

Scheme of Examination and Syllabus for

Under-Graduate Programme

(Subject: Zoology)

Under Multiple Entry-Exit, Internship and CBCS-LOCF in accordance to NEP-2020 w.e.f. 2023-24 (in phased manner)

DEPARTMENT OF ZOOLOGY, KURUKSHETRA UNIVERSITY, KURUKSHETRA
Scheme of Examination for Under-Graduate Programme
Under Multiple Entry-Exit, Internship and CBCS-LOCF in accordance to NEP-2020
w.e.f. 2023-24 (in phased manner)
Subject: Zoology

SEMESTER-1									
Remarks	**Course Type**	**Course Code**	**Name of the Course**	**Credit**	**Contact Hours/ Week**	**Internal Assessment marks**	**End Term Marks**	**Max. Marks**	**Exam Duration**
Scheme A & C	**CC-1 MCC-1 4 credit**	B23-ZOO-101	Animal Diversity of Non-Chordates	3	3	20	50	70	3 hrs.
			Practical	1	2	10	20	30	4 hrs.
Scheme C only	**MCC-2 4 credit**	B23-ZOO-102	Type study of Non-chordates	3	3	20	50	70	3 hrs.
			Practical	1	2	10	20	30	4 hrs.
Scheme A	**CC-M1 2 credit**	B23-ZOO-103	Introduction of Non-Chordates	1	1	10	20	30	3 hrs.
			Practical	1	2	5	15	20	4 hrs.
Scheme A & C	**MDC-1 3 credit**	B23-ZOO-104	Basics of Zoology-I	2	2	15	35	50	3 hrs.
			Practical	1	2	5	20	25	4 hrs.
SEMESTER-2									
Remarks	**Course Type**	**Course Code**	**Name of the Course**	**Credit**	**Contact Hours/ Week**	**Internal Assessment marks**	**End Term Marks**	**Max. Marks**	**Exam Duration**
Scheme A & C	**CC-2 MCC-3 4 credit**	B23-ZOO-201	Animal Diversity of Chordates	3	3	20	50	70	3 hrs.
			Practical	1	2	10	20	30	4 hrs.
Scheme C only	**DSEC-1 4 credit**	B23-ZOO-202	Applied Zoology	3	3	20	50	70	3 hrs.
			Practical	1	2	10	20	30	4 hrs.
Scheme A only	**CC-M2 2 credit**	B23-ZOO-203	Introduction of Chordates	1	1	10	20	30	3 hrs.
			Practical	1	2	5	15	20	4 hrs.
Scheme A & C	**MDC-2 3 credit**	B23-ZOO-204	Basics of Zoology-II	2	2	15	35	50	3 hrs.
			Practical	1	2	5	20	25	4 hrs.

DEPARTMENT OF ZOOLOGY, KURUKSHETRA UNIVERSITY, KURUKSHETRA
Scheme of Examination for Under-Graduate Programme
Under Multiple Entry-Exit, Internship and CBCS-LOCF in accordance to NEP-2020
w.e.f. 2023-24 (in phased manner)
Subject: Zoology

SEMESTER-3									
Remarks	**Course Type**	**Course Code**	**Name of the Course**	**Credit**	**Contact Hours/ Week**	**Internal Assessment marks**	**End Term Marks**	**Max. Marks**	**Exam Duration**
Scheme A, B & C	**CC-3 MCC-4 4 credit**	B23-ZOO-301	Cell Biology and Animal Genetics	3	3	20	50	70	3 hrs.
			Practical	1	2	10	20	30	4 hrs.
Scheme B & C	**MCC-5 4 credit**	B23-ZOO-302	Type study of Chordates	3	3	20	50	70	3 hrs.
			Practical	1	2	10	20	30	4 hrs.
Scheme A, B & C	**MDC-3 3 credit**	B23-ZOO-303	Basics of Zoology-III	2	2	15	35	50	3 hrs.
			Practical	1	2	5	20	25	4 hrs.
SEMESTER-4									
Remarks	**Course Type**	**Course Code**	**Name of the Course**	**Credit**	**Contact Hours/ Week**	**Internal Assessment marks**	**End Term Marks**	**Max. Marks**	**Exam Duration**
Scheme A, B & C	**CC-4 MCC-6 4 credit**	B23-ZOO-401	Biomolecules and Mammalian Physiology	3	3	20	50	70	3 hrs.
			Practical	1	2	10	20	30	4 hrs.
Scheme B & C	**MCC-7 4 credit**	B23-ZOO-402	Aquaculture	3	3	20	50	70	3 hrs.
			Practical	1	2	10	20	30	4 hrs.
Scheme B & C	**MCC-8 4 credit**	B23-ZOO-403	Pest Management	3	3	20	50	70	3 hrs.
			Practical	1	2	10	20	30	4 hrs.
Scheme B & C	**DSE-1 4 credit Select one option**	B23-ZOO-404	Biodiversity and Wildlife Management	3	3	20	50	70	3 hrs.
			Practical	1	2	10	20	30	4 hrs.
		B23-ZOO-405	Cytogenetics	3	3	20	50	70	3 hrs.
			Practical	1	2	10	20	30	4 hrs.

DEPARTMENT OF ZOOLOGY, KURUKSHETRA UNIVERSITY, KURUKSHETRA
Scheme of Examination for Under-Graduate Programme
Under Multiple Entry-Exit, Internship and CBCS-LOCF in accordance to NEP-2020
w.e.f. 2023-24 (in phased manner)
Subject: Zoology

SEMESTER-5									
Remarks	**Course Type**	**Course Code**	**Name of the Course**	**Credit**	**Contact Hours/ Week**	**Internal Assessment marks**	**End Term Marks**	**Max. Marks**	**Exam Duration**
Scheme A, B & C	**CC-5 MCC-9 4 credit**	B23-ZOO-501	Ecology and Environment	3	3	20	50	70	3 hrs.
			Practical	1	2	10	20	30	4 hrs.
Scheme B & C	**MCC-10 4 credit**	B23-ZOO-502	Animal Taxonomy	3	3	20	50	70	3 hrs.
			Practical	1	2	10	20	30	4 hrs.
Scheme B & C	**DSE-2 4 credit Select one Option**	B23-ZOO-503	Animal Behaviour and Chronobiology	3	3	20	50	70	3 hrs.
			Practical	1	2	10	20	30	4 hrs.
		B23-ZOO-504	Comparative Anatomy of Vertebrates	3	3	20	50	70	3 hrs.
			Practical	1	2	10	20	30	4 hrs.
Scheme B & C	**DSE-3 4 credit Select one Option**	B23-ZOO-505	Biology of Insects	3	3	20	50	70	3 hrs.
			Practical	1	2	10	20	30	4 hrs.
		B23-ZOO-506	Parasitology	3	3	20	50	70	3 hrs.
			Practical	1	2	10	20	30	4 hrs.
SEMESTER-6									
Remarks	**Course Type**	**Course Code**	**Name of the Course**	**Credit**	**Contact Hours/ Week**	**Internal Assessment marks**	**End Term Marks**	**Max. Marks**	**Exam Duration**
Scheme A, B & C	**CC-6 MCC-11 4 credit**	B23-ZOO-601	Developmental Biology & Evolution	3	3	20	50	70	3 hrs.
			Practical	1	2	10	20	30	4 hrs.
Scheme B & C	**MCC-12 4 credit**	B23-ZOO-602	Basics of Endocrinology and Immunology	3	3	20	50	70	3 hrs.
			Practical	1	2	10	20	30	4 hrs.
Scheme B & C	**DSE-4 4 credit Select one Option**	B23-ZOO-603	Reproductive Physiology	3	3	20	50	70	3 hrs.
			Practical	1	2	10	20	30	4 hrs.
		B23-ZOO-604	Neurophysiology	3	3	20	50	70	3 hrs.
			Practical	1	2	10	20	30	4 hrs.
Scheme B & C	**DSE-5 4 credit Select one Option**	B23-ZOO-605	Molecular Biology	3	3	20	50	70	3 hrs.
			Practical	1	2	10	20	30	4 hrs.
		B23-ZOO-606	Forensic Biology	3	3	20	50	70	3 hrs.
			Practical	1	2	10	20	30	4 hrs.

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Scheme of Examination for Under-Graduate Programme
Under Multiple Entry-Exit, Internship and CBCS-LOCF in accordance to NEP-2020
w.e.f. 2023-24 (in phased manner)
Subject: Zoology

SEMESTER-7 (FOR HONOURS/HONOURS WITH RESEARCH IN ZOOLOGY)									
Remarks	**Course Type**	**Course Code**	**Name of the Course**	**Credit**	**Contact Hours/ Week**	**Internal Assessment marks**	**End Term Marks**	**Max. Marks**	**Exam Duration**
For Honours in Zoology/ Honours with Research in Zoology	**CC-H1 4 credit**	B23-ZOO-701	Advances of Cell Biology	4	4	30	70	100	3 hrs.
	CC-H2 4 credit	B23-ZOO-702	Biochemistry and Bio-techniques	4	4	30	70	100	3 hrs.
	CC-H3 4 credit	B23-ZOO-703	Structure and Function of Invertebrates	4	4	30	70	100	3 hrs.
	DSE-H1 4 credit Select one Option	B23-ZOO-704	Biosystematics and Biostatistics	4	4	30	70	100	3 hrs.
		B23-ZOO-705	Computational Biology	4	4	30	70	100	3 hrs.
	PC-H1 4 credit	B23-ZOO-706	Practical Based on B23-ZOO-701 TO 704/705	4	8	30	70	100	6 hrs.
SEMESTER-8 (FOR HONOURS IN ZOOLOGY)									
Remarks	**Course Type**	**Course Code**	**Name of the Course**	**Credit**	**Contact Hours/ Week**	**Internal Assessment marks**	**End Term Marks**	**Max. Marks**	**Exam Duration**
Honours in Zoology	**CC-H4 4 credit**	B23-ZOO-801	Structure and Function of Vertebrates	4	4	30	70	100	3 hrs.
	CC-H5 4 credit	B23-ZOO-802	Comparative Physiology	4	4	30	70	100	3 hrs.
	CC-H6 4 credit	B23-ZOO-803	Population Genetics & Evolution	4	4	30	70	100	3 hrs.
	DSE-H2 4 credit Select one option	B23-ZOO-804	Population and Community Ecology	4	4	30	70	100	3 hrs.
		B23-ZOO-805	Environment and Public Health	4	4	30	70	100	3 hrs.
	PC-H2 4 credit	B23-ZOO-806	Practical Based on B23-ZOO-801 TO 804/805	4	8	30	70	100	6 hrs.
OR SEMESTER-8 (FOR HONOURS WITH RESEARCH IN ZOOLOGY)									
Remarks	**Course Type**	**Course Code**	**Name of the Course**	**Credit**	**Contact Hours/ Week**	**Internal Assessment marks**	**End Term Marks**	**Max. Marks**	**Exam Duration**
Honours with Research in Zoology	**CC-H4 4 credit**	B23-ZOO-801	Structure and Function of Vertebrates	4	4	30	70	100	3 hrs.
	CC-H5 4 credit	B23-ZOO-802	Comparative Physiology	4	4	30	70	100	3 hrs.
	Project/ Dissertation 12 credit	B23-ZOO-807	Project/Dissertation	8+4	-	-	-	-	-

ZOOLOGY: SEMESTER-I

Remarks	Course Type	Course Code	Name of the Course	Credit	Contact Hours/ Week	Internal Assessment marks	End Term Marks	Max. Marks	Exam Duration
Scheme A & C	CC-1 MCC-1 4 credit	B23-ZOO-101	Animal Diversity of Non-Chordates	3	3	20	50	70	3 hrs.
			Practical	1	2	10	20	30	4 hrs.

Level of the course: 100-199

Pre-requisite for the course (if any): Biology as a Subject at 4.0 Level (Class XII)

Course Learning Outcomes (CLO)

1. Student will be able to describe unique characters and recognize life forms of phylum Protozoa and Porifera
2. Student will be able to describe unique characters and recognize life forms of phylum Coelenterata and Helminthes
3. Student will be able to describe unique characters and recognize life forms of phylum Annelida and Arthropoda
4. Student will be able to describe unique characters and recognize life forms of phylum Mollusca, Echinodermata and Hemichordates
5. Students will be capable of identifying the characters and classification of Non-Chordates

Instructions for Paper-Setter

1. Nine questions will be set in all. All questions will carry equal marks.
2. Question No. 1, which will be short answer type covering the entire syllabus, will be compulsory. The remaining eight questions will be set unit wise selecting two questions from each Unit I to IV. The candidate will be required to attempt question No. 1 and four more questions selecting one question from each unit.

UNIT	TOPICS	CONTACT HOURS
I	Phylum Protozoa: General characters and classification up to class level Type study of *Plasmodium* Phylum Porifera: General characters and classification up to class level, Type study of *Sycon*	12
II	Phylum – Coelentrata: General characters and classification up to class level Type Study of *Obelia* Phylum – Platyhelminthes and Aschelminthes: General characters and classification up to class level, Type study of Liver Fluke, *Fasciola hepatica*	11
III	Phylum – Annelida: General characters and classification up to class level, Type study of Earthworm, *Pheretima posthuma* (Habitat, habits, metamerism, digestive System, circulatory system, nervous system, reproductive system) Phylum – Arthropoda: General characters and classification up to class level, Type study of Cockroach, *Periplaneta americana* (Habitat, habits, external morphology, digestive system, respiratory system, excretory system, reproductive system)	11
IV	Phylum - Mollusca: General characters and classification up to class level, Type study of *Pila* Phylum – Echinodermata: General characters and classification up to class level, Type study of *Asterias* (Sea Star) (Habitat, habits, external morphology, water vascular system, Circulatory System) Phylum Hemichordata: General characters of Hemichordates with examples	11
V Practical	Classification up to orders with ecological note and economic importance of the following animals: 1. Protozoa: Lamination of cultures of *Amoeba, Euglena* and *Paramecium;* permanent prepared slides: *Amoeba, Euglena, Trypanosoma, Noctiluca, Eimeria, Paramecium* (binary fission and conjugation), *Opalina, Vorticella, Balantidium, Nyctotherus,* radiolarian and formaniferan ooze. 2. Parazoa (Porifera): *Sycon, Grantia, Euplectella, Hyalonema, Spongilla, Euspongia* 3. Coelenterata: *Porpita, Valella, Physalia, Aurelia, Rhizostoma, Metridium, Millipora, Alcyonium, Tubipora, Zoanthus, Madrepora, Favia, Fungia,* and *Astrea.* Permanent prepared slides: *Hydra* (W.M.), *Hydra* with buds, *Obelia* (colony and medusa), *Sertularia, Plumularia, Tubularia, Bougainvillea, Aurelia* (sense organs and stages of life history). 4. Playhelminthes: *Dugesia, Fasciola, Taenia, Echinocoecus.* Permanent prepared slides: *Miracidium, Sporocyst, Redia, Cercaria, Scolex* and *Proglotttids of Taenia* (mature and gravid). 5. Aschelminthes: *Ascaris* (male and female), *Trichinella, Ancylostoma, Meloidogyne* 6. Annelida: *Pheretima, Heteronereis, Polynoe, Aphrodite, Chaetopterus, Arenicola, Tubifex* and *Pontobdella* 7. Arthropoda: *Peripatus, Palaemon* (Prawn), *Lobster, Cancer* (crab), *Sacculina, Eupagurus* (hermit crab), *Lepas, Balanus,Cyclops, Daphnia, Lepisma, Periplaneta* (cockroach), *Schistocerca* (locust), *Poecilocerus* (ak-	30

	hopper), *Gryllus* (cricket), *Mantis* (praying mantis), *Cicada, Forticula* (earwig), Dragon fly, termite queen, bug, moth, beetle, *Polistes* (wasp), *Apis* (honey bee), *Bombyx* (silk moth), *Cimex* (beg bug), *Pediculus* (body louse), *Millipede, Scolopendra* (centipede), *Palamnaeus* (scorpion), *Aranea* (spider), *Limulus* (king crab) *8.* Mollusca: *Mytilus, Ostrea, Cardium, Pholas, Solen* (razor/Fish), *Pecten, Holiotis, Patella, Aplysia, Doris, Limax, Loligo, Sepia, Octopus, Nautilus* (complete and T.S.), *Chiton* and *Dentalium* *9.* Echinodermata: *Asterias, Echinus, Cucumaia, Ophiothrix, Antedon a*nd *Asterophyton* 10. Hemichordata: *Balanoglossus* 11. Study of slides of Non-Chordates phyla; Staining of *Obelia* and *Sertularia*	

Suggested Evaluation Methods

Internal Assessment:	**End Term Examination:**
➢ **Theory** •Class Participation: 5 •Seminar/presentation/assignment/quiz/class test etc.: 5 •Mid-Term Exam: 10 ➢ **Practicum** •Class Participation: NA •Seminar/Demonstration/Viva-voce/Lab records etc.: 10 •Mid-Term Exam: NA	➢ **Theory** •Written Examination: 50 ➢ **Practicum** Practical Examination: 20

Learning Resources

1. Jordan, E.L and P.S. Verma. 2009. Invertebrate Zoology, S.Chand and Co. Ltd. New Delhi.
2. Ayyar, E.K and T. Ananthakrishnan. 1992. Manual of Zoology Vol.1 Invertebrates Part I and II, S.Viswanathan Printers and Publishers Pvt. Ltd. Madras.
3. Kotpal, R.L. 2021. Zoology Invertebrates. Rastogi Publications, Meerut.
4. Nair, N.C., N. Arumugam, N. Soundarapandian, T. Murugan and S. Leelavathy. 2010. A textbook of Invertebrates. Saras Publication, Nagercoil.
5. Rastogi V.B. 2021 . Invertebrate Zoology. Kedar Nath Ram Nath , Meerut
6. Lal S.S. (2019) Practical Zoology Invertebrates. Rastogi Publications, Meerut
7. Anderson D.T. (1999) Invertebrate Zoology, Oxford University Press
8. Edward E. Ruppert, Robert D. Barnes (1994)· Invertebrate Zoology ; Saunders College Pub.

ZOOLOGY: SEMESTER-I									
Remarks	**Course Type**	**Course Code**	**Name of the Course**	**Credit**	**Contact Hours/ Week**	**Internal Assessment marks**	**End Term Marks**	**Max. Marks**	**Exam Duration**
Scheme C only	**MCC-2 4 credit**	**B23-ZOO-102**	**Type study of Non-chordates**	**3**	**3**	**20**	**50**	**70**	**3 hrs.**
			Practical	**1**	**2**	**10**	**20**	**30**	**4 hrs.**

Level of the course: 100-199

Pre-requisite for the course (if any): Biology as a Subject at 4.0 Level (Class XII)

Course Learning Outcomes (CLO)

1. Student will be able to describe about Type study of *Paramecium*
2. Student will be able to describe Type study of *Ascaris*
3. Student will be able to describe about Annelids and Arthropods
4. Student will be able to describe Type study of *Balanoglossus*
5. Students will be capable of identifying the characters and classification of Non-Chordates

Instructions for Paper-Setter

1. Nine questions will be set in all. All questions will carry equal marks.
2. Question No. 1, which will be short answer type covering the entire syllabus, will be compulsory. The remaining eight questions will be set unit wise selecting two questions from each Unit I to IV. The candidate will be required to attempt question No. 1 and four more questions selecting one question from each unit.

UNIT	TOPICS	CONTACT HOURS
I	**Phylum Protozoa:** Biodiversity and economic importance of Protozoans; Type study of *Amoeba*, *Paramecium* **Phylum Porifera:** Biodiversity and economic importance of poriferans, Canal system in sponges, Spicules in sponges	**12**
II	**Phylum – Coelentrata:** Biodiversity and economic importance of cnidarians Corals and coral reefs Polymorphism in Siphonophores **Phylum – Platyhelminthes and Aschelminthes:** Biodiversity and economic importance of flat worms, Type study of *Ascaris lumbricoides* Common roundworms and their economic importance	**11**
III	**Phylum – Annelida:** Biodiversity and economic importance of annelids Metamerism in Annelida Larval forms in Annelids **Phylum – Arthropoda:** Biodiversity and economic importance of insects (insect vectors, lac insects, honey bee, insect pest) & crustaceans Type study of Grasshopper Evolutionary significance of *Peripatus*	**11**
IV	**Phylum - Mollusca:** Biodiversity and economic importance of Molluscs Torsion and detorsion in gastropoda **Phylum – Echinodermata:** Biodiversity and economic importance of echinoderms Larval forms of Echinoderm Aristotle's Lantern: Structure & Functions **Phylum – Hemichordata:** Type Study of *Balanoglossus*	**11**
V Practical	**Study of the following permanent stained preparations:** 1. L.S. and T.S. *Sycon;* gemmules, spicules and spongin fibres of *Sycon*, canal system of sponges 2. T.S. *Hydra* (testis and ovary region) 3. T.S. *Fasciola* (different regions) 4. T.S. *Ascaris* (male and female) 5. T.S. *Pheretima* (pharyngeal and typhlosolar regions), Setae, septal nephridia and spermathecae of *Pheretima.* 6. Trachea and mouthparts of cockroach. 7. Statocyst of *Palaemon.* 8. Glochidium larva of *Anodonta;* radula and osphradium of *Pila.* 9. T.S. Star fish (arm). 10. T.S. *Balanoglossus* (through various regions).	**30**

	Preparation of the following slides: 1. Temporary preparation of *Volvo, Paramecium,* Gemmules and spicules of *Sycon;* mouth parts and trachea of *Periplaneta* (cockroach). 2. Preparation of permanent stained whole mounts of *Hydra, Obelia, Sertularia, Plumularia* and *Bougainvillea.* 3. Preparation of mouth parts of Mosquito, House fly and cockroach. **Study of Internal Anatomy** 1. Computer, simulated study/ model of: (i) *Earthworm*: Digestive, reproductive and nervous systems (ii) *Pila* : Pallial complex, digestive and nervous system 2. Demonstration of internal anatomy of cockroach: Digestive, reproductive and nervous systems	

Suggested Evaluation Methods

Internal Assessment:	**End Term Examination:**
➢ **Theory** •Class Participation: 5 •Seminar/presentation/assignment/quiz/class test etc.: 5 •Mid-Term Exam: 10 ➢ **Practicum** •Class Participation: NA •Seminar/Demonstration/Viva-voce/Lab records etc.: 10 •Mid-Term Exam: NA	➢ **Theory** •Written Examination: 50 ➢ **Practicum** Practical Examination: 20

Learning Resources

1. Jordan, E.L and P.S. Verma. 2009. Invertebrate Zoology, S.Chand and Co. Ltd. New Delhi.
2. Ayyar, E.K and T. Ananthakrishnan. 1992. Manual of Zoology Vol.1 Invertebrates Part I and II, S.Viswanathan Printers and Publishers Pvt. Ltd. Madras.
3. Kotpal, R.L. 2021. Zoology Invertebrates. Rastogi Publications, Meerut.
4. Nair, N.C., N. Arumugam, N. Soundarapandian, T. Murugan and S. Leelavathy. 2010. A textbook of Invertebrates. Saras Publication, Nagercoil.
5. Rastogi V.B. 2021 . Invertebrate Zoology. Kedar Nath Ram Nath , Meerut
6. Lal S.S. (2019) Practical Zoology Invertebrates. Rastogi Publications, Meerut
7. Anderson D.T. (1999) Invertebrate Zoology, Oxford University Press
8. Edward E. Ruppert, Robert D. Barnes (1994)· Invertebrate Zoology ; Saunders College Pub.

ZOOLOGY: SEMESTER-I

Remarks	Course Type	Course Code	Name of the Course	Credit	Contact Hours/ Week	Internal Assessment marks	End Term Marks	Max. Marks	Exam Duration
Scheme A	CC-M1 2 credit	B23-ZOO-103	Introduction of Non-Chordates	1	1	10	20	30	3 hrs.
			Practical	1	2	5	15	20	4 hrs.

Level of the course: 100-199

Pre-requisite for the course (if any): NA

Course Learning Outcomes (CLO)

1. Student will be able to understand about phylum Protozoa and Porifera
2. Student will be able to understand about phylum Coelenterata and Helminthes
3. Student will be able to understand about phylum Annelida and Arthropoda
4. Student will be able to understand about phylum Mollusca, Echinodermata and Hemichordates
5. Students will be capable of identifying the characters and classification of Non-Chordates

Instructions for Paper-Setter

1. Nine questions will be set in all. All questions will carry equal marks.
2. Question No. 1, which will be short answer type covering the entire syllabus, will be compulsory. The remaining eight questions will be set unit wise selecting two questions from each Unit I to IV. The candidate will be required to attempt question No. 1 and four more questions selecting one question from each unit.

UNIT	TOPICS	CONTACT HOURS
I	Phylum Protozoa: General characters and classification of Protozoa with their ecological and economic importance Phylum Porifera: General characters and classification of Porifera with their ecological and economic importance	4
II	Phylum – Coelentrata: General characters and classification of Coelentrata with their ecological and economic importance Phylum – Platyhelminthes and Aschelminthes: General characters and classification of Helminthes with their ecological and economic importance	4
III	Phylum – Annelida: General characters and classification of Annelida with their ecological and economic importance Phylum – Arthropoda: General characters and classification of Arthropods with their ecological and economic importance	4
IV	Phylum - Mollusca: General characters and classification of Mollusca with their ecological and economic importance Phylum – Enchinodermata: General characters and classification of Echinoderms with their ecological and economic importance Phylum Hemichordata: General Characters of Hemichordates with examples	3
V Practical	Classification up to orders with ecological note and economic importance of the following animals: 1. Protozoa: Permanent slides: *Amoeba, Euglena, Trypanosoma, Noctiluca, Eimeria, Paramecium* (binary fission and conjugation), *Opalina, Vorticella, Balantidium, Nyctotherus*, radiolarian and formaniferan ooze. 2. Porifera: *Sycon, Grantia, Euplectella, Hyalonema, Spongilla, Euspongia* 3. Coelenterata: *Porpita, Valella, Physalia, Aurelia, Rhizostoma, Metridium, Millipora, Alcyonium, Tubipora, Zoanthus, Madrepora, Favia, Fungia,* and *Astrea.* Permanent slides of *Hydra* (W.M.), *Hydra* with buds, *Obelia* (colony and medusa), *Sertularia, Plumularia, Tubularia, Bougainvillea, Aurelia*. 4. Playhelminthes: *Dugesia, Fasciola, Taenia, Echinocoecus.* Permanent prepared slides: *Miracidium, Sporocyst, Redia, Cercaria, Scolex* and *Proglotttids of Taenia* (mature and gravid). Aschelminthes: *Ascaris* (male and female), *Trichinella, Ancylostoma, Meloidogyne* 5. Annelida: *Pheretima, Heteronereis, Polynoe, Aphrodite, Chaetopterus, Arenicola, Tubifex* and *Pontobdella* 6. Arthropoda: *Peripatus, Palaemon* (Prawn), *Lobster, Cancer* (Crab), *Sacculina, Eupagurus* (Hermit crab), *Lepas, Balanus,Cyclops, Daphnia, Lepisma, Periplaneta* (cockroach), *Schistocerca* (Locust), *Poecilocerus* (ak-hopper), *Gryllus* (cricket), *Mantis* (praying mantis), *Cicada, Forticula* (earwig), Dragon fly, termite queen, bug, moth, beetle, *Polistes* (wasp), *Apis* (Honey bee), *Bombyx* (Silk moth), *Cimex* (Bed bug), *Pediculus* (Head louse), *Millipede, Scolopendra* (centipede), *Palamnaeus* (scorpion), *Aranea* (spider), *Limulus* (king crab) 7. Mollusca: *Mytilus, Ostrea, Cardium, Pholas, Solen* (razor / Fish), *Pecten, Holiotis, Patella, Aplysia, Doris, Limax, Loligo, Sepia, Octopus, Nautilus* (complete and T.S.), *Chiton* and *Dentalium* 8. Echinodermata: *Asterias, Echinus, Cucumaia, Ophiothrix, Antedon a*nd *Asterophyton* 9. Hemichordata: *Balanoglossus*	30

Suggested Evaluation Methods

Internal Assessment:

- **Theory**
  - Class Participation: 4
  - Seminar/presentation/assignment/quiz/class test etc.: NA
  - Mid-Term Exam: 6

End Term Examination:

- **Theory**
  - Written Examination: 20
- **Practicum**
  - Practical Examination: 15

➢ **Practicum** •Class Participation: NA •Seminar/Demonstration/Viva-voce/Lab records etc.: 5 •Mid-Term Exam: NA	

Learning Resources

1. Jordan, E.L and P.S. Verma. 2009. Invertebrate Zoology, S.Chand and Co. Ltd. New Delhi.
2. Ayyar, E.K and T. Ananthakrishnan. 1992. Manual of Zoology Vol.1 Invertebrates Part I and II, S.Viswanathan Printers and Publishers Pvt. Ltd. Madras.
3. Kotpal, R.L. 2021. Zoology Invertebrates. Rastogi Publications, Meerut.
4. Nair, N.C., N. Arumugam, N. Soundarapandian, T. Murugan and S. Leelavathy. 2010. A textbook of Invertebrates. Saras Publication, Nagercoil.
5. Rastogi V.B. 2021 . Invertebrate Zoology. Kedar Nath Ram Nath , Meerut
6. Lal S.S. 2019. Practical Zoology Invertebrates. Rastogi Publications, Meerut
7. Anderson D.T. (1999) Invertebrate Zoology, Oxford University Press
8. Edward E. Ruppert, Robert D. Barnes (1994)· Invertebrate Zoology ; Saunders College Pub.

ZOOLOGY: SEMESTER-I									
Remarks	**Course Type**	**Course Code**	**Name of the Course**	**Credit**	**Contact Hours/ Week**	**Internal Assessment marks**	**End Term Marks**	**Max. Marks**	**Exam Duration**
Scheme A & C	**MDC-1 3 credit**	**B23-ZOO-104**	**Basics of Zoology-I**	**2**	**2**	**15**	**35**	**50**	**3 hrs.**
			Practical	**1**	**2**	**5**	**20**	**25**	**4 hrs.**

Level of the course: 100-199

Pre-requisite for the course (if any): NA

Course Learning Outcomes (CLO)

1. Student will be able to learn about Kingdom Animalia
2. Student will be able to learn about Chordates
3. Student will be able to describe unique characters and recognize life functions of phylum Annelida and Arthropoda
4. Student will be able to describe unique characters and recognize life functions of phylum Mollusca, Echinodermata and Hemichordates
5. Students will be capable understand the role of non chordates in their surroundings

Instructions for Paper-Setter

1.Nine questions will be set in all. All questions will carry equal marks.

2. Question No. 1, which will be short answer type covering the entire syllabus, will be compulsory. The remaining eight questions will be set unit wise selecting two questions from each Unit I to IV. The candidate will be required to attempt question No. 1 and four more questions selecting one question from each unit.

UNIT	TOPICS	CONTACT HOURS
I	Zoology: Definition and scope, introduction to Animal Kingdom, animal characters Non-Chordates and Invertebrates with examples, Invertebrate Phyla, Introduction to basic characters of animal with special reference to the non chordates; Biodiversity: Introduction and Scope; General characters of Protozoa and Porifera; Study of Amoeba and sponges with special reference to its structure and economic importance	**8**
II	General characters of Coelentrata and Annelida; Ecological importance of corals; Morphology of earthworm and its ecological role; Economic importance of Leech	**8**
III	General characters of Arthropoda and Mollusca; Study of basic characters of insects and snails; Insects as pest: Grasshopper, Economic importance of Honey Bee; Snails as pest in Paddy fields	**7**
IV	General characters of Echinodermata; Study of basic characters of Star fish with reference to its role in ecosystem; Economic importance of Star Fish	**7**
V Practical	1. To study the non chordates from pond water 2. To study the different parts of Insects by examining Housefly, butterfly, beetles 3. To study the characters of burrowing non chordates e.g. Earthworm 4. To study the life cycle of Butterfly/Mosquito 5. To study various minor phyla as connecting link 6. Identifications of Non-Chordates specimens of various phyla	**30**

Suggested Evaluation Methods

Internal Assessment:

- **Theory**
  - Class Participation: 4
  - Seminar/presentation/assignment/quiz/class test etc.: 4
  - Mid-Term Exam: 7
- **Practicum**
  - Class Participation: NA
  - Seminar/Demonstration/Viva-voce/Lab records etc.: 5
  - Mid-Term Exam: NA

End Term Examination:

- **Theory**
  - Written Examination: 35
- **Practicum**
  Practical Examination: 20

Learning Resources

1. Jordan, E.L and P.S. Verma. 2009. Invertebrate Zoology, S.Chand and Co. Ltd. New Delhi.
2. Ayyar, E.K and T. Ananthakrishnan. 1992. Manual of Zoology Vol.1 Invertebrates Part I and II, S.Viswanathan Printers and Publishers Pvt. Ltd. Madras.
3. Kotpal, R.L. 2021. Zoology Invertebrates. Rastogi Publications, Meerut.
4. 5. Rastogi V.B. 2021 . Invertebrate Zoology. Kedar Nath Ram Nath , Meerut
6. Lal S.S. (2019) Practical Zoology Invertebrates. Rastogi Publications, Meerut

ZOOLOGY: SEMESTER-2

Remarks	Course Type	Course Code	Name of the Course	Credit	Contact Hours/ Week	Internal Assessment marks	End Term Marks	Max. Marks	Exam Duration
Scheme A & C	CC-2 MCC-3 4 credit	B23-ZOO-201	Animal Diversity of Chordates	3	3	20	50	70	3 hrs.
			Practical	1	2	10	20	30	4 hrs.

Level of the course: 100-199

Pre-requisite for the course (if any): Biology as a Subject at 4.0 Level (Class XII)

Course Learning Outcomes (CLO)

1. Student will be able to describe unique characters and recognize life functions of Urochordates
2. Student will be able to describe unique characters and recognize life functions of Pisces
3. Student will be able to describe unique characters and recognize life functions of Amphibians & Reptiles
4. Student will be able to describe unique characters and recognize life functions of Birds & Mammals
5. Students will be capable of identifying the characters and classification of Chordates

Instructions for Paper-Setter

1. Nine questions will be set in all. All questions will carry equal marks.
2. Question No. 1, which will be short answer type covering the entire syllabus, will be compulsory. The remaining eight questions will be set unit wise selecting two questions from each Unit I to IV. The candidate will be required to attempt question No. 1 and four more questions selecting one question from each unit.

UNIT	TOPICS	CONTACT HOURS
I	**Chordates**: Salient features of chordates; Principles of classification; **Protochordates**: Urochordata: Systematic position, distribution, ecology, morphology and affinities Urochordata: Type Study of Herdmania	12
II	**Pisces**: General characters and classification up to classes with examples emphasizing their biodiversity, Scales & Fins, Type study of *Labeo*	11
III	**Amphibia**: General characters and Classification upto class level; Type study of frog, Parental Care and Neoteny in Amphibia **Reptilia:** General characters and Classification upto classes,	11
IV	**Aves:** General characters and Classifications upto classes. Flight/Aerial adaptation in birds, *Archaeopteryx* as missing link **Mammals:** General characters and classification up to classes; Type study of Rat	11
V Practical	1. Classification upto orders, habit, habitats, external characters and economic importance (if any): • Protochordata: *Molqula, Hetryllus, Pyrosoma, Doliolum, Olikopleura,* and *Amphioxus.* • Cyclostomata: *Myxine, Petromyzon* and *Ammocoetus larva*. • Chondrichthyes: *Zygaena, Pristis, Narcine* (electric ray), *Trygon, Rhinobatus, Raja* and *Chimaera.* • Osteichthyes: *Acipenser, Lepidosteus, Muraena, Mystus, Catla, Hippocampus, Syngnathus, Exocoetus, Anabas, Diodon, Ostracion, Tetradon, Echinus, Lophius, Solea* and *Polypterus.* Any of the Lung Fishes. • Amphibia: *Necturus, Proteus, Amphiuma, Salamandra, Ambystoma, Axolotl larva, Alytes, Bufo, Rana*. • Reptilia: *Hemidactylus, Calotes, Draco, Varanus, Phrynosoma, Chamaeleon, Typhlops, Python, Eryx, Ptyas, Bungarus, Naja, Hydrus, Viper, Crocodilus, Gavialis, Chelone* (Turtle) and *Testudo* (Tortoise). • Aves: *Casuarius, Arden, Anas, Milvus, Pavo, Eudynamis, Tyto, Alcedo, Halcyon* • Mammalia: *Ornithorhynchus, Echidna, Didelphis, Macropus, Loris, Macaque, Hystrix, Funambulus, Felix, Panthera, Canis, Herpestes, Capra, Pteropus.* 2. Study of the skeleton of *Scoliodon, Labeo, Rana* (Frog), *Varanus,* Pigeon or Gallus and *Orcyctolagus*/rat. 3. Study of the following permanent slides: Tornaria larva, T.S. *Amphioxus* (through different regions). Oikopleura, Histology of rat (compound tissues), different types of scales. 4. Make permanent stained preparations of the following: *Salpa,* Spicules, and Pharynx of *Herdmania, Amphioxus*, Cycloid scales 5. Field Visit to Protected areas/National Park/Wildlife Sanctuary or Zoo.	30

Suggested Evaluation Methods

Internal Assessment:

➢ **Theory**
- Class Participation: 5
- Seminar/presentation/assignment/quiz/class test etc.: 5
- Mid-Term Exam: 10

➢ **Practicum**
- Class Participation: NA
- Seminar/Demonstration/Viva-voce/Lab records etc.: 10

End Term Examination:

➢ **Theory**
- Written Examination: 50

➢ **Practicum**
Practical Examination: 20

• Mid-Term Exam: NA	

Learning Resources

1. R.L.Kotpal. Modern Textbook of Zoology
2. E.L. Jordan and Verma. Chordate Zoology.
3. Barrington, E.J.W. The Biology of Hemichordata and Protochordata. Oliver and Boyd, Edinbourgh.
4. Walters, H.E. and Sayles, L.D. Biology of vertebrates. MacMillan & Co., New York.
5. Kent, C.G. Comparative anatomy of vertebrates.
6. S.S. Lal. Practical Zoology Vertebrate

ZOOLOGY: SEMESTER-2									
Remarks	**Course Type**	**Course Code**	**Name of the Course**	**Credit**	**Contact Hours/ Week**	**Internal Assessment marks**	**End Term Marks**	**Max. Marks**	**Exam Duration**
Scheme C only	**DSEC-1 4 credit**	**B23-ZOO-202**	**Applied Zoology**	**3**	**3**	**20**	**50**	**70**	**3 hrs.**
			Practical	**1**	**2**	**10**	**20**	**30**	**4 hrs.**

Level of the course: 100-199

Pre-requisite for the course (if any): Biology as a Subject at 4.0 Level (Class XII)

Course Learning Outcomes (CLO)

1. Students will be able to identify different species and casts of honeybees and species of silkworm.
2. Students will be able to use the tools and techniques used in apiculture, sericulture, aquaculture, piggery poultry and leather Industry and capabilities to initiate startups will develop
3. Students will able to explain the basic concept of Poultry and Pisciculture
4. Student will understand the basic concepts of industry based applied methods.
5. Students will develop skills in basic laboratory techniques and understand the principles in biology.

Instructions for Paper-Setter

1. Nine questions will be set in all. All questions will carry equal marks.
2. Question No. 1, which will be short answer type covering the entire syllabus, will be compulsory. The remaining eight questions will be set unit wise selecting two questions from each Unit I to IV. The candidate will be required to attempt question No. 1 and four more questions selecting one question from each unit.

UNIT	TOPICS	CONTACT HOURS
I	Apiculture: History and introduction; Honey bee and kinds; Social organization and colony nests; Lifecycle; Bee keeping, selection, methods, products; Honey composition, quality and importance Sericulture: Silkworm moth species and their life cycle; Rearing of silkworm, silk reeling, twisting and weaving; Silk composition, kind and uses; Diseases and pests of silkworm	**12**
II	Prawn Culture: Introduction to Prawns, species; Prawn farming methods, processing and preservation of prawns. Pearl Culture: Historical background, species; Pearl formation, composition, quality and commercial value, Artificial culturing, synthetic pearl types and their manufacturing, methods of harvesting.	**11**
III	Pisciculture: Economically important fresh water and marine fishes; Fish culture, Fish farming technologies, Problems of seed collection from natural resources, Induced breeding methods, Products and by products from pisciculture Poultry: Nomenclature and breeds of poultry birds; Egg structure and quality, nutritive values, factors affecting size and egg processing, Poultry products and by products	**11**
IV	Fur and leather industry: Fur producing animals; Fur farming, dressing, processing and dyeing, Fur industry in India; Animals of leather industry, processing of skin, flaying, curing salting and tanning. Piggery and other utilities of animals: Characteristics of swine and important breeds, Products and by products; Pharmaceuticals from animals; Uses of animals in vaccine production	**11**
V Practical	1. Life cycle of Chicken, Poultry farming 2. Life history of honeybee. 3. Morphology of Carp, Cat fish and Perch. 4. Fishing Crafts and Gears 5. Preparation of permanent slides of phytoplankton and zooplanktons which constitute the food of commercial fishes, their identification and study of important characters. 6. Field visit to aviary/fish pond and fish market/sericulture unit/Prawn farm and preparation of field report.	**30**

Suggested Evaluation Methods

Internal Assessment:

- **Theory**
  - Class Participation: 5
  - Seminar/presentation/assignment/quiz/class test etc.: 5
  - Mid-Term Exam: 10
- **Practicum**

End Term Examination:

- **Theory**
  - Written Examination: 50
- **Practicum**
  Practical Examination: 20

• Class Participation: NA • Seminar/Demonstration/Viva-voce/Lab records etc.: 10 • Mid-Term Exam: NA	

Learning Resources

1. Concepts of Insect Control by Ghosh M. R. Wiley Eastern Ltd. New Delhi.
2. Economic Zoology. Shukla Upadhyay, Rastogi Publication, Meerut, India, 1998.
3. Insect Pest Management by Dent, D.
4. Agricultural Entomology by Hill, D.S., Timber Press.
5. General and Applied Entomology by Nayar K. K. and T. N. Ananthkrishnan and B. V. Davis, Tata McGrew Hill Publications. New Delhi.
7. Agricultural Pests: Biology and Control Measures by B. M. Deoray and T. B. Nikam, Nirali Publication, Pune.

ZOOLOGY: SEMESTER-2

Remarks	Course Type	Course Code	Name of the Course	Credit	Contact Hours/ Week	Internal Assessment marks	End Term Marks	Max. Marks	Exam Duration
Scheme A only	CC-M2 2 credit	B23-ZOO-203	Introduction of Chordates	1	1	10	20	30	3 hrs.
			Practical	1	2	5	15	20	4 hrs.

Level of the course: 100-199

Pre-requisite for the course (if any): NA

Course Learning Outcomes (CLO)

1. Student will be able to describe unique characters of Protochordates
2. Student will be able to describe unique characters of Pisces
3. Student will be able to describe unique characters of Amphibians & Reptiles
4. Student will be able to describe unique characters of Birds & Mammals
5. Students will be capable of identifying the characters and classification of Chordates

Instructions for Paper-Setter

1.Nine questions will be set in all. All questions will carry equal marks.

2. Question No. 1, which will be short answer type covering the entire syllabus, will be compulsory. The remaining eight questions will be set unit wise selecting two questions from each Unit I to IV. The candidate will be required to attempt question No. 1 and four more questions selecting one question from each unit.

UNIT	TOPICS	CONTACT HOURS
I	Chordates: Salient features of chordates; Principles of classification; Origin and evolutionary tree of chordates Protochordates: Urochordata & Cephalochordates: Systematic position, distribution, ecology, morphology and affinities	4
II	Cyclostomata: General characters and classification upto class level. Ecological significance of cyclostomes Pisces: General characters and classification up to classes with examples emphasizing their biodiversity, Scales & Fins,	4
III	Amphibia: General Characters and Classification upto class level; Parental Care and Neoteny in Amphibia Reptilia: General Characters and Classification upto classes, Extinct reptiles; Poisonous apparatus in snakes	4
IV	Aves: General Characters and classifications upto class level. Flight/Aerial adaptation in birds, *Archaeopteryx* as missing link Mammals: General Characters and classification up to class; Adaptive radiations of mammals, dentition in mammals.	3
V Practical	1. Classification upto orders, habit, habitats, external characters and economic importance (if any): • Protochordata: *Molqula, Hetryllus, Pyrosoma, Doliolum, Olikopleura,* and *Amphioxus.* • Cyclostomata: *Myxine, Petromyzon* and *Ammocoetus larva*. • Chondrichthyes: *Zygaena, Pristis, Narcine* (electric ray), *Trygon, Rhinobatus, Raja* and *Chimaera.* • Osteichthyes: *Acipenser, Lepidosteus, Muraena, Mystus, Catla, Hippocampus, Syngnathus, Exocoetus, Anabas, Diodon, Ostracion, Tetradon, Echinus, Lophius, Solea* and *Polypterus.* Any of the Lung Fishes. • Amphibia: *Necturus, Proteus, Amphiuma, Salamandra, Amblystoma, Axolotl larva, Alytes, Bufo, Rana.* • Reptilia: *Hemidactylus, Calotes, Draco, Varanus, Phrynosoma, Chamaeleon, Typhlops, Python, Eryx, Ptyas, Bungarus, Naja, Hydrus, Viper, Crocodilus, Gavialis, Chelone* (Turtle) and *Testudo* (Tortoise). • Aves: *Casuarius, Arden, Anas, Milvus, Pavo, Eudynamis, Tyto, Alcedo, Halcyon* • Mammalia: *Ornithorhynchus, Echidna, Didelphis, Macropus, Loris, Macaque, Hystrix, Funambulus, Felix, Panthera, Canis, Herpestes, Capra, Pteropus.* 2. Study of the skeleton of *Scoliodon, Labeo, Rana* (Frog), *Varanus,* Pigeon or Gallus and *Orcyctolagus*/rat, Palates of birds, skulls of dog & rabbit. 3. Study of the following prepared slides: Tornaria larva, T.S. *Amphioxus* (through different regions). Oikopleura, Histology of rat (compound tissues), different types of scales. 4. Make permanent stained preparations of the following: *Salpa,* Spicules, and Pharynx of *Herdmania, Amphioxus,* Cycloid scales 5. Field Visit to National Park or Zoo.	30

Suggested Evaluation Methods

Internal Assessment:

- **Theory**
  - Class Participation: 4
  - Seminar/presentation/assignment/quiz/class test etc.: NA
  - Mid-Term Exam: 6
- **Practicum**
  - Class Participation: NA
  - Seminar/Demonstration/Viva-voce/Lab records etc.: 5

End Term Examination:

- **Theory**
  - Written Examination: 20
- **Practicum**
  Practical Examination: 15

• Mid-Term Exam: NA	

Learning Resources

1. R.L.Kotpal. Modern Textbook of Zoology
2. E.L. Jordan and Verma. Chordate Zoology.
3. Barrington, E.J.W. The Biology of Hemichordata and Protochordata. Oliver and Boyd, Edinbourgh.
4. Walters, H.E. and Sayles, L.D. Biology of vertebrates. MacMillan & Co., New York.
5. Kent, C.G. Comparative anatomy of vertebrates.
6. S.S. Lal. Practical Zoology Vertebrate

ZOOLOGY: SEMESTER-2									
Remarks	**Course Type**	**Course Code**	**Name of the Course**	**Credit**	**Contact Hours/ Week**	**Internal Assessment marks**	**End Term Marks**	**Max. Marks**	**Exam Duration**
Scheme A & C	**MDC-2 3 credit**	**B23-ZOO-204**	**Basics of Zoology-II**	**2**	**2**	**15**	**35**	**50**	**3 hrs.**
			Practical	**1**	**2**	**5**	**20**	**25**	**4 hrs.**

Level of the course: 100-199

Pre-requisite for the course (if any): NA

Course Learning Outcomes (CLO)

1. Student will learn the role of different groups of chordates in mantling an equilibrium in our ecosystem
2. Students will be able to identify local fishes species and their role in the ecosystem.
3. Course will help to understand how the natural systems on which we depend function.
4. Course will give the idea about how birds are economically important.
5. Student will learn about identification of chordates

Instructions for Paper-Setter

1. Nine questions will be set in all. All questions will carry equal marks.
2. Question No. 1, which will be short answer type covering the entire syllabus, will be compulsory. The remaining eight questions will be set unit wise selecting two questions from each Unit I to IV. The candidate will be required to attempt question No. 1 and four more questions selecting one question from each unit.

UNIT	TOPICS	CONTACT HOURS
I	**Basics of Chordates:** Define and Salient features of chordates, Difference between non chordates and chordates. Characters of protochordates	**8**
II	**Pisces (Fishes):** Characteristic features of freshwater and marine fishes, Edible fishes of India, Composite fish culture. **Class Amphibia:** Features of amphibians, Parental care in amphibians, Role of amphibians in ecosystem, Identification of turtles and tortoise, Frog and Toad.	**8**
III	**Class Reptilia:** Features of Reptiles, Common reptiles of India, Identification of Poisonous and non poisonous snakes, Difference between crocodile and Gharial	**7**
IV	**Class Aves:** Characteristic features of birds, Common birds of India, Flight adaptations in birds, Commercial uses of birds, Role of birds in agriculture. **Class Mammals:** Characters and economic importance of mammals	**7**
V Practical	1. Identifying feature of different class of chordates 2. Study of connecting links in chordates 3. Study of different types of feathers. 4. Study of different local species of fishes 5. Study of nesting pattern of some local birds, mammals	**30**

Suggested Evaluation Methods

Internal Assessment:

- **Theory**
  - Class Participation: 4
  - Seminar/presentation/assignment/quiz/class test etc.: 4
  - Mid-Term Exam: 7
- **Practicum**
  - Class Participation: NA
  - Seminar/Demonstration/Viva-voce/Lab records etc.: 5
  - Mid-Term Exam: NA

End Term Examination:

- **Theory**
  - Written Examination: 35
- **Practicum**
  Practical Examination: 20

Learning Resources

1. R.L.Kotpal. Modern Textbook of Zoology
2. E.L. Jordan and Verma. Chordate Zoology.
3. Barrington, E.J.W. The Biology of Hemichordata and Protochordata. Oliver and Boyd, Edinbourgh.
4. Walters, H.E. and Sayles, L.D. Biology of vertebrates. MacMillan & Co., New York.
5. Kent, C.G. Comparative anatomy of vertebrates.
6. S.S. Lal. Practical Zoology Vertebrate

ZOOLOGY: SEMESTER-3									
Remarks	**Course Type**	**Course Code**	**Name of the Course**	**Credit**	**Contact Hours/ Week**	**Internal Assessment marks**	**End Term Marks**	**Max. Marks**	**Exam Duration**
Scheme A, B & C	**CC-3 MCC-4 4 credit**	**B23-ZOO-301**	**Cell Biology and Animal Genetics**	**3**	**3**	**20**	**50**	**70**	**3 hrs.**
			Practical	**1**	**2**	**10**	**20**	**30**	**4 hrs.**

Level of the course: 200-299

Pre-requisite for the course (if any): Biology as a Subject at 4.0 Level (Class XII)

Course Learning Outcomes (CLO)

1. Students will understand the nature and basic concept of cell biology and genetics.
2. Students will be able to apply the knowledge of internal structure of cell and their role in many metabolic function of organism
3. Students will have acquaintance with the basic causes associated with inborn errors and other genetic disorder and will be able to give counseling to general people
4. Students will be able to explain the concept of gene interactions, Sex linked inheritance and their role in medical sciences.
5. Students will be able to conduct the morphomatric analysis of chromosomes and demonstrate cell division

Instructions for Paper-Setter

1. Nine questions will be set in all. All questions will carry equal marks.
2. Question No. 1, which will be short answer type covering the entire syllabus, will be compulsory. The remaining eight questions will be set unit wise selecting two questions from each Unit I to IV. The candidate will be required to attempt question No. 1 and four more questions selecting one question from each unit.

UNIT	TOPICS	CONTACT HOURS
I	General structure of animal cell. Plasma Membrane: Fluid mosaic model, various modes of transport across the membrane, mechanism of active and passive transport, endocytosis and exocytosis. Endoplasmic reticulum (ER): types and functions. Golgi complex: Structure, associated enzymes and role of golgi-complex in animal cell.	**12**
II	Ribosomes: Types, biogenesis and role in protein synthesis. Lysosomes: Structure, enzymes and their role; polymorphism Mitochondria: Structure, Mitochondria as semiautonomous body, biogenesis, functions of mitochondria. Cilia and Flagella: Structure and Functions Ultrastructure and functions of Nucleus: Nuclear membrane, nuclear lamina, nucleolus, fine structure of chromosomes, nucleosome concept and role of histones, euchromatin and heterochromatin	**11**
III	Introduction and Mendel's Laws of Inheritance, Linkage and recombination: Cell Cycle, crossing-over and chiasma formation; gene mapping. Sex determination and its mechanism: male and female heterozygous systems, genetic balance system; role of Y-chromosome, male haploidy, cytoplasmic and environmental factors, role of hormones in sex determination. Sex linked inheritance: Haemophilia and colour blindness in man, eye colour in Drosophila, Non-disjunction of sex-chromosome in Drosophila, Sex-linked and sex-influenced inheritance Extra chromocomal and cytoplasmic inheritance: Kappa particles in Paramecium, Shell coiling in snails, Milk factor in mice	**11**
IV	Multiple allelism: Eye colour in Drosophila; A, B, O blood group in man. Human genetics: Human karyotype, Chromosomal abnormalities involving autosomes and sex chromosomes, monozygotic and dizygotic twins. Inborn errors of metabolism (Alcaptonuria, Phenylketonuria, Albinism, sickle-cell anaemia). Applied genetics: Genetic counseling, pre-natal diagnosis, DNA-finger printing, transgenic animals.	**11**
V Practical	1. Cell division: Prepared slides of stages of mitosis and meiosis. 2. Salivary gland and polytene chromosomes of Drosophila/ Chironomus. 3. Temporary squash preparations of onion root tip/grasshopper testis for the study of mitosis 4. Blood antigens and antibodies: Blood group testing 5. Preparation of Human Karyotype and Idiogram 6. Barr Body and Drum stick slide Preparations	**30**

Suggested Evaluation Methods

Internal Assessment:

- **Theory**
  - Class Participation: 5
  - Seminar/presentation/assignment/quiz/class test etc.: 5
  - Mid-Term Exam: 10
- **Practicum**
  - Class Participation: NA
  - Seminar/Demonstration/Viva-voce/Lab records etc.: 10
  - Mid-Term Exam: NA

End Term Examination:

- **Theory**
  - Written Examination: 50
- **Practicum**
  Practical Examination: 20

Learning Resources
1. Molecular Cell, Biology, J. Darnell, H. Lodish and D. Baltimore Scientific American Book, Inc., USA.
2. Cell Biology, Genetics, Molecular Biology, Evolution and Ecology by P. S. Verma and V.K. Aggarwal
3. Molecular Biology of the Cell, B. Alberts, D. Bray, J. Lewis, M. Raff, K. Roberts and J.D. Watson. Garland Publishing Inc., New York.
4. Cell Biology and Genetics by P.K. Gupta
5. Cell Biology and Genetics by Veer Bala Rastogi.
6. Principles of Genetics by M. Gardner, J. Simmons, D. P. Snustad
7. Genetics by D. P. Snustad, J. Simmons

ZOOLOGY: SEMESTER-3

Remarks	Course Type	Course Code	Name of the Course	Credit	Contact Hours/ Week	Internal Assessment marks	End Term Marks	Max. Marks	Exam Duration
Scheme B & C	MCC-5 4 credit	B23-ZOO-302	Type study of Chordates	3	3	20	50	70	3 hrs.
			Practical	1	2	10	20	30	4 hrs.

Level of the course: 200-299

Pre-requisite for the course (if any): Biology as a Subject at 4.0 Level (Class XII)

Course Learning Outcomes (CLO)

1. Student will be able to describe about Urochordates
2. Student will be able to describe about Pisces
3. Student will be able to describe about Amphibians & Reptiles
4. Student will be able to describe about life functions of Birds & Mammals
5. Students will be capable of identifying the characters and classification of Chordates

Instructions for Paper-Setter

1. Nine questions will be set in all. All questions will carry equal marks.
2. Question No. 1, which will be short answer type covering the entire syllabus, will be compulsory. The remaining eight questions will be set unit wise selecting two questions from each Unit I to IV. The candidate will be required to attempt question No. 1 and four more questions selecting one question from each unit.

UNIT	TOPICS	CONTACT HOURS
I	Chordates: Origin and Evolutionary tree of chordates. Protochordates: Cephalochordata: Systematic position, distribution, ecology, morphology and affinities, Cephalochordata: Type study of *Amphioxus*	12
II	Agnatha: General characters Cyclostomata: General characters and classification upto class level. Ecological significance of cyclostomes Petromyzon: Structural & functional morphology type study	11
III	Reptilia: Type study of Lizard (*Hemidactylus*): Structural & Functional morphology, Extinct reptiles; Poisonous apparatus in snakes	11
IV	Aves: Type study of Pigeon (*Columba livia)*; Structural & Functional morphology Mammals: Adaptive radiations of mammals, dentition in mammals.	11
V Practical	1. Classification upto orders, habit, habitats, external characters and economic importance (if any): • Protochordata: *Molqula, Hetryllus, Pyrosoma, Doliolum, Olikopleura,* and *Amphioxus.* • Cyclostomata: *Myxine, Petromyzon* and *Ammocoetus larva*. • Chondrichthyes: *Zygaena, Pristis, Narcine* (electric ray), *Trygon, Rhinobatus, Raja* and *Chimaera.* • Osteichthyes: *Acipenser, Lepidosteus, Muraena, Mystus, Catla, Hippocampus, Syngnathus, Exocoetus, Anabas, Diodon, Ostracion, Tetradon, Echinus, Lophius, Solea* and *Polypterus.* Any of the Lung Fishes. • Amphibia: *Necturus, Proteus, Amphiuma, Salamandra, Amblystoma, Axolotl larva, Alytes, Bufo, Rana.* • Reptilia: *Hemidactylus, Calotes, Draco, Varanus, Phrynosoma, Chamaeleon, Typhlops, Python, Eryx, Ptyas, Bungarus, Naja, Hydrus, Viper, Crocodilus, Gavialis, Chelone* (Turtle) and *Testudo* (Tortoise). • Aves: *Casuarius, Arden, Anas, Milvus, Pavo, Eudynamis, Tyto, Alcedo, Halcyon* • Mammalia: *Ornithorhynchus, Echidna, Didelphis, Macropus, Loris, Macaque, Hystrix, Funambulus, Felix, Panthera, Canis, Herpestes, Capra, Pteropus.* 2. Internal anatomy of the following animals: (i) Computer simulated model/study of : (a) *Herdmania*: General anatomy; (b) *Rat*: Digestive, arterial, venous and urinogenital systems; (c) *Hemidactylus*: Digestive, arterial, venous and urinogenital systems (ii) Demonstration & Study of Internal Anatomy of locally available fish (*Labeo).* Digestive and reproductive systems, cranial nerves, Ear ossicle 3. Study of the skeleton of *Scoliodon, Labeo, Rana* (Frog), *Varanus,* Pigeon or Gallus and *Orcyctolagus*/rat, Palates of birds, skulls of dog & rabbit. 4. Study of the following prepared slides: Tornaria larva, T.S. *Amphioxus* (through different regions). Oikopleura, Histology of rat (compound tissues), different types of scales. 5. Make permanent stained preparations of the following: *Salpa,* Spicules, and Pharynx of *Herdmania, Amphioxus*, Cycloid scales 6. Field Visit to National Park or Zoo.	30

Suggested Evaluation Methods

Internal Assessment:	End Term Examination:
➢ **Theory** •Class Participation: 5	➢ **Theory** •Written Examination: 50

• Seminar/presentation/assignment/quiz/class test etc.: 5 • Mid-Term Exam: 10 ➢ **Practicum** • Class Participation: NA • Seminar/Demonstration/Viva-voce/Lab records etc.: 10 • Mid-Term Exam: NA	➢ **Practicum** Practical Examination: 20

Learning Resources

1. R.L.Kotpal. Modern Textbook of Zoology
2. E.L. Jordan and Verma. Chordate Zoology.
3. Barrington, E.J.W. The Biology of Hemichordata and Protochordata. Oliver and Boyd, Edinbourgh.
4. Walters, H.E. and Sayles, L.D. Biology of vertebrates. MacMillan & Co., New York.
5. Kent, C.G. Comparative anatomy of vertebrates.
6. S.S. Lal. Practical Zoology Vertebrate

ZOOLOGY: SEMESTER-3

Remarks	Course Type	Course Code	Name of the Course	Credit	Contact Hours/ Week	Internal Assessment marks	End Term Marks	Max. Marks	Exam Duration
Scheme A, B & C	MDC-3 3 credit	B23-ZOO-303	Basics of Zoology-III	2	2	15	35	50	3 hrs.
			Practical	1	2	5	20	25	4 hrs.

Level of the course: 200-299

Pre-requisite for the course (if any): NA

Course Learning Outcomes (CLO)

1. To understand the basic anatomical concepts of skeletal and bones.
2. Course will help to understand importance of blood group system in humans.
3. The student will learn the physiology of respiration in humans.
4. The course will make students understand the aspect of cell structure and its function.
5. Course will provide practical knowledge of osteology in humans.

Instructions for Paper-Setter

1. Nine questions will be set in all. All questions will carry equal marks.
2. Question No. 1, which will be short answer type covering the entire syllabus, will be compulsory. The remaining eight questions will be set unit wise selecting two questions from each Unit I to IV. The candidate will be required to attempt question No. 1 and four more questions selecting one question from each unit.

UNIT	TOPICS	CONTACT HOURS
I	Humans Skeleton and bones: Characteristics (axial and appendicular skeleton), Joints, cartilage and ligaments, interaction between skeletal muscles and nerves. ABO and RH system in humans, methods of determination, importance and dangers of blood transfusion.	8
II	Human cell and chromosomes: Cell as unit of life, morphology and functional elements of human chromosome Sex Determination: Definition, different types and scope.	8
III	Respiration in humans: Anatomy and physiology of respiration, factors affecting change of gases and diffusing capacity. Introduction to Dental Formula, types and development of tooth.	7
IV	Darwinism, species and population: Concept of evolution, theory of Darwinism, Neo-Darwinism, Genetic drift, Hardy Weinberg Law Human Evolution: Origin and evolution, adaptive evolution.	7
V Practical	1. To study different Human bones: Skull, Vertebrae, Girdles and limb bones. 2. Preparation of mitotic chromosomes from onion root tips. 3. Study of different slides of mitosis and meiosis. 4. Blood grouping in Human	30

Suggested Evaluation Methods

Internal Assessment:

- **Theory**
  - Class Participation: 4
  - Seminar/presentation/assignment/quiz/class test etc.: 4
  - Mid-Term Exam: 7
- **Practicum**
  - Class Participation: NA
  - Seminar/Demonstration/Viva-voce/Lab records etc.: 5
  - Mid-Term Exam: NA

End Term Examination:

- **Theory**
  - Written Examination: 35
- **Practicum**
  Practical Examination: 20

Learning Resources

1. Essentials of human Osteology by A.K. Dutta
2. Cell Biology and Genetics by P.K. Gupta.
3. Evolution by Strikberger M. W.
4. Evolutionary Biology by Futuyama.
5. Comparative anatomy of Vertebrates by Kent C.G.
6. Practical Zoology Vertebrates by S.S. Lal

ZOOLOGY: SEMESTER-4

Remarks	Course Type	Course Code	Name of the Course	Credit	Contact Hours/ Week	Internal Assessment marks	End Term Marks	Max. Marks	Exam Duration
Scheme A, B & C	CC-4 MCC-6 4 credit	B23-ZOO-401	Biomolecules and Mammalian Physiology	3	3	20	50	70	3 hrs.
			Practical	1	2	10	20	30	4 hrs.

Level of the course: 200-299

Pre-requisite for the course (if any): Biology as a Subject at 4.0 Level (Class XII)

Course Learning Outcomes (CLO)

1. Students will be able to understand and explain the mechanism that works to keep the human body functioning.
2. Students will be able to explain the interaction and interdependence of physiological and biochemical processes.
3. It will make the students understand the appropriate functioning of each body system in animals and mechanism of working.
4. Students will be able to explain the mechanism of action of hormones and related molecules involved in various physiological processes
5. Students will be able to understand and perform biological and analytical techniques in labs to explain biological activities

Instructions for Paper-Setter

1. Nine questions will be set in all. All questions will carry equal marks.
2. Question No. 1, which will be short answer type covering the entire syllabus, will be compulsory. The remaining eight questions will be set unit wise selecting two questions from each Unit I to IV. The candidate will be required to attempt question No. 1 and four more questions selecting one question from each unit.

UNIT	TOPICS	CONTACT HOURS
I	Introduction, classification, structure, function and general properties of proteins, carbohydrates and lipids. Nomenclature, classification and mechanisms of enzyme action; Enzyme Kinetics, factors affecting enzyme activity, inhibition of enzymes Transport through biomembranes (Active and Passive), osmotic pressure, hydrogen ion concentration and buffers	12
II	Nutrition: Nutritional components: Carbohydrates, fats, lipids, Vitamins and Minerals; Types of nutrition & feeding, Digestion of lipids, proteins, carbohydrates & nucleic acids; symbiotic digestion, lactose intolerance, Physico-chemical mechanism of Absorption of nutrients & assimilation; control of secretion of digestive juices. Muscles: Types of muscles, ultra-structure of skeletal muscle, neuromuscular junction. Bio-chemical and physical events during muscle contraction, single muscle twitch, tetanus, muscle fatigue, muscle tone, oxygen debt., Cori's cycle, single unit smooth muscles, their physical and functional properties.	11
III	Circulation: Origin, conduction and regulation of heart beat; cardiac cycle, electrocardiogram, cardiac output, fluid pressure and flow pressure in closed and open circulatory system; Composition and functions of blood & lymph; Mechanism of coagulation of blood, coagulation factors; anticoagulants, haemopoiesis. Respiration: Exchange of respiratory gases, transport of gases, lung air volumes, oxygen dissociation curve of haemoglobin, Bohr's effect, Hamburger's phenomenon (Chloride shift), control / regulation of respiration (peripheral reflexes, chemical control and Higher centres), Myoglobin. Excretion: Patterns of excretory products viz. Amonotelic, ureotlic uricotelic, ornithine cycle (Kreb's – Henseleit cycle) for urea formation in liver; Urine formation, composition of Urine, counter-current mechanism of urine formation, osmoregulation, micturition.	11
IV	Neural Integration: Nature, origin and propagation of nerve impulse alongwith medullated & non-medullated nerve fibre, conduction of nerve impulse across synapse, synaptic delay and synaptic fatigue, Neurotransmitter. Chemical integration of Endocrinology: Structure, chemical nature and mechanism of peptide and steroid hormone action; physiology of hypothalamus, pituitary, thyroid, parathyroid, adrenal, pancreas and gonads, Hormonal disorders. Reproduction: Spermatogenesis, Capacitation of spermatozoa, oogenesis, ovulation, formation of corpus luteum, oestrous-anoestrous cycle, Menstrual cycle in human, fertilization, implantation and gestation, parturition	11
V PRACTICAL	1. Qualitative tests for identification of simple sugars, disaccharides and polysaccharides. 2. Study of human salivary amylase activity: Effect of temperature, pH, Concentration. 3. Estimation of abnormal constituents of urine (Albumin, sugar, ketone bodies). 4. Use of Kymograph unit & respirometer. 5. Haematin crystal preparation. 6. Estimation of Hb. 7. DLC of Man/RBC count/WBC count. 8. Study of permanent slides of endocrine glands 9. Blood antigens and antibodies: Blood group testing	30

Suggested Evaluation Methods

Internal Assessment:

- **Theory**
  - Class Participation: 5
  - Seminar/presentation/assignment/quiz/class test etc.: 5
  - Mid-Term Exam: 10
- **Practicum**

End Term Examination:

- **Theory**
  - Written Examination: 50
- **Practicum**
  Practical Examination: 20

• Class Participation: NA • Seminar/Demonstration/Viva-voce/Lab records etc.: 10 • Mid-Term Exam: NA	

Learning Resources

1. Agarwal R A , Srivastava A. K., Kumar K. Animal Physiology and Biochemistry; S Chand Publishing; Twenty Third edition, 1978.
2. Vasantika Kashyap (2021) A Text-Book of Animal Physiology and Biochemistry; Kedar Nath Ram Nath Publisher
3. Arumugam N, Fatima D, Narayanan L.M. (2016) Animal Physiology and Biochemistry; Saras Publication
4. Moyes C, Schulte P (2015). Principles of Animal Physiology, Pearson; 3rd edition
5. Satyanarayana (2021) . Biochemistry, Elsevier; 6th edition

ZOOLOGY: SEMESTER-4									
Remarks	**Course Type**	**Course Code**	**Name of the Course**	**Credit**	**Contact Hours/ Week**	**Internal Assessment marks**	**End Term Marks**	**Max. Marks**	**Exam Duration**
Scheme B & C	**MCC-7 4 credit**	**B23-ZOO-402**	**Aquaculture**	**3**	**3**	**20**	**50**	**70**	**3 hrs.**
			Practical	**1**	**2**	**10**	**20**	**30**	**4 hrs.**

Level of the course: 200-299

Pre-requisite for the course (if any): Biology as a Subject at 4.0 Level (Class XII)

Course Learning Outcomes (CLO)

1. Students will understand about fresh water fishes of India
2. Students will capable to undertake about fishing crafts and gears
3. It will make the students understand about the seed production in fishes
4. Students will be able to explain the culture technology in fishery
5. Students will be able to identify fish specimens

Instructions for Paper-Setter

1. Nine questions will be set in all. All questions will carry equal marks.
2. Question No. 1, which will be short answer type covering the entire syllabus, will be compulsory. The remaining eight questions will be set unit wise selecting two questions from each Unit I to IV. The candidate will be required to attempt question No. 1 and four more questions selecting one question from each unit.

UNIT	TOPICS	CONTACT HOURS
I	Introduction to world fisheries: Production, utilization and demand, Major species cultured Fresh Water fishes of India: River system, reservoir, pond, tank fisheries; captive and culture fisheries, cold water fisheries.	**12**
II	Fishing crafts and gears. Fin fishes, Crustaceans, Molluscs and their culture. Traits of important cultivable fish and shellfish and their culture methods – Indian major carps, exotic carps, air breathing fishes, cold water fishes, freshwater prawns, mussels	**11**
III	Seed production: Natural seed resources – its assessment, collection, Hatchery production Nutrition: Sources of food (Natural, Artificial) and feed composition (Calorie and Chemical ingredients).	**11**
IV	Field Culture: Culture, Culture in Pond-running waters; recycled water culture, cage culture; poly culture. Culture technology: Induced breading in fishes, techniques and hormones; Fish Biotechnology (Transgenesis and Cryopreservation of gametes).	**11**
V Practical	1. Identification of *Catla catla, Labeo rohita, L. calbasu, Cirrhinus, mrigala, Puntius sarana, Channa punctatus, C. marulius, C. stariatus, Trichogaster fasciata, Mystus seenghala, M. cavasius, M. tengra, Callichrous pabola, C. bimaculatus, Wallago attu,* Prawns, Crabs, Lobsters, Clams, Mussels & Oysters. 2. A study of the slides of fish parasites. 3. A study of the different types of nets, e.g., cast net, gill net, drift net and drag net. 4. A visit to lake/reservoir/fish breeding centre.	**30**

Suggested Evaluation Methods

Internal Assessment:

- **Theory**
  - Class Participation: 5
  - Seminar/presentation/assignment/quiz/class test etc.: 5
  - Mid-Term Exam: 10
- **Practicum**
  - Class Participation: NA
  - Seminar/Demonstration/Viva-voce/Lab records etc.: 10
  - Mid-Term Exam: NA

End Term Examination:

- **Theory**
  - Written Examination: 50
- **Practicum**
  Practical Examination: 20

Learning Resources

1. Arumugam N. (2014). Aquaculture and Fisheries, Saras Publication
2. Bardach, JE, Ryther & McLarney, Wo (1972) Aquaculture, New York: Wiley-Interscience. 896pp.
3. Lagler, KF, Bardach, JE, Miller, RR & Passino, DRM (1977) Ichthyology, 21nd Edition, New York, Wiley, 506 pp.
4. Khanna S S, & Singh H R (2014). Textbook of Fish Biology and Fisheries 3rd edn. Narendra Publishing House

ZOOLOGY: SEMESTER-4									
Remarks	**Course Type**	**Course Code**	**Name of the Course**	**Credit**	**Contact Hours/ Week**	**Internal Assessment marks**	**End Term Marks**	**Max. Marks**	**Exam Duration**
Scheme B & C	**MCC-8 4 credit**	**B23-ZOO-403**	**Pest Management**	**3**	**3**	**20**	**50**	**70**	**3 hrs.**
			Practical	**1**	**2**	**10**	**20**	**30**	**4 hrs.**

Level of the course: 200-299

Pre-requisite for the course (if any): Biology as a Subject at 4.0 Level (Class XII)

Course Learning Outcomes (CLO)

1. Students will able to understand ecologically important and harmful insects.
2. Will be able to recognize life cycle of crop insects
3. It will make the students understand about the vegetable pest
4. Students will be able to explain about various pest control approaches
5. Students will be able to identify various insect and pest species

Instructions for Paper-Setter

1. Nine questions will be set in all. All questions will carry equal marks.
2. Question No. 1, which will be short answer type covering the entire syllabus, will be compulsory. The remaining eight questions will be set unit wise selecting two questions from each Unit I to IV. The candidate will be required to attempt question No. 1 and four more questions selecting one question from each unit.

UNIT	TOPICS	CONTACT HOURS
I	Study of important insect pests of crops and vegetables: **Sugarcane:** (With their systematic position, habits and nature of damage caused. (a) Sugarcane leaf-hopper *(Pyrilla perpusilla)* (b) Sugarcane Whitefly *(Aleurolobus barodensis)* (c) Sugarcane top borer *(Sciropophaga nivella)* (d) Sugarcane root borer *(Emmalocera depresella)* (e) Gurdaspur borer *(Bissetia steniellus)* Life cycle and control of *Pyrilla perpusilla* only. **Cotton: (**With their systematic position, habits and nature of damage caused. (a) Pink bollworm (*Pestinophora gossypfolla)* (b) Red cotton bug *(Dysdercus cingulatus)* (c) Cotton grey weevil (*Myllocerus undecimpustulatus)* (d) Cotton Jassid (*Amrasca devastans)* Life cycle and control of *Pectinophore gossypiella*	**12**
II	**Wheat**: Wheat stem borer (*Sesamia inferens)* with its systematics position, habits, nature of damage caused. Life cycle and control methods. **Paddy: (**With their systematic position, habits and nature of damage caused) (a) Gundhi bug (*Leptocorisa acuta)* (b) Rice grasshopper *(Hieroglyphus banian)* (c) Rice stem borer *(Scirpophaga incertullus)* (d) Rice Hispa *(Diceladispa armigera)* Life cycle and control of *Loptocorisa acuta* only	**11**
III	**Vegetables: (**Their systematics position, habits and nature of damage caused. (a) *Aulacophora faveicollis* – The Red pumpkin beetle. (b) *Dacus cucurbitas* – The pumpkin fruit fly. (c) *Tetranychus tecarius* – The vegetable mite. (d) *Epilachna* – The Hadda beetle Life cycle and control of *Aulacophora faveicollis* **Stored grains:** (Their systematic position, habits and nature of damage caused. (a) Pulse beetle *(Callosobruchus maculatus)* (b) Rice weevil *(Sitophilus oryzae)* (c) Wheat weevil *(Trogoderma granarium)* (d) Rust Red Flour beetles *(Tribolium castaneum)* (e) Lesser grain borer *(Rhizopertha dominica)* (f) Grain & Flour moth *(Sitotroga cerealella)* Life cycle and control of *Trogoderma granarium*)	**11**
IV	Important bird and rodent pests of agriculture & their management. **Pest control:** Biological control, its history, requirement and precautions and feasibility of biological agents for control. **Chemical control:** History, Categories of pesticides, important pesticides from each category to pests against which they can be used, insect repellants and attractants. Integrated pest management	**11**
V Practical	1. External morphology, identification marks, nature of damage and host of the following pests:- (i) **Sugarcane**: Sugarcane leaf-hopper, Sugarcance whitefly, Sugarcance top borer, Sugarcane root borer,	**30**

	Gurdaspur borer (any two). (ii) **Cotton**: Red Cotton bug (iii) **Wheat**: Wheat stem borer (iv) **Paddy**: Gundhi bug, Rice grasshopper, Rice stem borer, Rice hispa (any one). (v) **Vegetables**: *Aulocophora faveicollis, Dacus cucurbitas, Tetranychus tecarious, Epilachna* (any three). (vi) **Pests of stored grains:** Pulse beetle, Rice weevil, Grain & Flour moth, Rust-red flour beetle, lesser grain borer (any three). 2. Stages of life history of silk moth and honey bee. 3. Preparation of permanent/temporary slides for identification of mosquitoes	

Suggested Evaluation Methods

Internal Assessment:	**End Term Examination:**
➢ **Theory** •Class Participation: 5 •Seminar/presentation/assignment/quiz/class test etc.: 5 •Mid-Term Exam: 10 ➢ **Practicum** •Class Participation: NA •Seminar/Demonstration/Viva-voce/Lab records etc.: 10 •Mid-Term Exam: NA	➢ **Theory** •Written Examination: 50 ➢ **Practicum** Practical Examination: 20

Learning Resources

1. David Dent , Richard Binks (2020). Insect Pest Management CABI Publishing; 3rd edition
2. Larry P Pedigo , Marlin E. Rice (2014) Entomology and Pest Management. Waveland Pr Inc; 6th edition
3. John R. Ruberson (2019) Handbook of Pest Management, CRC Press; 1st edition
4. Kalatia M.K. (2021) Introduction to principles of pest and disease management; Walnut Publication
5. Smith K M (2013) A Textbook of Agricultural Entomology by Hill, Cambridge University Press

ZOOLOGY: SEMESTER-4									
Remarks	**Course Type**	**Course Code**	**Name of the Course**	**Credit**	**Contact Hours/ Week**	**Internal Assessment marks**	**End Term Marks**	**Max. Marks**	**Exam Duration**
Scheme B & C	**DSE-1 4 credit Select one option**	**B23-ZOO-404**	**Biodiversity and Wildlife Management**	**3**	**3**	**20**	**50**	**70**	**3 hrs.**
			Practical	**1**	**2**	**10**	**20**	**30**	**4 hrs.**

Level of the course: 200-299

Pre-requisite for the course (if any): Biology as a Subject at 4.0 Level (Class XII)

Course Learning Outcomes (CLO)

1. Students will be able to understand about wildlife zones of India
2. Students will be able to explain the concept of Protected area system
3. It will make the students understand about IUCN categories
4. Students will be able to explain the mechanism of biodiversity threats
5. Students will be able to understand about understanding of wildlife management methods

Instructions for Paper-Setter

1. Nine questions will be set in all. All questions will carry equal marks.
2. Question No. 1, which will be short answer type covering the entire syllabus, will be compulsory. The remaining eight questions will be set unit wise selecting two questions from each Unit I to IV. The candidate will be required to attempt question No. 1 and four more questions selecting one question from each unit.

UNIT	TOPICS	CONTACT HOURS
I	Concept of Bio-Diversity and Wildlife, Levels of Biodiversity Pattern and distribution of Wildlife in India, Wildlife zones of India Techniques of animal counts (Examples of Tiger count)	**12**
II	Conservation of biodiversity: *in-situ* and *ex-situ* Concept of Protected Area Systems Important Protected Areas of India (Biosphere reserve, National Park & Wildlife sanctuaries)	**11**
III	Red Data Book and its uses IUCN Categories of wildlife species Climate change and loss of biodiversity	**11**
IV	Threats to biodiversity: habitat loss, poaching of wildlife, man-wildlife conflicts Wildlife Tourism Biosphere Reserves concept and Indian Biosphere Reserves; Location & Significance	**11**
V Practical	1. Study of biodiversity among various organisms (Listing of all the animals found in and around your house and also try to find out their Zoological names). 2. Identification and photography of various species. 3. Visits to a local animal park or zoo to identify and study the captive fauna and preparation of report. 4. Study of adaptive characteristics of various vertebrates in different climate. 5. Study of biodiversity in grassland and pond water by using Shannon -Weiner index. 6. Comparison of two species of birds belonging to same genus (Interspecific difference).	**30**

Suggested Evaluation Methods

Internal Assessment:

- **Theory**
  - Class Participation: 5
  - Seminar/presentation/assignment/quiz/class test etc.: 5
  - Mid-Term Exam: 10
- **Practicum**
  - Class Participation: NA
  - Seminar/Demonstration/Viva-voce/Lab records etc.: 10
  - Mid-Term Exam: NA

End Term Examination:

- **Theory**
  - Written Examination: 50
- **Practicum**
  Practical Examination: 20

Learning Resources
1. Trends in wildlife biodiversity conservation and management. B.B. Hosetti and M. Venkateshwarlu.
2. Wildlife conservation and management. Reena Mathur.
3. Concepts of Wildlife management. B.B.Hosetti.
4. Techniques for wildlife Census in India by W.A. Rogers (A field manual); Wildlife Institute of India, Dehradun.
5. Wildlife Wealth of India by T.C. Majupuria; Tecpress Services, L.P., 487/42-SOL-Wattenslip, Pratunam Bangkok, 10400, Thailand.
6. Ali, S. Ripley S.D. Handbook of Birds of India, Pakistan 10-Vols. Oxford University Press, Bombay.
7. The Book of Indian Animals by S.H. Prater, BNHS-Publication, Bombay.
8. Wildlife in India by V.B. Saharia Natraj Publishers, Dehradun.
9. E.P. Gee, The Wildlife of India.

ZOOLOGY: SEMESTER-4									
Remarks	**Course Type**	**Course Code**	**Name of the Course**	**Credit**	**Contact Hours/ Week**	**Internal Assessment marks**	**End Term Marks**	**Max. Marks**	**Exam Duration**
Scheme B & C	**DSE-1 4 credit Select one option**	**B23-ZOO-405**	**Cytogenetics**	**3**	**3**	**20**	**50**	**70**	**3 hrs.**
			Practical	**1**	**2**	**10**	**20**	**30**	**4 hrs.**

Level of the course: 200-299

Pre-requisite for the course (if any): Biology as a Subject at 4.0 Level (Class XII)

Course Learning Outcomes (CLO)

1. Students will be able to understand about Biology of chromosomes
2. Students will be able to explain the concept of gene mutations and genetics of cell cycle
3. It will make the students understand about Human cytogenetics
4. Students will be able to explain the mechanism molecular cytogenetics
5. Students will be able to understand about practical exposure of cytogenetics

Instructions for Paper-Setter

1. Nine questions will be set in all. All questions will carry equal marks.
2. Question No. 1, which will be short answer type covering the entire syllabus, will be compulsory. The remaining eight questions will be set unit wise selecting two questions from each Unit I to IV. The candidate will be required to attempt question No. 1 and four more questions selecting one question from each unit.

UNIT	TOPICS	CONTACT HOURS
I	**Biology of Chromosomes:** Molecular anatomy of eukaryotic chromosomes. Heterochromatin and euchromatin. Giant Chromosomes: Polytene and Lampbrush Chromosomes **Sex Chromosomes:** Sex determination. Dosage compensation in *C. elegans, Drosophila* and Humans. **Chromosome Banding Techniques:** Q-banding, C-banding, G-banding, R-banding, T-banding, High-Resolution & Replication banding and Nuclease banding. Functional significance of chromosome bands.	**12**
II	**Genes in Pedigrees:** Mendelian pedigree pattern. Heritable diseases in human. Inheritance of mitochondrial diseases, Non-Mendelian traits. **Gene Mutations:** Spontaneous mutations – Base pair substitution and frame shift mutations. Induced mutations – Radiation, chemical and environmental. *In –vitro* site specific mutagenesis. Detection of mutagens – The Ames test and sister chromatid exchanges. **Genetics of Cell Cycle:** Genetic regulation of cell division in yeast and eukaryotes. Molecular basis of cellular check points. Molecular basis of neoplasia.	**11**
III	**Human Cytogenetics:** Human karyotype, Nomenclature for normal chromosomes (ISCN), Variable chromosome features, Nomenclature for acquired chromosome aberrations **Numerical and Structural Abnormalities of Human Chromosomes –Syndromes:** Autosomal syndromes – cat-cry syndrome, Trisomy13, Trisomy 18, Trisomy 21.Sex chromosomal syndromes – Turner syndrome, Klinefelter syndrome, XYY, True and Pseudo-hermaphroditism. **The mechanisms which contribute to cytogenetic alterations:** Polyploidy, Aneuploidy, Duplications, deletions, inversions, translocations.	**11**
IV	**Molecular Cytogenetic Techniques:** FISH, Chromosome painting, automated karyotyping, Flow cytometery, DNA fingerprinting, Molecular Markers in Genome Analysis, PCR and its applications in genome analysis, Microarrays. **Genome Projects:** Human genome project – history, organization, goals and value of the project. Genetic & Physical mapping of the human genome, Human genome diversity project, Model organisms and other genome projects. Life in the post genomic era.	**11**
V Practical	1. Identification of meiotic and mitotic stages from permanent slides. 2. Study of chiasma frequency and terminalisation co-efficient. 3. Study of mitosis from hepatic ceacae/bone marrow of suitable animals (invertebrate/vertebrate) and preparation of karyotype and idiogram. 4. Making karyological preparations from testicular material of suitable animals (invertebrate/vertebrate) to study the structure and behaviour of chromosomes duringmeiosis. 5. Nuclear sexing from polymorphonuclear leucocytes. 6. Preparation of human buccal smear to study sex chromatin. 7. Micronucleus test for genetic damage. 8. Preparation of pedigrees and pedigree analysis. 9. Demonstration of banding techniques. 10. PCR: Introduction and demonstration. 11. Isolation of genomic DNA. 12. A Survey/Project report for the study of: a) ABO and Rh blood groups b) Some morphogenetic and behavioural traits. c) Some biochemical traits.	**30**

Suggested Evaluation Methods	
Internal Assessment: ➢ **Theory** •Class Participation: 5 •Seminar/presentation/assignment/quiz/class test etc.: 5 •Mid-Term Exam: 10 ➢ **Practicum** •Class Participation: NA •Seminar/Demonstration/Viva-voce/Lab records etc.: 10 •Mid-Term Exam: NA	**End Term Examination:** ➢ **Theory** •Written Examination: 50 ➢ **Practicum** Practical Examination: 20

Learning Resources

1. Atherly, A.C., J.R. Girton and J.F. McDonald. The Science of Genetics. Sauders CollegePublishing, Harcort Brace College Publishers, NY.
2. Brooker, R.J. Genetics: Analysis and Principles. Benjamin/Cummings, Longman Inc.
3. Fairbanks, D.J. and W.R. Anderson. Genetics – The Continuity of Life. Brook/ColePublishing Company ITP, NY, Toronto.
4. Gardner, E.J., M.J. Simmons and D.P. Snustad. Principles of Genetics. John Wiley andSons. Inc., NY.
5. Griffiths, A.J.F., J.H. Miller, D.T. Suzuki, R.C. Lewontin and W.M. Gelbart. An introduction to genetic analysis. W.H. Freeman and company, NY.
6. Lewin, B. Genes. VI. Oxford University Press, Oxford, New York, Tokyo.
7. Snustad, D.P. and M.J. Simmons. Principles of Genetics. John Wiley and Sons. Inc., NY.
8. Watson, J.D., N.H. Hopkins, J.W. Roberts, J.A. Steitz and A.M. Weiner. Molecular Biology of Genes. The Benjamin/Cummings Publishing Company Inc., Tokyo.
9. Tom Strachan & Read, A.P. Human Molecular Genetics 3rd edition, Garland Publishing2004, London

KURUKSHETRA UNIVERSITY KURUKSHETRA

Syllabus of VAC, SEC, VOC

for Under-Graduate Programme

Under Multiple Entry-Exit, Internship and

CBCS-LOCF in accordance to NEP-2020

w.e.f. 2023-24 (in phased manner)

DEPARTMENT OF ZOOLOGY
KURUKSHETRA UNIVERSITY, KURUKSHETRA

VAC-VALUE ADDED COURSE								
Course Type	**Course Code**	**Name of the Course**	**Credit**	**Contact Hours/ Week**	**Internal Assessment marks**	**End Term Marks**	**Max. Marks**	**Exam Duration**
VAC-3	**B23-VAC-320**	**Indian Biodiversity**	**2**	**2**	**15**	**35**	**50**	**3 hrs.**

Level of the course: NA

Pre-requisite for the course (if any): NA

Course Learning Outcomes (CLO):

1. Know about an overview of Indian Biodiversity
2. Understand various strategies of biodiversity conservation
3. Improve their knowledge about Important Protected areas
4. To identify the local biodiversity

Instructions for Paper-Setter

1. Nine questions will be set in all. All questions will carry equal marks.
2. Question No. 1, which will be short answer type covering the entire syllabus, will be compulsory. The remaining eight questions will be set unit wise selecting two questions from each Unit I to IV. The candidate will be required to attempt question No. 1 and four more questions selecting one question from each unit.

UNIT	TOPICS	CONTACT HOURS
I	An overview of Indian Biodiversity; Faunal and Floral Indian biodiversity, Definition and concept of Biodiversity; Important Biodiversity area of India, Biodiversity: levels, values and threats and conservation	**8**
II	Popular Biosphere Reserves and their biodiversity, Popular Tourist spots of Rich Biodiversity, In-situ and Ex-situ conservation of biodiversity	**8**
III	Protected Areas and their roles in biodiversity conservation, Important National Park and Wildlife sanctuaries, IUCN categories, Threatened categories	**7**
IV	Terrestrial Biodiversity, Aquatic and Coastal biodiversity, Biodiversity hotspots, their characteristic flora and fauna, Biodiversity resources of north-east India	**7**

Suggested Evaluation Methods

Internal Assessment:

- **Theory**
  - Class Participation: 4
  - Seminar/presentation/assignment/quiz/class test etc.: 4
  - Mid-Term Exam: 7

End Term Examination:

- **Theory**
  - Written Examination: 35

Learning Resources

1. Thammineni Pullaiah and Sandhya Rani (2016) " Biodiversity in India" Volume: Regency Publications
2. Shukla Mahanty and Anjali Srivastava (2016). "Biodiversity And It's Conservation" Disha International Publishing House
3. Ramakrishanan, N "Biodiversity in Indian Scenarios" Daya Publishing House, New Delhi
4. Erach Bharucha (2002) "The Biodiversity of India" Mapin Pub.
5. Asad R. Rahmani and Dhritiman Mukherjee (2016) "Magical Biodiversity Of India" Oxford University Press

VAC-VALUE ADDED COURSE								
Course Type	**Course Code**	**Name of the Course**	**Credit**	**Contact Hours/ Week**	**Internal Assessment marks**	**End Term Marks**	**Max. Marks**	**Exam Duration**
VAC-4	**B23-VAC-407**	**Ecology and Environment**	**2**	**2**	**15**	**35**	**50**	**3 hrs.**

Level of the course: NA

Pre-requisite for the course (if any): NA

Course Learning Outcomes (CLO):

1. Know about basics of ecological science
2. Understand various strategies for research and development on ecological succession and dynamics
3. Improve their knowledge about conservation science
4. Describe about various conservation projects

Instructions for Paper-Setter

1. Nine questions will be set in all. All questions will carry equal marks.
2. Question No. 1, which will be short answer type covering the entire syllabus, will be compulsory. The remaining eight questions will be set unit wise selecting two questions from each Unit I to IV. The candidate will be required to attempt question No. 1 and four more questions selecting one question from each unit.

UNIT	TOPICS	CONTACT HOURS
I	Environmental components: biotic and abiotic components and their interactions. Concept of habitat and niche; Major terrestrial biomes; Biogeographical zones of India.	**8**
II	Population and Community ecology: Characteristics of a population; life history strategies (r and K selection); concept of metapopulation – demes and dispersal, Species Interactions: Types of interactions, interspecific competition, Community Ecology: Nature of communities; community structure and attributes; levels of species diversity and its measurement; edges and ecotones.	**8**
III	Ecosystem and Ecological Succession: Ecosystem: structure and function; energy flow and mineral cycling (C,N,P); primary production and decomposition; structure and function of some Indian ecosystems: terrestrial and aquatic. Ecological Successions: Types; mechanisms; changes involved in succession; concept of climax.	**7**
IV	Applied Ecology and Conservation Biology: Environmental pollution; biodiversity: status, monitoring and documentation; biodiversity management approaches; Principles of conservation and it's management; Project Tiger, Biosphere reserves.	**7**

Suggested Evaluation Methods

Internal Assessment:

- **Theory**
  - Class Participation: 4
  - Seminar/presentation/assignment/quiz/class test etc.: 4
  - Mid-Term Exam: 7

End Term Examination:

- **Theory**
  - Written Examination: 35

Learning Resources

1. H.R. Singh & Neeraj Kumar (2014)"Ecology and Environmental Science" Vishal Publishing Co.
2. P D Sharma (2017) "Ecology and Environment" Rastogi Publications
3. Eugene Odum (2017)"Fundamentals of Ecology" Cengage India Private Limited Publishers, Noida
4. Pranav Kumar and Usha Mina (2021)"Fundamentals Of Ecology And Environment" 3 rd Edition , Pathfinder Academy
5. N. Arumugam " Concepts of Ecology" Saras Publication

SEC-SKILL ENHANCEMENT COURSE								
Course Type	**Course Code**	**Name of the Course**	**Credit**	**Contact Hours/ Week**	**Internal Assessment marks**	**End Term Marks**	**Max. Marks**	**Exam Duration**
SEC-2	**B23-SEC-220**	**Techniques in Bird Watching**	**2**	**2**	**15**	**35**	**50**	**3 hrs.**
		Practical	**1**	**2**	**5**	**20**	**25**	**4 hrs.**

Level of the course: NA

Pre-requisite for the course (if any): NA

Course Learning Outcomes (CLO):

1. Students will be able to learn about the theory of camera trap
2. Learners will be able to learn about installation of camera trap
3. This Practice will be effective for students for collection of data with camera trap
4. Learners will be able theory of camera trap field operations
5. Students will get practical exposure of camera trap

Instructions for Paper-Setter

1. Nine questions will be set in all. All questions will carry equal marks.
2. Question No. 1, which will be short answer type covering the entire syllabus, will be compulsory. The remaining eight questions will be set unit wise selecting two questions from each Unit I to IV. The candidate will be required to attempt question No. 1 and four more questions selecting one question from each unit.

UNIT	TOPICS	CONTACT HOURS
I	Introduction to Bird watching Characteristics of Birds with flight adaptations Important field signs of bird watching	**8**
II	Zoological Names of Important birds Field characters of important birds Sexual dimorphism in birds	**8**
III	Important Indian Bird areas Important Bird areas of Haryana Resident & Migratory Birds	**7**
IV	Birds as bio-indicators Birds in food chain and Agriculture Bird Migration	**7**
V Practical	1. Instruments in Bird watching 2. Identification of Birds 3. Sexual Dimorphism studies in Birds 4. Field visits to local Bird areas	**30**

Suggested Evaluation Methods

Internal Assessment:

- **Theory**
  - Class Participation: 4
  - Seminar/presentation/assignment/quiz/class test etc.: 4
  - Mid-Term Exam: 7
- **Practicum**

End Term Examination:

- **Theory**
  - Written Examination: 35
- **Practicum**
  - Practical Examination: 20

• Class Participation: NA • Seminar/Demonstration/Viva-voce/Lab records etc.: 5 • Mid-Term Exam: NA	

Learning Resources

1. Birds of Indian subcontinent by Richard Grimmett, Inskipp.
2. Birds of Haryana. A field guide by Kalsi and Coworkers
3. Birds of Basai Wetlands Haryana by Deepak Rai and Coworkers.
4. Birding basics: Tips, tools and techniques for great bird watching by Noah Stryckar.

SEC-SKILL ENHANCEMENT COURSE								
Course Type	**Course Code**	**Name of the Course**	**Credit**	**Contact Hours/ Week**	**Internal Assessment marks**	**End Term Marks**	**Max. Marks**	**Exam Duration**
SEC-2	**B23-SEC-223**	**Taxidermy**	**2**	**2**	**15**	**35**	**50**	**3 hrs.**
		Practical	**1**	**2**	**5**	**20**	**25**	**4 hrs.**

Level of the course: NA

Pre-requisite for the course (if any): NA

Course Learning Outcomes (CLO):

1. Students will be able to learn about the materiality of the taxidermy animal within the museum context
2. Learners will be able to develop a knowledge and understanding of how to sustain a line of enquiry in a series of related art works
3. This Practice will be effective in the uses of a range drawing and in development studies which consider a creative response to the taxidermy animal.
4. Learners will be able for editing of visual ideas derived from research and study of the taxidermy animal.
5. Students will get practical exposure of Taxidermy procedure

Instructions for Paper-Setter

1. Nine questions will be set in all. All questions will carry equal marks.
2. Question No. 1, which will be short answer type covering the entire syllabus, will be compulsory. The remaining eight questions will be set unit wise selecting two questions from each Unit I to IV. The candidate will be required to attempt question No. 1 and four more questions selecting one question from each unit.

UNIT	TOPICS	CONTACT HOURS
I	General introduction to Taxidermy; Past and present scenario of Taxidermy; Types of Taxidermy for different animals; Applications of taxidermy	**8**
II	Layout of Taxidermy- Techniques and Materials used for Skinning, Cleaning and Preservation of dead animals; Keeping the record of dead animal- age, sex, infestation of pests	**8**
III	Methods of Taxidermy in Fishes, Snakes and Birds; Instruments used in Taxidermy; Maceration; Chemical treatments and procedure of Tanning	**7**
IV	Economic importance of Taxidermy; Role of Taxidermy in conservation and education; Factors affecting Taxidermy; Ethical issues; Pros and cons of Taxidermy	**7**
V Practical	1. Visit to the museum; 2. Identification of animals in Museum; 3. Prepare small models of animals; 4. To study the best and easiest method of Taxidermy of Birds; 5. Procedure of Taxidermy in mammals; Enlist the different types of chemicals used for Taxidermy; 6. Enlist the different types of instruments used for taxidermy	**30**

Suggested Evaluation Methods

Internal Assessment:	**End Term Examination:**
➢ **Theory** • Class Participation: 4	➢ **Theory** • Written Examination: 35

• Seminar/presentation/assignment/quiz/class test etc.: 4 • Mid-Term Exam: 7 ➢ **Practicum** • Class Participation: NA • Seminar/Demonstration/Viva-voce/Lab records etc.: 5 • Mid-Term Exam: NA	➢ **Practicum** ➢ Practical Examination: 20

Learning Resources

1. Taxidermy by Alexis Turner. Rizzoli.
2. Taxidermy by Leon Pray.
3. Barber's Manual : A text book on taxidermy by T.J. McConnaughay
4. Home Book of taxidermy and tanning by Gerold . J Grantz. Stackpole Books, 1985.

SEC-SKILL ENHANCEMENT COURSE								
Course Type	**Course Code**	**Name of the Course**	**Credit**	**Contact Hours/ Week**	**Internal Assessment marks**	**End Term Marks**	**Max. Marks**	**Exam Duration**
SEC-2	**B23-SEC-224**	**Camera Trapping in Wildlife Studies**	**2**	**2**	**15**	**35**	**50**	**3 hrs.**
		Practical	**1**	**2**	**5**	**20**	**25**	**4 hrs.**

Level of the course: NA

Pre-requisite for the course (if any): NA

Course Learning Outcomes (CLO):

1. Students will be able to learn about the theory of camera trap
2. Learners will be able to learn about installation of camera trap
3. This Practice will be effective for students for collection of data with camera trap
4. Learners will be able theory of camera trap field operations
5. Students will get practical exposure of camera trap

Instructions for Paper-Setter

1. Nine questions will be set in all. All questions will carry equal marks.
2. Question No. 1, which will be short answer type covering the entire syllabus, will be compulsory. The remaining eight questions will be set unit wise selecting two questions from each Unit I to IV. The candidate will be required to attempt question No. 1 and four more questions selecting one question from each unit.

UNIT	TOPICS	CONTACT HOURS
I	Camera trap, Theory and practice Various modes and settings of Camera trap.	**8**
II	Installation of Camera Trap. How to operate it in field	**8**
III	Collection of data through camera trap. What the collected data can tells us., Information retrieval	**7**
IV	Use of Camera Trap in wildlife studies. Field studies for hands on experience on camera trap	**7**
V **Practical**	Practical Knowledge of camera trap Practical working of camera trap Extraction of field data from camera trap	**30**

Suggested Evaluation Methods

Internal Assessment:

➢ **Theory**

- Class Participation: 4
- Seminar/presentation/assignment/quiz/class test etc.: 4
- Mid-Term Exam: 7

➢ **Practicum**

- Class Participation: NA
- Seminar/Demonstration/Viva-voce/Lab records etc.: 5
- Mid-Term Exam: NA

End Term Examination:

➢ **Theory**

- Written Examination: 35

➢ **Practicum**

➢ Practical Examination: 20

Learning Resources

1. Camera trapping for wildlife research by Frensco Rovero and Fridolin Zimmerman
2. Camera traps in animal ecology. Methods and Analyses by Allan F.O. Channel, James D. Nichols
3. Camera trapping Guide. Tracks, signand behaviour of eastern wild life by Janet Pesaturo.

SEC-SKILL ENHANCEMENT COURSE								
Course Type	**Course Code**	**Name of the Course**	**Credit**	**Contact Hours/ Week**	**Internal Assessment marks**	**End Term Marks**	**Max. Marks**	**Exam Duration**
SEC-3	**B23-SEC-321**	**Microtomy**	**2**	**2**	**15**	**35**	**50**	**3 hrs.**
		Practical	**1**	**2**	**5**	**20**	**25**	**4 hrs.**

Level of the course: NA

Pre-requisite for the course (if any): NA

Course Learning Outcomes (CLO):

1. Students will have thorough understanding of modern development in microtomy.
2. Learners will be able to process animal samples for permanent slide preparation.
3. Gain knowledge regarding various biological stains.
4. Localize histochemical of proteins, lipids and nucleic acids.
5. Students will get practical exposure of Microtomy

Instructions for Paper-Setter

1. Nine questions will be set in all. All questions will carry equal marks.
2. Question No. 1, which will be short answer type covering the entire syllabus, will be compulsory. The remaining eight questions will be set unit wise selecting two questions from each Unit I to IV. The candidate will be required to attempt question No. 1 and four more questions selecting one question from each unit.

UNIT	TOPICS	CONTACT HOURS
I	Microtomy:- Introduction, definition, History and Applications in Biological sciences; Types of microtomes- Rotary microtome, Sledge Microtome and Cryomicrotome	**8**
II	Collection and transportation of sample/specimens for histological examination; Basic concepts of fixation- Various types of fixatives used in microtomy; Process of fixation; Embedding-Block formation	**8**
III	Section Cutting: Paraffin section cutting ; Streching- Spreading the sections and attachment to the glass slides; Staining – Principle and procedure; Preparation of Stains and solvents	**7**
IV	General Staining Procedures for Paraffin Embedded tissue; Nuclear Stains and Cytoplasmic stains- Haematoxylin and Eosin staining, Mercury Bromophenol Blue staining; Toulidine Blue; Commonly used mountants in microtomy.	**7**
V Practical	1. Collection and labeling of histological samples/specimens 2. To demonstrate various part and types of microtome 3. Preparation of various fixatives- Bouin's fluid, Corney's fluid; 10% Neutral formalin,Normal saline 4. Processing of tissue by manual method 5. To perform embedding and casting of block, section cutting, stretching 6. To perform & practice the Haematoxylin and Eosin staining, Mercury Bromophenol Blue staining; Toulidine Blue Staining 7. Study the permanent slides of different tissues	**30**

Suggested Evaluation Methods	
Internal Assessment: ➢ **Theory** • Class Participation: 4 • Seminar/presentation/assignment/quiz/class test etc.: 4 • Mid-Term Exam: 7 ➢ **Practicum** • Class Participation: NA • Seminar/Demonstration/Viva-voce/Lab records etc.: 5 • Mid-Term Exam: NA	**End Term Examination:** ➢ **Theory** • Written Examination: 35 ➢ **Practicum** ➢ Practical Examination: 20

Learning Resources

1. Principles and interpretation of laboratory practices in surgical pathology by S. S.and Kaler Amrit Kaur
2. Practical approach to histopathology staining and microtomy by Prof. Punit Puri
3. Histopathology Techniques and it's management by Ramdas Nayak.
4. Troubleshooting histopathology stains by Richard.W. Horobin and John D. Baneroft.

VOC-VOCATIONAL COURSE								
Course Type	**Course Code**	**Name of the Course**	**Credit**	**Contact Hours/ Week**	**Internal Assessment marks**	**End Term Marks**	**Max. Marks**	**Exam Duration**
VOC-1	**B23-VOC-102**	**Apiculture**	**2**	**2**	**15**	**35**	**50**	**3 hrs.**
		Practical	**2**	**4**	**15**	**35**	**50**	**4 hrs.**

Level of the course: NA

Pre-requisite for the course (if any): NA

Course Learning Outcomes (CLO):

1. Students will be able to understand the significance of honey bees and Apiculture
2. Students will acquire knowledge about different species and castes of the honey bees
3. Students will learn to manage beehives for honey production and pollination, and Learn various product of honey bees and value addition in these products,
4. Students will be aware about economic importance of honey bees, and use of Apiculture for employment, self employment and conservation of nature
5. Students will gain practical knowledge about various methods of bee keeping and extraction of honey thus create scope for entrepreneurship.

Instructions for Paper-Setter

3. Nine questions will be set in all. All questions will carry equal marks.
4. Question No. 1, which will be short answer type covering the entire syllabus, will be compulsory. The remaining eight questions will be set unit wise selecting two questions from each Unit I to IV. The candidate will be required to attempt question No. 1 and four more questions selecting one question from each unit.

UNIT	TOPICS	CONTACT HOURS
I	Apiculture meaning, definition scope and history Status of Apiculture Industry in India Classification and Life Cycle of Honey Bee. Identification of Indigenous and exotic Honey bee species	**8**
II	Cultivable species of Honey Bee with reference to India Social organization of honey bees: the castes- queen, drone and workers, Nesting behavior of Honey bees, Bee foraging, Seasonal management, swarming in Honey bees, waggle dance, defense in honey bees Diseases and Enemies. of Bees ,Control and Preventive measures.	**8**
III	Role of Bees in cross pollination in horticulture and agriculture Methods of Artificial Bee keeping Equipments used in Bee keeping Industry Methods of extraction of Honey and other products	**7**
IV	Products of Apiculture Industry and their Uses (Honey, Bee Wax, Royal Jelly, Bee Venom, Propolis and Pollen) Bee Keeping Industry: Present and future Prospects of apiculture as self employment venture. Economics of Apiculture: Expenditure, Net Income, and Additional benefits	**7**
V Practical	**Practical Exercises on** 1. Identification of different bee species 2. Training of Bee keeping in Artificial boxes 3. Demonstration of Modern Bee Keeping Equipment and Methods. 4. Training of methods of Extraction of Honey (Indigenous and Modern) 5. Field visit to Honey Bee farm/Unit 6. Report of field visit	**60**

Suggested Evaluation Methods

Internal Assessment:	**End Term Examination:**
➢ **Theory** • Class Participation: 4	➢ **Theory** • Written Examination: 35

• Seminar/presentation/assignment/quiz/class test etc.: 4 • Mid-Term Exam: 7 ➢ **Practicum** • Class Participation: 5 • Seminar/Demonstration/Viva-voce/Lab records etc.: 10 • Mid-Term Exam: NA	➢ **Practicum** ➢Practical Examination: 35

Learning Resources

- Prost, P. J. (1962). Apiculture. Oxford and IBH, New Delhi.
- Bisht, D.S. (2004). Agricultural Development in India, Anmol Pub. Pvt. Ltd.
- Singh S. (1964). Beekeeping in India, Indian council of Agricultural Research, NewDelhi
- Mehrotra, K.N. Bisht, D.S. (1981). Twenty-five years of apiculture research at IARI. I. Apiculture in relation to agriculture.
- The Social Behaviour of the Bees, 1974 : By Missioner C.D
- The Social Behaviour of the Bees, A Comparative Study 1974, C.D.Mathener, Harvard University Press, Cambridge, England.
- Bees and Mankind 1982, J.B.Free, George Allen & Unwin (Pub.), Limited London, UK. 25. Biogeography and Taxonomy of Honeybees 1985, F.Ruttnar, Springer-Verlag, Berlin, Jermany.

VOC-VOCATIONAL COURSE								
Course Type	**Course Code**	**Name of the Course**	**Credit**	**Contact Hours/ Week**	**Internal Assessment marks**	**End Term Marks**	**Max. Marks**	**Exam Duration**
VOC-2	**B23-VOC-202**	**Vermicomposting**	**2**	**2**	**15**	**35**	**50**	**3 hrs.**
		Practical	**2**	**4**	**15**	**35**	**50**	**4 hrs.**

Level of the course: NA

Pre-requisite for the course (if any): NA

Course Learning Outcomes (CLO):

1. Student will get the knowledge of composting
2. The student will get the knowledge of biodiversity of local earthworms
3. The student can generate income by supplying worms, vermiwash and vermicompost.
4. It leads towards organic farming and healthy food.
5. Student will be trained to identify Earthworms and their use in small vermicompost bin for converting the home waste.

Instructions for Paper-Setter

1. Nine questions will be set in all. All questions will carry equal marks.
2. Question No. 1, which will be short answer type covering the entire syllabus, will be compulsory. The remaining eight questions will be set unit wise selecting two questions from each Unit I to IV. The candidate will be required to attempt question No. 1 and four more questions selecting one question from each unit.

UNIT	TOPICS	CONTACT HOURS
I	Vermiculture: Introduction, definition, history, general characters of Annelida, systematic position of earthworm, habits and habitat of earthworm, diversity of earthworms, collection of earthworms, preservation of earthworms.	**8**
II	Vermitechnology: Role of earthworm in maintance of soil structure and their role as recycling, reduce, reuse, restore (4r's), choosing right species of earthworm.	**8**
III	Earthworm biology and rearing: Key to identify the species of earthworm, life cycle of *Eisenia fetida, Lampito mauritii* and their role on ecology, an eco-friendly approach to sustainable agriculture	**7**
IV	Vermicomposting (methods and products): Preparation of vermibed, small scale earthworm farming for home garden, large scale commercial composting, properties of vermicompost and vermiwash, application on crop plants economic development and self-employment.	**7**
V Practical	**Practical** 1. Key to identify different types of earthworms. 2. Collection of some native earthworms and identification. 3. Study of systematic position, habits, habitat and external feature of earthworm 4. Study of life stages of *Elisenia fetida, Eudrilus eugeniae, Lampito mauritii* 5. Preparation of vermibeds, maintance of vermicompost and climatic conditions. 6. Field visit of Vermicomposting unit. 7. Report of field visit.	**60**

Suggested Evaluation Methods

Internal Assessment:	End Term Examination:
➢ **Theory** • Class Participation: 4 • Seminar/presentation/assignment/quiz/class test etc.: 4 • Mid-Term Exam: 7 ➢ **Practicum** • Class Participation: 5 • Seminar/Demonstration/Viva-voce/Lab records etc.: 10 • Mid-Term Exam: NA	➢ **Theory** • Written Examination: 35 ➢ **Practicum** ➢Practical Examination: 35

Learning Resources

1. Dash, M. C. (2012). Charles Darwin's Plough Tool for Vermitechnology. I.K. International Publishing House Pvt Ltd. New Delhi, India.
2. Tripathi, G (2003). Vermiresources Technology Discovery Publishing House, New Delhi.
3. Rajnesh Kumar Sharma and Poonam Bhardwaj (2018). Green Farming- Earthworms and Vermitechnology. RAR Publication, New Delhi.

VOC-VOCATIONAL COURSE								
Course Type	**Course Code**	**Name of the Course**	**Credit**	**Contact Hours/ Week**	**Internal Assessment marks**	**End Term Marks**	**Max. Marks**	**Exam Duration**
VOC-2	**B23-VOC-223**	**DNA Fingerprinting**	**2**	**2**	**15**	**35**	**50**	**3 hrs.**
		Practical	**2**	**4**	**15**	**35**	**50**	**4 hrs.**

Level of the course: NA

Pre-requisite for the course (if any): NA

Course Learning Outcomes (CLO):

1. The students will get the knowledge of basic structure of DNA molecules
2. The students will understand of various DNA typing methods.
3. The students will get knowledge of performing DNA profiling of any biological samples aiming at investigations.
4. The students will get the application of DNA profiling.
5. Students will be able to learn practical exposure of DNA fingerprinting

Instructions for Paper-Setter

1. Nine questions will be set in all. All questions will carry equal marks.
2. Question No. 1, which will be short answer type covering the entire syllabus, will be compulsory. The remaining eight questions will be set unit wise selecting two questions from each Unit I to IV. The candidate will be required to attempt question No. 1 and four more questions selecting one question from each unit.

UNIT	TOPICS	CONTACT HOURS
I	DNA Profiling: Introduction, History of DNA Typing, human genetics – heredity, alleles, mutations, molecular biology of DNA and RNA, DNA types.	**8**
II	DNA Polymorphism: VNTR, STR, SNP, Mt DNA, DNA Markers, sequence polymorphism. DNA typing systems- RELP analysis, PCR amplifications.	**8**
III	DNA profiling methods: Sample collection and preservation for DNA profiling, DNA Extraction Analysis of SNP, STR, Y-STR. Mitochondrial DNA, evaluation of results, database, quality control, certification and accreditation.	**7**
IV	Forensic applications of DNA Profiling: Applications in disputed paternity cases, child swapping, missing person's identity – civil immigrations, veterinary, wildlife and agriculture cases, legal perspectives – legal standards for admissibility of DNA profiling. New and future technologies: DNA chips, Rapid DNA analyser, imitations of DNA profiling.	**7**
V Practical	Practical based on Sample extraction, DNA Isolation and DNA profiling 1. To extract DNA from biological samples. 2. Quantification of DNA. 3. Report Writing: Role of DNA typing in identifying. 4. Blood grouping from fresh and dried blood. 5. Quality Assurance of DNA 6. Project Report	**60**

Suggested Evaluation Methods

Internal Assessment:	End Term Examination:
➢ **Theory** • Class Participation: 4 • Seminar/presentation/assignment/quiz/class test etc.: 4 • Mid-Term Exam: 7 ➢ **Practicum** • Class Participation: 5 • Seminar/Demonstration/Viva-voce/Lab records etc.: 10 • Mid-Term Exam: NA	➢ **Theory** • Written Examination: 35 ➢ **Practicum** ➢ Practical Examination: 35

Learning Resources

1. J.M. Butler, Forensic DNA Typing, Elsevier, Burlington (2005).
2. K. Inman and N. Rudin, An Introduction to Forensic DNA Analysis, CRC Press, Boca Raton (1997).
3. H. Coleman and E. Swenson, DNA in the Courtroom: A Trial Watcher's Guide, GeneLex Corporation, Washington (1994).
4. W.J. Tilstone, M.L. Hastrup and C. Hald, Fisher's, Techniques of Crime Scene Investigation, CRC Press, Boca Raton (2013).

VOC-VOCATIONAL COURSE								
Course Type	**Course Code**	**Name of the Course**	**Credit**	**Contact Hours/ Week**	**Internal Assessment marks**	**End Term Marks**	**Max. Marks**	**Exam Duration**
VOC-3	**B23-VOC-302**	**Poultry Farming**	**2**	**2**	**15**	**35**	**50**	**3 hrs.**
		Practical	**2**	**4**	**15**	**35**	**50**	**4 hrs.**

Level of the course: NA

Pre-requisite for the course (if any): NA

Course Learning Outcomes (CLO):

1. Understand the field level structure and functioning of Poultry Farming
2. This course will enlighten the students about the operation of livestock and poultry farming.
3. It will develop the knowledge of poultry in an operational farm for more profit management, feed requirements etc.
4. Learning of poultry farming will generate a source of employment opportunities in rural areas and employment to the farmers.
5. Will gain all round knowledge of Poultry Farming as a business enterprise rather than as a community profession

Instructions for Paper-Setter

1. Nine questions will be set in all. All questions will carry equal marks.
2. Question No. 1, which will be short answer type covering the entire syllabus, will be compulsory. The remaining eight questions will be set unit wise selecting two questions from each Unit I to IV. The candidate will be required to attempt question No. 1 and four more questions selecting one question from each unit.

UNIT	TOPICS	CONTACT HOURS
I	General introduction to poultry farming -Definition of Poultry Past and present scenario of poultry industry in India. Breeds, Varieties and Strains, Life cycle of poultry birds	**8**
II	Poultry feed management – Principles of feeding Nutrient requirements for different stages of layers and broilers. Feed formulation Methods of feeding.	**8**
III	Layer Industry in India Systems of layer farming – Location & Lay out of the farm Systems of housing –Types of roof, materials, pillars, trusses for poultry house Management of layers in different systems of rearing.	**7**
IV	Poultry diseases – viral, bacterial, fungal and parasitic (two each); symptoms, control and management. Vaccination programme Cleaning, Disinfection and Fumigation of Poultry Houses	**7**
V Practical	**Following Practical Exercises shall be taught** 1. Identification of External Body Parts of a Bird 2. Identification of Chicken Breeds 3. General View of Poultry Farm 4. Rearing, Feeding and Watering of Chicks, Growers and Layers	**60**

	5. Debeaking, Delicing, Deworming and Spraying 6. Candling and Grading of Eggs 7. Field visit of Poultry farm 8. Report of field visit	

Suggested Evaluation Methods

Internal Assessment:	**End Term Examination:**
➢ **Theory** • Class Participation: 4 • Seminar/presentation/assignment/quiz/class test etc.: 4 • Mid-Term Exam: 7 ➢ **Practicum** • Class Participation: 5 • Seminar/Demonstration/Viva-voce/Lab records etc.: 10 • Mid-Term Exam: NA	➢ **Theory** • Written Examination: 35 ➢ **Practicum** ➢ Practical Examination: 35

Learning Resources

1. Das D, Das B C, Nayak N, Jena B, Sahu A R 2021,"TextBook on Poultry Management" Narendra Publishing House
2. Ghosh N 2015,"Poultry Science And Practice: A Textbook" CBS Publishers & Distributors
3. Prasad Rajeshwar (2010): Poultry Management Alfa Publications.
4. Singh R A 2009," Poultry Production" Kalyani Publishers
5. Shukla, G. S. and Upadhyay, V. B. (2011): Economic Zoology. Rastogi Publications.

VOC-VOCATIONAL COURSE								
Course Type	**Course Code**	**Name of the Course**	**Credit**	**Contact Hours/ Week**	**Internal Assessment marks**	**End Term Marks**	**Max. Marks**	**Exam Duration**
VOC-3	**B23-VOC-318**	**Fish Farming**	**2**	**2**	**15**	**35**	**50**	**3 hrs.**
		Practical	**2**	**4**	**15**	**35**	**50**	**4 hrs.**

Level of the course: NA

Pre-requisite for the course (if any): NA

Course Learning Outcomes (CLO):

1. Create awareness about food security, significance of protein in diet and will learn the skills to develop business enterprise
2. Students will learn about various methods and significance of fish farming
3. Student/s will learn identification of fish species using classical morphological methods
4. Students will get acquainted about bye products of fish farming industry and fish health
5. Students will develop capability of identifying different species of fishes and will be trained for analysis of water quality and fish culture in ponds

Instructions for Paper-Setter

1. Nine questions will be set in all. All questions will carry equal marks.
2. Question No. 1, which will be short answer type covering the entire syllabus, will be compulsory. The remaining eight questions will be set unit wise selecting two questions from each Unit I to IV. The candidate will be required to attempt question No. 1 and four more questions selecting one question from each unit.

UNIT	TOPICS	CONTACT HOURS
I	General introduction -Definition of Fish, Fisheries, Aquaculture and Pisciculture Significance of fish farming. Production, Utilization and Demand of Fish in India General description of Capture and Culture Fisheries	**8**
II	Culture fisheries and its types Criteria for the selection of fish species for farming Important culturable Fishes in India and Identification of commercially important fish species Basics of induced breeding in fishes	**8**
III	Pond fish culture : Types, Design and construction of fish farming ponds Maintenance of fish culture ponds Ecology of Fish pond ecosystem: Water quality(Physico-chemical and Biological) and Soil quality Weeds of fish farming ponds and their control	**7**
IV	Nutrition of cultured fishes: Natural, supplementary and artificial feed, Nutrient composition and common dietary ingedients By products of fish farming Industry Methods of Fish harvesting and marketing Common fish diseases and their control	**7**
V Practical	**Practical Exercises on**	**60**

	1. Identification of important fishes 2. Identification of developmental stages of fishes 3. Analysis of physical and chemical properties of water: (Temperature, pH, turbidity, salinity, total solids, Dissolved oxygen, Free carbon-di-oxide, hardness, chlorides) 4. Study of aquatic weeds 5. Study of crafts and gears 6. Visit to fish farm and/or fish market and preparation of report	

Suggested Evaluation Methods

Internal Assessment:	**End Term Examination:**
➢ **Theory** • Class Participation: 4 • Seminar/presentation/assignment/quiz/class test etc.: 4 • Mid-Term Exam: 7 ➢ **Practicum** • Class Participation: 5 • Seminar/Demonstration/Viva-voce/Lab records etc.: 10 • Mid-Term Exam: NA	➢ **Theory** • Written Examination: 35 ➢ **Practicum** ➢ Practical Examination: 35

Learning Resources

1. APHA (1995) Standard Methods of Examination of Water and Wastewater. American Public Health Association, AWWA, WCPF, Washington DC.

2. Bardach, JE, Ryther & McLarney, Wo (1972) Aquaculture, New York: Wiley-Interscience. 896pp

3. Gupta S.K. and Gupta P.C. (2006) General & Applied Ichthyology: Fish and Fisheries. S Chand Publications, New Delhi

4. Jhingran, VG (1983) Fish and Fisheries of India. Hindustan Publishing Corporation (India) 954 pp

5. Khanna, S.S. and Singh, H.R. (2014). Text book of Fish Biology and Fisheries 3rd edn (PB) Narendra Publishing House, India

KURUKSHETRA UNIVERSITY

KURUKSHETRA

(Established by the state legislature Act XII of 1964)
A^{+} Grade NAAC Accredited)

Scheme of Examination and Syllabus for

Under-Graduate Programme

Subject: Chemistry

Under Multiple Entry-Exit, Internship and CBCS-LOCF in accordance to NEP-2020 w.e.f. 2023-24 (in phased manner)

DEPARTMENT OF CHEMISTRY, KURUKSHETRA UNIVERSITY, KURUKSHETRA

FIRST YEAR: SEMESTER-1									
Remarks	**Course**	**Paper(s)**	**Nomenclature of Paper**	**Credits**	**Hours/ Week**	**Internal marks**	**External Marks**	**Total Marks**	**Exam Duration**
Scheme A & C	**CC-1 MCC-1 4 credit**	B-23 CHE-101	Chemistry-I	3	3	20	50	70	3 hrs.
			Practical	1	2	10	20	30	3 hrs.
Scheme C only	**MCC-2 4 credit**	B-23 CHE-102	Physical Chemistry-I	3	3	20	50	70	3 hrs.
			Practical	1	2	10	20	30	3 hrs.
Scheme A & D	**CC-M1 2 credit**	B-23 CHE-103	Minor Chemistry-I	2	2	15	35	50	3 hrs.
Scheme A, C & D	**MDC-1 3 credits**	B-23 CHE-104	Introductory Chemistry-I	2	2	15	35	50	3 hrs.
			Practical	1	2	5	20	25	3 hrs.
Scheme C only	**CC-M1 4 credit**	From Available CC-I/MCC-I of 4 credits as per NEP							
FIRST YEAR: SEMESTER-2									
Remarks	**Course**	**Paper(s)**	**Nomenclature of Paper**	**Credits**	**Hours/ Week**	**Internal marks**	**External Marks**	**Total Marks**	**Exam Duration**
Scheme A & C	**CC-2 MCC-3 4 credit**	B-23 CHE-201	Chemistry-II	3	3	20	50	70	3 hrs.
			Practical	1	2	10	20	30	3 hrs.
Scheme C only	**DSEC-1 4 credit**	B-23 CHE-202	Chemistry Skill-I	3	3	20	50	70	3 hrs.
			Practical	1	2	10	20	30	3 hrs.
Scheme A & D	**CC-M 2 2 credit**	B-23 CHE-	Minor Chemistry-II	2	2	15	35	15	2 hrs.

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Scheme A, C & D	**MDC-2 3 credits**	B-23 CHE-204	Introductory Chemistry-II	2	2	15	35	50	3 hrs.
			Practical	1	2	5	20	25	3 hrs.
Scheme C only	**CC-M2 4 credit**	From Available CC-2/MCC-3 of 4 credits as per NEP							
Internship of 4 credits of 4-6 weeks duration after 2nd Semester									

SECOND YEAR: SEMESTER-3									
Remarks	**Course**	**Paper(s)**	**Nomenclature of Paper**	**Credits**	**Hours / Week**	**Internal marks**	**External Marks**	**Total Marks**	**Exam Duration**
Scheme A, B & C	**CC-3 MCC-4 4 credit**	B-23 CHE-301	Chemistry-III	**3**	**3**	**20**	**50**	**70**	**3 hrs.**
			Practical	**1**	**2**	**10**	**20**	**30**	**3 hrs.**
Scheme B & C	**MCC-5 4 credit**	B-23 CHE-302	Inorganic Chemistry-I	**3**	**3**	**20**	**50**	**70**	**3 hrs.**
			Practical	**1**	**2**	**10**	**20**	**30**	**3 hrs.**
Scheme A, B, C & D	**MDC-3 3 credits**	B-23 CHE-303	Introductory Chemistry-III	**2**	**2**	**15**	**35**	**50**	**3 hrs.**
			Practical	**1**	**2**	**5**	**20**	**25**	**3 hrs.**
Scheme A, C & D	**CC-M3 4 credits**	**From Available CC-3/MCC-4 of 4 credits as per NEP**							
Scheme B only	**MCC-2**	**MCC-2 FROM SCHEME C OF FIRST SEMESTER Physical Chemistry-I**							

SECOND YEAR: SEMESTER-4									
Remarks	**Course**	**Paper(s)**	**Nomenclature of Paper**	**Credits**	**Hours / Week**	**Internal marks**	**External Marks**	**Total Marks**	**Exam Duration**
Scheme A, B & C	**CC-4 MCC-6 4 credit**	B-23 CHE-401	Chemistry-IV	**3**	**3**	**20**	**50**	**70**	**3 hrs.**
			Practical	**1**	**2**	**10**	**20**	**30**	**3 hrs.**
Scheme B & C	**MCC-7 4 credit**	B-23 CHE-402	Organic Chemistry-I	**3**	**3**	**20**	**50**	**70**	**3 hrs.**
			Practical	**1**	**2**	**10**	**20**	**30**	**3 hrs.**
Scheme B & C	**MCC-8 4 credit**	B-23 CHE-403	Physical Chemistry-II	**3**	**3**	**20**	**50**	**70**	**3 hrs.**
			Practical	**1**	**2**	**10**	**20**	**30**	**3 hrs.**
Scheme B & C	**DSE-1 4 credit Select one option**	**Elective Chemistry(Select One option)**							
		B-23 CHE-404	Elective Chemistry - I	**3**	**3**	**20**	**50**	**70**	**3 hrs.**
			Practical	**1**	**2**	**10**	**20**	**30**	**3 hrs.**
		B-23 CHE-405	Elective Chemistry - II	**3**	**3**	**20**	**50**	**70**	**3 hrs.**
			Practical	**1**	**2**	**10**	**20**	**30**	**3 hrs.**
		B-23 CHE-406	Elective Chemistry - III	**3**	**3**	**20**	**50**	**70**	**3 hrs.**
			Practical	**1**	**2**	**10**	**20**	**30**	**3 hrs.**
Internship of 4 credits of 4-6 weeks duration after 4th Semester (if not done after second semester)									

THIRD YEAR: SEMESTER-5									
Remarks	**Course**	**Paper(s)**	**Nomenclature of Paper**	**Credits**	**Hours / Week**	**Internal marks**	**External Marks**	**Total Marks**	**Exam Duration**
Scheme A, B & C	**CC-5 MCC-9 4 credit**	B-23 CHE-501	Chemistry-V	**3**	**3**	**20**	**50**	**70**	**3 hrs.**
			Practical	**1**	**2**	**10**	**20**	**30**	**3 hrs.**
Scheme B & C	**MCC-10 4 credit**	B-23 CHE-502	Inorganic Chemistry-II	**3**	**3**	**20**	**50**	**70**	**3 hrs.**
			Practical	**1**	**2**	**10**	**20**	**30**	**3 hrs.**
Scheme B & C	**DSE-2 4 credit Select one Option**	**Elective Chemistry(Select One option)**							
		B-23 CHE-503	Elective Chemistry-IV	**3**	**3**	**20**	**50**	**70**	**3 hrs.**
			Practical	**1**	**2**	**10**	**20**	**30**	**3 hrs.**
		B-23 CHE-504	Elective Chemistry-V	**3**	**3**	**20**	**50**	**70**	**3 hrs.**
			Practical	**1**	**2**	**10**	**20**	**30**	**3 hrs.**
		B-23 CHE-505	Elective Chemistry-VI	**3**	**3**	**20**	**50**	**70**	**3 hrs.**
			Practical	**1**	**2**	**10**	**20**	**30**	**3 hrs.**
Scheme B & C	**DSE-3 4 credit Select one Option**	**Elective Chemistry (Select One option)**							
		B-23 CHE-506	Elective Chemistry-VII	**3**	**3**	**20**	**50**	**70**	**3 hrs.**
			Practical	**1**	**2**	**10**	**20**	**30**	**3 hrs.**
		B-23	Elective	**3**	**3**	**20**	**50**	**70**	**3 hrs.**

		CHE-507	Chemistry-VIII						
			Practical	**1**	**2**	**10**	**20**	**30**	**3 hrs.**
		B-23 CHE-508	Elective Chemistry-IX	**3**	**3**	**20**	**50**	**70**	**3 hrs.**
			Practical	**1**	**2**	**10**	**20**	**30**	**3 hrs.**
Scheme A, B & C	**Internship 4 credits**	**Internship#4 credit after 4th semester**							
THIRD YEAR: SEMESTER-6									
Remarks	**Course**	**Paper(s)**	**Nomenclature of Paper**	**Credits**	**Hours / Week**	**Internal marks**	**External Marks**	**Total Marks**	**Exam Duration**
Scheme A, B & C	**CC-6 MCC-11 4 credit**	B-23 CHE-601	Chemistry-VI	**3**	**3**	**20**	**50**	**70**	**3 hrs.**
			Practical	**1**	**2**	**10**	**20**	**30**	**3 hrs.**
Scheme B & C	**MCC-12 4 credit**	B-23 CHE-602	Organic Chemistry-II	**3**	**3**	**20**	**50**	**70**	**3 hrs.**
			Practical	**1**	**2**	**10**	**20**	**30**	**3 hrs.**
Scheme B & C	**DSE-4 4 credit Select one Option**	**Elective Chemistry(Select One option)**							
		B-23 CHE-603	Elective Chemistry-X	**3**	**3**	**20**	**50**	**70**	**3 hrs.**
			Practical	**1**	**2**	**10**	**20**	**30**	**3 hrs.**
		B-23 CHE-604	Elective Chemistry-XI	**3**	**3**	**20**	**50**	**70**	**3 hrs.**
			Practical	**1**	**2**	**10**	**20**	**30**	**3 hrs.**

		B-23 CHE-605	Elective Chemistry-XII	**3**	**3**	**20**	**50**	**70**	**3 hrs.**
			Practical	**1**	**2**	**10**	**20**	**30**	**3 hrs.**
Scheme B & C	**DSE-5 4 credit Select one Option**	**Elective Chemistry (Select One option)**							
		B-23 CHE-606	Elective Chemistry-XIII	**3**	**3**	**20**	**50**	**70**	**3 hrs.**
			Practical	**1**	**2**	**10**	**20**	**30**	**3 hrs.**
		B-23 CHE-607	Elective Chemistry-XIV	**3**	**3**	**20**	**50**	**70**	**3 hrs.**
			Practical	**1**	**2**	**10**	**20**	**30**	**3 hrs.**
		B-23 CHE-608	Elective Chemistry-XV	**3**	**3**	**20**	**50**	**70**	**3 hrs.**
			Practical	**1**	**2**	**10**	**20**	**30**	**3 hrs.**
Scheme A only	**CC-6 4 credits**	**(Only for minor subject as chemistry) From Available CC-6/MCC-11 of 4 credits as per NEP**							

FOURTH YEAR: SEMESTER-7 (FOR HONOURS/HONOURS WITH RESEARCH IN Chemistry)

Remarks	Course	Paper(s)	Nomenclature of Paper	Credits	Hours/ Week	Internal marks	External Marks	Total Marks	Exam Duration
for Honours in Chemistry/Honours with Research in Chemistry (For Scheme B & C)	**CC-H1 4 credit**	B-23 CHE-701	Physical Chemistry-III	**4**	**4**	**30**	**70**	**100**	**3 hrs.**
	CC-H2 4 credit	B-23 CHE-702	Inorganic Chemistry-III	**4**	**4**	**30**	**70**	**100**	**3 hrs.**
	CC-H3	B-23	Organic	**4**	**4**	**30**	**70**	**100**	**3 hrs.**

	4 credit	CHE -703	Chemistry-III						
	Select any one option								
	DSE-6 **4 credit** **Select one Option**	B-23 CHE -704	Advanced Chemistry-I	**4**	**4**	**30**	**70**	**100**	**3 hrs.**
		B-23 CHE -705	Advanced Chemistry-II	**4**	**4**	**30**	**70**	**100**	**3 hrs.**
		B-23 CHE -706	Advanced Chemistry-III	**4**	**4**	**30**	**70**	**100**	**3 hrs.**
	PC-H1 **4 credit**	B-23 CHE -707	Practical Chemistry	**4**	**8**	**30**	**70**	**100**	**6 hrs.**
	CC-HM1 **4 credit**	**From Available Minor of 4 credits as per NEP**							
SEMESTER-8 (FOR HONOURS in Chemistry)									
Remarks	**Course**	**Paper(s)**	**Nomenclature of Paper**	**Credits**	**Hours/ Week**	**Internal marks**	**External Marks**	**Total Marks**	**Exam Duration**
Honours in Chemistry **(For Scheme B & C)**	**CC-H4** **4 credit**	B-23 CHE -801	Physical Chemistry-IV	**4**	**4**	**30**	**70**	**100**	**3 hrs.**
	CC-H5 **4 credit**	B-23 CHE -802	Inorganic Chemistry-IV	**4**	**4**	**30**	**70**	**100**	**3 hrs.**
	CC-H6 **4 credit**	B-23 CHE -803	Organic Chemistry-IV	**4**	**4**	**30**	**70**	**100**	**3 hrs.**
	DSE-H2 **4 credit** **Select one option**	**Elective (Select any one)**							
		B-23 CHE -804	Advanced Chemistry-IV	**4**	**4**	**30**	**70**	**100**	**3 hrs.**

		B-23 CHE -805	Advanced Chemistry-V	**4**	**4**	**30**	**70**	**100**	**3 hrs.**
		B-23 CHE -806	Advanced Chemistry-VI	**4**	**4**	**30**	**70**	**100**	**3 hrs.**
	PC-H2 **4 credit**	B-23 CHE -807	Practical Chemistry	**4**	**8**	**30**	**70**	**100**	**6 hrs.**
	CC-HM2 **4 credit**	**From Available Minor of 4 credits as per NEP**							
OR SEMESTER-8 (FOR HONOURS WITH RESEARCH IN Chemistry)									
Remarks	**Course**	**Paper(s)**	**Nomenclature of Paper**	**Credits**	**Hours/ Week**	**Internal marks**	**External Marks**	**Total Marks**	**Exam Duration**
Honours with Research in Chemistry	**CC-H4** **4 credit**	B-23 CHE -801	Physical Chemistry-IV	**4**	**4**	**30**	**70**	**100**	**3 hrs.**
(For Scheme B & C)	**CC-H5** **4 credit**	B-23 CHE -802	Inorganic Chemistry-IV	**4**	**4**	**30**	**70**	**100**	**3 hrs.**
	Project/Dissertation **12 credit**	B-23 CHE -809	Dissertation/project in chemistry	**8+4**	**-**	**-**	**-**	**-**	**-**
	CC-HM2 **4 credit**	**From Available Minor of 4 credits as per NEP**							

CC-1/ MCC-1

Session: 2023-24			
Part A - Introduction			
Subject	Chemistry		
Semester	I		
Name of the Course	**Chemistry-I**		
Course Code	B23-CHE-101		
Course Type: (CC/MCC/MDC/CC-M/DSEC/VOC/DSE/PC/AEC/VAC)	CC/MCC		
Level of the course (As per Annexure-I	100-199		
Pre-requisite for the course (if any)	4.0		
Course Learning Outcomes(CLO):	After completing this course, the learner will be able to: 1. Enable to understand the basis of quantum mechanics and structural idea and relevance in describing shapes of s, p and d orbitals. 2. To learn about role of temperature and pressure to establish the state of gases and describe the concept of critical constants of real gases. 3. Get knowledge about the electrophile/nucleophile and its role in mechanism of preparation of organic compounds. 4. To know the physical properties, morphology and crystalline study of liquid and different type of solids. 5*. Hand on practice in preparation of solutions, compounds, estimation and determination of physical properties of some compounds.		
Credits	Theory	Practical	Total
	3	1	4

Contact Hours	45	30	75
Max. Marks:70+30* Internal Assessment Marks:20+10* End Term Exam Marks: 50+20*		**Time:03 + 03***	

Part B- Contents of the Course

Instructions for Paper- Setter

Note: The examiner is requested to set nine questions in all, selecting two questions from each SECTION and one question (Question No.1 based on entire syllabus will consist of short answer type. All questions carry equal marks. The candidate is required to attempt five questions in all selecting one from each SECTION. Question No.1 is compulsory. Log table and non-programmable calculator is allowed.

Unit	Topics	Contact Hours
I	**Atomic Structure** Dual behaviour of matter and radiation, de Broglie's relation, Heinsenberg's uncertainty principle, concept of atomic orbitals, significance of quantum numbers, radial and angular wave functions, normal and orthogonal wave functions, significance of Ψ and Ψ^2, shapes of s, p, d, f orbitals, Rules for filling electrons in various orbitals, effective nuclear charge, Slater's rules. **Periodic table and atomic properties** Classification of periodic table, definition of atomic and ionic radii, ionisation energy, electron affinity and electronegativity, trend in periodic table (in s and p-block elements), Pauling, Mulliken, Allred Rachow and Mulliken Jaffe's electronegativity scale, Sanderson's electron density ratio.	12
II	**Gaseous State** Kinetic theory of gases, Maxwell's distribution of velocities and energies (derivation excluded) Calculation of root mean square velocity, average velocity, and most probable velocity. Collision diameter, collision number, collision frequency and mean free path (Derivations excluded), Deviation of Real gases from ideal behaviour, Derivation of Van der Waal' s Equation of State, its application in the calculation of Boyle' s temperature (compression	11

	factor) **Critical Phenomenon** Concept of Critical temperature, critical pressure, critical volume, relationship between critical constants and Van der Waal' s constants (Derivation excluded).	
III	**Structure and Bonding** Localized and delocalized chemical bond, Van der Waals interactions. Concept of resonance and its applications, hyperconjugation, inductive effect, Electromeric effect and their comparison. **Mechanism of Organic Reactions** Curved arrow notation, homolytic and heterolytic bond fission. Types of reagents: electrophiles and nucleophiles. Types of organic reactions: Substitution, Addition, Condensation, Elimination, Rearrangement, Isomerization and Pericyclic reactions. Reactive intermediates: Carbocations, carbanions, free radicals, carbenes (structure & stability).	11
IV	**Liquid State** Structure of liquids, Properties of liquids – surface tension, refractive index, viscosity, vapour pressure and optical rotation. **Solid State** Classification of solids, Law of constancy of interfacial angles, law of rational indices, Miller indices, elementary ideas of symmetry and symmetry elements, seven crystal systems and fourteen Bravais lattices; X-ray diffraction, Bragg's law, a simple account of Laue method, rotating crystal method and powder pattern method.	11
V*	1. **Acid/Base titration:** Determination of strength of oxalic acid using NaOH. 2. **Redox titrations:** Determination of Fe^{2+} ions using $KMnO_4$. 3. To determine the surface tension of given liquid using Stalagmometer by drop no. methods. 4. Preparation of *m*-Dinitrobenzne from Nitrobenzene (use 1:2 conc. HNO_3-H_2SO_4 mixture if fuming HNO_3 is not available)	30

	5. Preparation of p-Bromoacetanilide from Acetanilide	
Suggested Evaluation Methods		
Internal Assessment:20+10* ➢ **Theory** • Class Participation: 5 • Seminar/presentation/assignment/quiz/class test etc.: 5 • Mid-Term Exam: 10 ➢ **Practicum** • Class Participation: NA • Seminar/Demonstration/Viva-voce/Lab records etc.: 10 • Mid-Term Exam: NA		**End Term Examination:** 50+20*
Part C-Learning Resources		

Recommended Books/e-resources/LMS:

1. Lee, J.D.; (2010),**Concise Inorganic Chemistry**, Wiley India.
2. Kapoor, K.L. (2015),**A Textbook of Physical Chemistry**, Vol 1, 6 th Edition, McGraw HillEducation.
3. Clayden, J.; Greeves, N.; Warren, S. (2012), **Organic Chemistry**, Oxford.
4. Morrison, R. N.; Boyd, R. N. **Organic Chemistry**, Dorling Kindersley (India) Pvt. Ltd. (Pearson Education).
5. Khosla, B.D.; Garg, V.C.; Gulati, A. (2015),**Senior Practical Physical Chemistry**, R. Chand &Co, New Delhi.
6. Jeffery, G.H.; Bassett, J.; Mendham, J.; Denney, R.C. (1989),**Vogel's Textbook of QuantitativeChemical Analysis,** John Wiley and Sons.

*Applicable for courses having practical component.

MCC-2

Session: 2023-24			
Part A - Introduction			
Subject	Chemistry		
Semester	I		
Name of the Course	**Physical Chemistry-I**		
Course Code	B23-CHE-102		
Course Type: (CC/MCC/MDC/CC-M/DSEC/VOC/DSE/PC/AEC/VAC)	MCC		
Level of the course (As per Annexure-I)	100-199		
Pre-requisite for the course (if any)	4.0		
Course Learning Outcomes(CLO):	After completing this course, the learner will be able to: 1. Get the knowledge of concepts of rates of chemical reactions and its application in determination of order of various reactions. 2. Get the knowledge of various thermodynamic variables and properties. 3. To learn about the concepts of physical and thermodynamic functions in different reversible reactions and get the knowledge of molecular structure. 4. To learn about the various properties of molecules related to its magnetic behavior. 5*. Hand on practice in preparation of solutions, compounds, estimation and determination of physical properties of some compounds.		
Credits	Theory	Practical	Total
	3	1	4
Contact Hours	45	30	75

Max. Marks:70+30* **Internal Assessment Marks:20+10*** **End Term Exam Marks:** 50+20*	**Time:03 + 03 hrs**

Part B- Contents of the Course

Instructions for Paper- Setter

Note: The examiner is requested to set nine questions in all, selecting two questions from each SECTION and one question (Question No.1 based on entire syllabus will consist of short answer type. All questions carry equal marks. The candidate is required to attempt five questions in all selecting one from each SECTION. Question No.1 is compulsory. Log table and non-programmable calculator is allowed.

Unit	Topics	Contact Hours
I	**Chemical Kinetics**: Kinetics Rate of reaction, rate equation and its types, factors influencing the rate of a reaction – concentration, temperature, pressure, solvent, light, catalyst. Order and molecularity of a reaction, integrated rate expression for zero order, first order, second and third order reactions (for equal and unequal concentrations of reactants), methods of determination of order of reaction, Half-life period of a reaction. Effect of temperature on the rate of reaction – Arrhenius equation.	12
II	**Chemical Kinetics &Thermodynamics:** Theories of reaction rate – Simple collision theory for unimolecular collision. Transition state theory of bimolecular reactions. Definition of thermodynamic terms: system, surrounding etc. Types of systems, intensive and extensive properties. State and path functions and their differentials. Thermodynamic process. Thermodynamic equilibrium, Concept of heat and work. First law of thermodynamics: statement, concepts of internal energy and enthalpy. Heat capacity, heat capacities at constant volume and pressure and their relationship.	11
III	**Thermodynamics, Physical Properties and Molecular Structure-I:** Joule–Thomson coefficient for ideal gas and real gas and inversion temperature. Calculation of w, q, dU & dH for the expansion of ideal gases under isothermal and adiabatic conditions for reversible process.	11

	Optical activity, polarization – (Clausius – Mossotti equation-derivation excluded). Orientation of dipoles in an electric field, dipole moment, induced dipole moment.	
IV	**Physical Properties and Molecular Structure-II:** Measurement of dipole moment-temperature method and refractivity method, dipole moment and structure of molecules, Magnetic permeability, magnetic susceptibility and its determination. Application of magnetic susceptibility, magnetic properties – paramagnetism, diamagnetism and ferromagnetism.	11
V*	1. **Acid/Base titration:** Determination of strength of HCl using NaOH. 2. **Redox titrations:** Determination of $C_2O_4^{2-}$ ions using $KMnO_4$. 3. To determine the surface tension of given liquid using Stalagmometer by drop weight methods. 4. To study the effect of surfactant on surface tension of water. 5. To study the process of sublimation of Camphor and Phthalic acid.	30
Suggested Evaluation Methods		
Internal Assessment: 20+10* ➢ **Theory** • Class Participation: 5 • Seminar/presentation/assignment/quiz/class test etc.: 5 • Mid-Term Exam: 10 **Practicum** • Class Participation: NA • Seminar/Demonstration/Viva-voce/Lab records etc.: 10 • Mid-Term Exam: NA		**End Term Examination:** **50+20***
Part C-Learning Resources		

Recommended Books/e-resources/LMS:

1. Atkins, P.W.; Paula, J.de. (2014),**Atkin's Physical Chemistry Ed**., 10th Edition, OxfordUniversity Press.
2. Ball, D. W. (2017),**Physical Chemistry,** 2 nd Edition,Cengage Learning, India.
3. Castellan, G. W. (2004),**Physical Chemistry**, 4 th Edition, Narosa.
4. Kapoor, K.L. (2015),**A Textbook of Physical Chemistry**, Vol 1, 6 th Edition, McGrawHillEducation.
5. Khosla, B.D.; Garg, V.C.; Gulati, A. (2015),**Senior Practical Physical Chemistry**, R. Chand &Co, New Delhi.
6. Garland, C. W.; Nibler, J. W.; Shoemaker, D. P.(2003),**Experiments in Physical Chemistry**, 8 thEdition, McGraw-Hill, New York.

*Applicable for courses having practical component.

CC-M1

Session: 2023-24			
Part A - Introduction			
Subject	Chemistry		
Semester	I		
Name of the Course	**Minor Chemistry-I**		
Course Code	B23-CHE-103		
Course Type: (CC/MCC/MDC/CC-M/DSEC/VOC/DSE/PC/AEC/VAC)	CC-M		
Level of the course (As per Annexure-I	100-199		
Pre-requisite for the course (if any)	4.0		
Course Learning Outcomes(CLO):	After completing this course, the learner will be able to: 1. To understand the basics of Covalent bonding in simple molecules. 2. To get the basics of rates of chemical reactions and factors affecting it. 3. To learn about the nomenclature, classification and methods of preparation of alkenes. 4. To learn about qualitative knowledge of conductors, semiconductors and insulates.		
Credits	Theory	Practical	Total
	2	-	2
Contact Hours	30	-	30
Max. Marks:50 **Internal Assessment Marks:15** **End Term Exam Marks:** 35		**Time:03 hrs**	
Part B- Contents of the Course			

Instructions for Paper- Setter

Note: The examiner is requested to set nine questions in all, selecting two questions from each SECTION and one question (Question No.1 based on entire syllabus will consist of short answer type. All questions carry equal marks. The candidate is required to attempt five questions in all selecting one from each SECTION. Question No.1 is compulsory. Log table and non-programmable calculator is allowed.

Unit	Topics	Contact Hours
I	**Covalent Bond** Valence bond theory approach, shapes of simple inorganic molecules and ions based on valence shell electron pair repulsion (VSEPR) theory and hybridization with suitable examples of linear, trigonal planar, square planar, tetrahedral, trigonal bipyramidal and octahedral arrangements. Molecular orbital theory of homonuclear (N_2, O_2) and heteronuclear (CO and NO) diatomic molecules, dipole moment and percentage ionic character in covalent bond.	8
II	**Chemical Kinetics** Concept of reaction rates, rate equation, factors influencing the rate of reaction, Order and molecularity of a reaction, integrated rate expression for zero, first, second order reactions (for equal conc. of reactants), Half-life period of a reaction.	8
III	**Alkanes (upto 5 carbon atoms)** Alkanes, nomenclature, classification of carbon atoms in alkanes. Isomerism in alkanes, sources, methods of formation: Wurtz reaction, Kolbe reaction, Corey-House reaction and decarboxylation of carboxylic acids, physical properties. Mechanism of free radical halogenation of alkanes: reactivity and selectivity.	7
IV	**Metallic Bond and semiconductors** Metallic bond – Qualitative idea of valence bond and Band theories of metallic bond (conductors, semiconductors, insulators). Semiconductors – Introduction, types, and applications.	7

Suggested Evaluation Methods		
Internal Assessment: 15 ➢ **Theory** • Class Participation: 4 • Seminar/presentation/assignment/quiz/class test etc.: 4 • Mid-Term Exam: 7		**End Term Examination:** **35**
Part C-Learning Resources		
Recommended Books/e-resources/LMS: 1. Dhawan S.N.,Organic Chemistry, Vol 1 Pardeep Publication.		

*Applicable for courses having practical component.

MDC-1

Session: 2023-24			
Part A - Introduction			
Subject	Chemistry		
Semester	I		
Name of the Course	**Introductory Chemistry-I**		
Course Code	B23-CHE-104		
Course Type: (CC/MCC/MDC/CC-M/DSEC/VOC/DSE/PC/AEC/VAC)	MDC		
Level of the course (As per Annexure-I	0-99		
Pre-requisite for the course (if any)	Higher secondary other than science discipline		
Course Learning Outcomes(CLO):	After completing this course, the learner will be able to: 1. To get knowledge about structure and bonding. 2. To learn about hydrocarbons and their applications. 3. To get aware about different polymers. 4. To get knowledge about preservative. 5* To get knowledge about experiments related to daily life.		
Credits	Theory	Practical	Total
	2	1	3
Contact Hours	30	30	60
Max. Marks:50+25* **Internal Assessment Marks:15+5*** **End Term Exam Marks:** 35+20*		**Time:03 + 03 hrs**	
Part B- Contents of the Course			
Instructions for Paper- Setter **Note:** The examiner is requested to set nine questions in all, selecting two questions from each			

SECTION and one question (Question No.1 based on entire syllabus will consist of short answer type. All questions carry equal marks. The candidate is required to attempt five questions in all selecting one from each SECTION. Question No.1 is compulsory. Log table and non-programmable calculator is allowed.

Unit	Topics	Contact Hours
I	**Atomic Structure and Bonding** Introduction, Elementary introduction of atomic structure and chemical bonding, Representation of elements/ atoms, Lewis structure, electronic configurations (1-30)	8
II	**Carbon and Its Compounds** Introduction, Tetravalency of Carbon, allotropes of carbon and their properties, hydrocarbons (1-5), nomenclature (linear compounds), Applications of hydrocarbons.	8
III	**Polymers** Introduction, elementary idea of synthetic and natural polymers, Homo polymers and copolymers, uses and properties (Natural rubber, Vulcanized rubber, Polyethene, PVC, Styrene, Teflon, PAN, Nylon-66)	7
IV	**Food Preservatives** Elementary idea of natural and synthetic food preservatives, rancidity, uses and properties, different food preservation processes (pickle, Jam), artificial sweeteners, uses and properties	7
V*	**Practicals:** 1. Identify the pH of the given samples through pH strip. 2. Experiments related to persevering food items. 3. Preparation of Artificail Silk. 4. To senthesize some polymers asper available resources.	30
Suggested Evaluation Methods		

Internal Assessment: 15+5* ➢ **Theory** • Class Participation: 4 • Seminar/presentation/assignment/quiz/class test etc.: 4 • Mid-Term Exam: 7 **Practicum** • Class Participation: NA • Seminar/Demonstration/Viva-voce/Lab records etc.: 5 • Mid-Term Exam: NA	**End Term Examination:** **35+20***

Part C-Learning Resources

Recommended Books/e-resources/LMS:

1. Dhawan S.N.,Organic Chemistry, Vol 1 Pardeep Publication.

2. Subbulakshmi G, Food processing and preservation, New Age International Publishers.

3. Manas Chanda, 2013, Introduction to Polymer Science and Chemistry 2nd Edition,

Making Rayon Fiber - Artificial silk, chemical experiment!

How to make silk from cotton wool ("Artificial silk" experiment)

Neelam Seedher, Basic Concepts: Physical Chemistry Experiments, Kindley Edition

*Applicable for courses having practical component.

CC-2/MCC-3

Session: 2023-24			
Part A - Introduction			
Subject	Chemistry		
Semester	II		
Name of the Course	**Chemistry-II**		
Course Code	B23-CHE-201		
Course Type: (CC/MCC/MDC/CC-M/DSEC/VOC/DSE/PC/AEC/VAC)	CC/MCC		
Level of the course (As per Annexure-I	100-199		
Pre-requisite for the course (if any)	4.0		
Course Learning Outcomes(CLO):	After completing this course, the learner will be able to: 1. Able to understand the theories which governs the shape, structure and ionic behavior, polarizability, ionic structures and concept of Lattice energy of crystals of molecules. 2. To know the basics of rates of chemical reactions ,the laws and solubility behavior of solutes in different compositions of solvents 3. To know about alkanes, alkene, cycloalkanes and their chemical reactions. 4. To understand about weak interactions and bonding in metals. 5*. Hand on practice for estimation and determination of viscosity, specific refractivity properties of some compounds.		
Credits	Theory	Practical	Total
	3	1	4
Contact Hours	45	30	75

Max. Marks:70+30* **Internal Assessment Marks:20+10*** **End Term Exam Marks:** 50+20*	**Time:03+03***

Part B- Contents of the Course

Instructions for Paper- Setter

Note: The examiner is requested to set nine questions in all, selecting two questions from each SECTION and one question (Question No.1 based on entire syllabus will consist of short answer type. All questions carry equal marks. The candidate is required to attempt five questions in all selecting one from each SECTION. Question No.1 is compulsory. Log table and non-programmable calculator is allowed.

Unit	Topics	Contact Hours
I	**Covalent Bond** Valence bond theory approach, shapes of simple inorganic molecules and ions based on valence shell electron pair repulsion (VSEPR) theory and hybridization with suitable examples of linear, trigonal planar, square planar, tetrahedral, trigonal bipyramidal and octahedral arrangements. Molecular orbital theory of homonuclear (N_2, O_2) and heteronuclear (CO and NO) diatomic molecules, dipole moment and percentage ionic character in covalent bond. **Ionic Solids** Ionic structures (NaCl, CsCl, ZnS (Zinc blende), CaF_2) size effects, radius ratio rule and its limitations, Concept of Lattice energy, Born- Haber cycle, Solvation energy and its relationship with solubility of Ionic solids, Polarizing power and Polarisability of ions, Fajan's rule.	11
II	**Chemical Kinetics** Concept of reaction rates, rate equation, factors influencing the rate of reaction, Order and molecularity of a reaction, integrated rate expression for zero, first, Half-life period of a reaction, Arrhenius equation. **Distribution Law** Nernst distribution law – its thermodynamic derivation, Nernst distribution law after association and dissociation of solute in one of the phases, of distribution law: (i) Determination of degree of hydrolysis and hydrolysis constant of aniline hydrochloride	12

III	**Alkanes and Cycloalkanes** Nomenclature, classification of carbon atoms in alkanes and its structure. Isomerism in alkanes, sources. Methods of formation: Wurtz reaction, Kolbe reaction, Corey- House reaction and decarboxylation of carboxylic acids, physical properties. Mechanism of free radical halogenation of alkanes: reactivity and selectivity. Nomenclature of Cycloalkanes, Baeyer' s strain theory and its limitations, theory of strainless r ings. **Alkenes** Nomenclature of alkenes and its structure. Methods of formation: dehydration of alcohols, dehydrohalogenation of alkyl halide, Hofmann elimination and their mechanism. The Saytzeff rule and relative stabilities of alkenes. Chemical reactions: electrophilic and free radical additions, addition of halogens, halogen acids, hydroboration–oxidation, oxymercuration-reduction, ozonolysis and hydration. Markownikoff's rule of addition.	11
IV	**Hydrogen Bonding and Van der Waals forces** Hydrogen Bonding – Definition, types, effects of hydrogen bonding on properties of substances, application Brief discussion of various types of Van der Waals forces. **Metallic Bond and semiconductors** Metallic bond – Qualitative idea of valence bond and Band theories of metallic bond (conductors, semiconductors, insulators). Semiconductors – Introduction, types, and applications.	11
V*	1. **Complexometric titrations:** Determination of Mg^{2+} by EDTA. 2. **Paper Chromatography:** Qualitative Analysis of any one of the following Inorganic cations and anions by paper chromatography (Pb^{2+}, Cu^{2+}, Ni^{2+}, Cl^{-}, Br^{-} , and PO_4^{3-} and NO_3^{-}). 3. To determine the viscosity of given liquid using Ostwald's Viscometer. 4. To determine the specific refractivity of at least two liquids by Refractometer. 5. Separation of mixture of two Organic Compounds by TLC.	30

Suggested Evaluation Methods	
Internal Assessment:20+10* • **Theory** • Class Participation: 5 • Seminar/presentation/assignment/quiz/class test etc.: 5 • Mid-Term Exam: 10 **Practicum** • Class Participation: NA • Seminar/Demonstration/Viva-voce/Lab records etc.: 10 • Mid-Term Exam: NA	**End Term Examination:** 50+20*

Part C-Learning Resources

Recommended Books/e-resources/LMS:

1. Lee, J.D.; (2010), **Concise Inorganic Chemistry**, Wiley India.
2. Kapoor, K.L. (2015), **A Textbook of Physical Chemistry**, Vol 1, 6 th Edition, McGraw HillEducation.
3. Clayden, J.; Greeves, N.; Warren, S. (2012), **Organic Chemistry**, Oxford.
4. Morrison, R. N.; Boyd, R. N. **Organic Chemistry**, Dorling Kindersley (India) Pvt. Ltd. (Pearson Education).
5. Khosla, B.D.; Garg, V.C.; Gulati, A. (2015), **Senior Practical Physical Chemistry**, R. Chand &Co, New Delhi.
6. Jeffery, G.H.; Bassett, J.; Mendham, J.; Denney, R.C. (1989),**Vogel's Textbook of QuantitativeChemical Analysis,** John Wiley and Sons.

*Applicable for courses having practical component.

DSEC-1

Session: 2023-24			
Part A - Introduction			
Subject	Chemistry		
Semester	II		
Name of the Course	**Chemistry Skill-I**		
Course Code	B23-CHE-202		
Course Type: (CC/MCC/MDC/CC-M/DSEC/VOC/DSE/PC/AEC/VAC)	DSEC		
Level of the course (As per Annexure-I	100-199		
Pre-requisite for the course (if any)	4.0		
Course Learning Outcomes(CLO):	After completing this course, the learner will be able to: 1. Aware about lab handling and handling of hazardous chemicals. 2. Determine percentage purity and knowledge to prepare buffer solutions. 3. To Know preparation of complexometric titration and purification techniques. 4. To get operating knowledge of different instruments. _____ 5*.To get practical knowledge about complexometric titrations and paper chromatography. Also determination some physical properties of some compounds/ solutions.		
Credits	Theory	Practical	Total
	3	1	4
Contact Hours	45	30	75
Max. Marks:70+30* **Internal Assessment Marks:20+10*** **End Term Exam Marks:** 50+20*		**Time:03+03***	

Part B- Contents of the Course		
Instructions for Paper- Setter **Note:** The examiner is requested to set nine questions in all, selecting two questions from each SECTION and one question (Question No.1 based on entire syllabus will consist of short answer type. All questions carry equal marks. The candidate is required to attempt five questions in all selecting one from each SECTION. Question No.1 is compulsory. Log table and non-programmable calculator is allowed.		
Unit	**Topics**	**Contact Hours**
I	Familiarization with chemical labeling, Handling of hazardous chemicals, Handling of glassware. Sodium metal disposal, Familiarization with chemical concepts related to solution preparation and standardization: Equivalent mass, molar mass, specific gravity, concentration (Normality, Molarity, Molality, %w/v, %w/w, %v/v, ppm, ppb solutions), Basicity, acidity, solutions of oxidizing and reducing agents.	12
II	Determination of concentration and percentage purity. Standardization of solutions, Knowledge about primary and secondary standards. Knowledge about indicators and preparation of indicator solutions, Knowledge about buffers and preparation of buffer solutions.	11
III	Preparation of complexometric solutions (e.g. EDTA solutions) and titrations, Management of chemical waste. Purification of chemicals through distillation, crystallization, sublimation etc. Operating knowledge including calibration, handling and maintenance of Potentiometers and conductometer.	11
IV	Knowledge about different electrodes (e.g., Ag, Pt, SCE, Ag/AgCl) and their upkeep, Operating knowledge including calibration and maintenance of pH-meters and glass electrode, Operating knowledge including calibration and maintenance of refractometer, polarimeter, Flame-photometer, Spectrophotometer, Interferometer and Dipole meter	11
V*	1. **Complexometric titrations:** Determination of Zn^{2+} by EDTA.	30

	2. **Paper Chromatography:** Qualitative Analysis of any two of the following Inorganic cations and anions by paper chromatography (Pb^{2+}, Cu^{2+}, Ca^{2+}, Ni^{2+}, Cl^{-}, Br^{-} , I^{-} and PO_4^{3-} and NO_3^{-}). 3. To determine the viscosity of given liquid using Ostwald's Viscometer. 4. To determine the specific refractivity of at least three liquids by Refractometer. 5. Preparation of Dibenzalacetone from Acetone and Benzaldehyde 6. Preparation of 2,4-DNP derivative of Benzophenone. 7. Separation of mixture of two Organic Compounds by TLC.	
Suggested Evaluation Methods		
Internal Assessment:20+10* **Theory** • Class Participation: 5 • Seminar/presentation/assignment/quiz/class test etc.:5 • Mid-Term Exam: 10 **Practicum** • Class Participation: NA • Seminar/Demonstration/Viva-voce/Lab records etc.: 10 • Mid-Term Exam: NA		**End Term Examination: 50+20***
Part C-Learning Resources		
Recommended Books/e-resources/LMS: 1. Khosla, B.D.; Garg, V.C.; Gulati, A. (2015),Senior Practical Physical Chemistry, R. Chand &Co, New Delhi. 2. Jeffery, G.H.; Bassett, J.; Mendham, J.; Denney, R.C. (1989),Vogel's Textbook of QuantitativeChemical Analysis, John Wiley and Sons.		

*Applicable for courses having practical component.

CC-M2

Session: 2023-24			
Part A - Introduction			
Subject	Chemistry		
Semester	II		
Name of the Course	**Minor Chemistry-II**		
Course Code	B23-CHE-203		
Course Type: (CC/MCC/MDC/CC-M/DSEC/VOC/DSE/PC/AEC/VAC)	CC-M		
Level of the course (As per Annexure-I	100-199		
Pre-requisite for the course (if any)	4.0		
Course Learning Outcomes(CLO):	After completing this course, the learner will be able to: 1. To know the basics of periodic properties and hybridization. 2. To learn about the ionic solids. 3. Understand about the semiconductors and metallic bonds. 4. Get the knowledge of stereochemistry of simple organic molecules.		
Credits	Theory	Practical	Total
	2		2
Contact Hours	30		30
Max. Marks:50 **Internal Assessment Marks:15** **End Term Exam Marks: 35**		**Time:03 hrs**	
Part B- Contents of the Course			
Instructions for Paper- Setter			

Note: The examiner is requested to set nine questions in all, selecting two questions from each SECTION and one question (Question No.1 based on entire syllabus will consist of short answer type. All questions carry equal marks. The candidate is required to attempt five questions in all selecting one from each SECTION. Question No.1 is compulsory. Log table and non-programmable calculator is allowed.

Unit	Topics	Contact Hours
I	**Periodic table and atomic properties** **Atomic properties**: atomic and ionic radii, ionisation energy, electron affinity and electronegativity definition, methods of determination or evaluation, trend in periodic table, effective nuclear charge, Slater's rules. Directional characteristics of covalent bond, various type of hybridisation and shapes of simple inorganic molecules and ions (BeF_2, BF_3, CH_4, PF_5, SF_6, IF_7, SO_4^{-2}, ClO_4^{-1}, NO_3^{-1}	8
II	**Ionic Solids:** Stoichiometric and Non-stoichiometric defects in crystals, Lattice energy and Born- Haber cycle, Solvation energy and its relationship with solubility of Ionic solids, Polarizing power and Polarisability of ions, Fajan's rule. Metallic bond – Qualitative idea of valence bond and Band theories of metallic bond (conductors, semiconductors, insulators)	8
III	**Metallic Bond and semiconductors** Semiconductors – Introduction, types, and applications. Structure and Bonding in Organic Compounds Localized and delocalized chemic al bond, Van der Waal's interactions, resonance: conditions, resonance effect and its applications, hyperconjugation, inductive effect, Electromeric effect & their comparison.	7
IV	**Stereochemistry of Organic Compounds** Concept of isomerism. Types of isomerism. Optical isomerism, element s of symmetry, enantiomers, stereo genic centre, optical activity, properties of enantiomers, chiral and achiral molecules (upto two stereo genic centres), diastereomers, threo and erythro diastereomers, meso compounds Relative and absolute configuration, sequence rules, R & S systems of nomenclature. Geometrical isomerism. Determination of configuration of geometric isomers.	7

V*		

Suggested Evaluation Methods	
Internal Assessment: 15 • **Theory** • Class Participation: 4 • Seminar/presentation/assignment/quiz/class test etc.: 4 • Mid-Term Exam: 7	**End Term Examination:** **35**

Part C-Learning Resources

Recommended Books/e-resources/LMS:

1. Huheey, J.E.; Keiter, E.A.; Keiter; R. L.; Medhi, O.K. (2009),**Inorganic**
2. **Chemistry- Principles ofStructure and Reactivity**, Pearson ducation.
3. Atkins, P.W.; Paula, J.de. (2014),**Atkin's Physical Chemistry Ed**., 10th Edition, Oxford UniversityPress.
4. Kapoor, K.L.(2015),**A Textbook of Physical Chemistry**,Vol 1, 6 th Edition, McGraw HillEducation.
5. Nasipuri, D.(2018), **Stereochemistry of Organic Compounds: Principles and Applications**, 3 rd Edition, New Age International.
6. Gunstone, F. D. (1975), **Guidebook to Stereochemistry**, Prentice Hall Press.

*Applicable for courses having practical component.

MDC-2

Session: 2023-24			
Part A - Introduction			
Subject	Chemistry		
Semester	II		
Name of the Course	**Introductory Chemistry-II**		
Course Code	B23-CHE-204		
Course Type: (CC/MCC/MDC/CC-M/DSEC/VOC/DSE/PC/AEC/VAC)	MDC		
Level of the course (As per Annexure-I)	0-99		
Pre-requisite for the course (if any)	Higher secondary other than science discipline		
Course Learning Outcomes(CLO):	After completing this course, the learner will be able to: 1. To learn about role of Indian scientists in the upliftment of research 2.To learn about classification of elements with their properties 3.To learn about three states of matter 4.To get more knowledge about role of fertilizers in fertility of soil 5*.To learn about acid- base reaction in daily life		
Credits	Theory	Practical	Total
	2	1	3
Contact Hours	30	30	60
Max. Marks:50+25* Internal Assessment Marks:15+5* End Term Exam Marks: 35+20*		**Time:03+03***	
Part B- Contents of the Course			

Instructions for Paper- Setter

Note: The examiner is requested to set nine questions in all, selecting two questions from each SECTION and one question (Question No.1 based on entire syllabus will consist of short answer type. All questions carry equal marks. The candidate is required to attempt five questions in all selecting one from each SECTION. Question No.1 is compulsory. Log table and non-programmable calculator is allowed.

Unit	Topics	Contact Hours
I	**Renowned Indian Scientists** Brief Biography of Renowned Indian Scientists (Hargobind Khurana, Dr. P.C. Ray, Sir C.V. Raman, Dr. A.P.J. Abdul Kalam, C. N. R. Rao, Dr. Vikram Sara Bhai, Dr. Homi Jahangir Bhabha, Dr. J.C. Bose, Dr. S. N. Bose)	8
II	**Metal and Non-Metals** Periodic table, classification of elements, physical and chemical aspects of metals and non-metals, Ore and Minerals of Iron, Copper, Aluminium, alloys	8
III	**Physical Properties of Matter** Classification of matter, properties, uses, ideal gas equation, real gas equation, some important compounds (baking soda, washing soda, plaster of Paris, gypsum,, glass)	7
IV	**Soil and fertilizers** Green revolution, soil: types of soil and their components for fertility, grow condition, pH, irrigation, biofertilizers, chemical fertilizers and their uses, acid rain.	7
V*	**Practicals:** 1. To prepare Plaster of Paris 2. To prepare Potash Alum 3. To study the effect of acid on Baking and washing soda 4. To perform the action of water on quick lime and identify the nature of reaction (Exo/Endothermic)	30
Suggested Evaluation Methods		

Internal Assessment: 15+5* **Theory** • Class Participation: 4 • Seminar/presentation/assignment/quiz/class test etc.: 4 • Mid-Term Exam: 7 **Practicum** • Class Participation: NA • Seminar/Demonstration/Viva-voce/Lab records etc.: 5 • Mid-Term Exam: NA	**End Term Examination:** **35+20***

Part C-Learning Resources

Recommended Books/e-resources/LMS:

1. Chemistry In Daily Life : Third Edition by Kirpal Singh , PHI Learning
2. General Chemistry: Principles, Patterns, and Applications, Bruce Averill, Strategic Energy Security Solution, Patricia Eldredge, R.H. Hand, LLC, Copyright Year: 2011
3. The Great Indian Scientists Paperback – 1 January 2017, Cengage Learning India

*Applicable for courses having practical component.

CC-3/MCC-4

Session: 2023-24	
Part A - Introduction	
Subject	Chemistry
Semester	III
Name of the Course	**Chemistry-III**
Course Code	B23-CHE-301
Course Type: (CC/MCC/MDC/CC-M/DSEC/VOC/DSE/PC/AEC/VAC)	CC/MCC
Level of the course (As per Annexure-I	100-199
Pre-requisite for the course (if any)	4.0
Course Learning Outcomes(CLO):	After completing this course, the learner will be able to: 1. To learn about the structure of S and P-block elements, their properties and discuss their use in daily life as well as industrial applications. 2. To understand about various laws and theories related to eletrochemistry-I and know about their thermodynamic properties. 3. To understand about variation of conductance studies with concentration and explain with many phenomenon. 4. The fundamental properties, structures and reactivity of organic compounds such alkene, alkyne arenes, alkyl and aryl halide etc. 5.* Learning about reaction mechanism and predict the outcome of the reactions. 6. How to distinguish between the organic compounds by use of different chemical tests.

Credits	Theory	Practical	Total
	3	1	4
Contact Hours	45	30	75

Max. Marks:70+30* **Internal Assessment Marks:20+10*** **End Term Exam Marks:** 50+20*	**Time:03+03***

Part B- Contents of the Course

Instructions for Paper- Setter

Note: The examiner is requested to set nine questions in all, selecting two questions from each SECTION and one question (Question No.1 based on entire syllabus will consist of short answer type. All questions carry equal marks. The candidate is required to attempt five questions in all selecting one from each SECTION. Question No.1 is compulsory. Log table and non-programmable calculator is allowed.

Unit	Topics	Contact Hours
I	**s and p-Block Elements** Salient features of hydrides, oxides, halides, hydroxides of s-block elements (methods of preparation excluded). Structure, preparation and properties of Diborane and Borazine. Catenation, carbides, fluorocarbons, silicates (structural aspects), structure of oxides of Nitrogen and Phosphorous, structure of white and red phosphorus. Structure of oxyacids of Nitrogen, phosphorous, sulphur and chlorine and comparison of acidic strength of oxyacids. low chemical reactivity of noble gases, chemistry of xenon, structure and bonding in fluorides, oxides and oxyfluorides of xenon.	11
II	**Electrochemistry-I** Electrolytic conduction, factors affecting electrolytic conduction, specific conductance, molar conductance, equivalent conductance and relation among them, their variation with concentration. Application of Kohlrausch' s Law in calculation of conductance of weak electrolytes at infinite dilution (Numericals) Concepts of pH and pK_a, Buffer solution, Buffer action, Henderson – Hazel equation, Buffer mechanism of buffer action. **Electrochemistry-II**	11

	Reversible & irreversible cells, Calculation of thermodynamic quantities of cell reaction (▲G, ▲H & K). Types of reversible electrodes – metal- metal ion, gas electrode, metal – insoluble salt- anion and redox electrodes. Nernst equation, Standard Hydrogen electrode, reference electrodes, Applications of EMF measurement in solubility product and potentiometric titrations using glass electrode.	
III	**Alkynes** Nomenclature and its structure. Methods of formation: using Calcium carbide, dehydrohalogenation, Kolbe's electrolysis. Chemical reactions: Mechanism of electrophilic and nucleophilic addition reactions, formation of metal acetylides, addition of bromine and alkaline KMnO4, ozonolysis. Acidity of alkynes. **Stereochemistry of Organic Compounds** Concept of isomerism: Structural and Stereoisomerism. Symmetry elements, enantiomers, optical activity, properties of enantiomers, chiral and achiral molecules (up-to 2 asymmetric centres), diastereomers, threo- and erythro- nomenclature, meso-compounds, Relative and absolute configuration, sequence rules, R and S system of nomenclature. Cis- Trans isomerism, E & Z system of nomenclature, Conformational analysis of ethane and n-butane, conformations of cyclohexane, axial and equatorial bonds. Newman and Sawhorse projection formulae.	11
IV	**Benzene and its derivatives:** Nomenclature, Aromatic nucleus and side chain, Huckels' rule of aromaticity. Aromatic electrophilic substitution, mechanism of nitration, halogenation, sulphonation, and Friedel- Crafts reaction. Energy profile diagrams. Activating, deactivating substituents and orientation. **Alkyl halides:** Nomenclature, methods of formation: from alkenes and alcohol, nucleophilic substitution reactions of alkyl halides, SN2 and SN1 reactions with energy profile diagrams. **Aryl halides**: Methods of formation: halogenation, Sandmeyer reaction. The addition-elimination, and the elimination-addition mechanisms of nucleophilic aromatic substitution reactions. Relative reactivities of alkyl halides vs allyl, vinyl, and aryl halides.	12

V*	1. **Gravimetriic Analysis:** Estimation of Ni^{2+} as Ni-dimethylglyoxime and Al^{3+} as Al-oxinate. 2. **Colorimetry:** To verify Beer-Lambert law for $KMnO_4$ /$K_2Cr_2O_7$ and determine the unknown concentration of the given solution of $KMnO_4$ /$K_2Cr_2O_7$ solution. 3. To prepare acidic and basic buffer solutions of pH 5 and 9 respectively. 4. Preparation of Cuprous chloride, tetra ammine cupric sulphate. 5. To determine the CST of phenol-water system. 6. To determine the solubility of Benzoic acid at various temperatures and to determine the ΔH of the dissolution process. 7. To determine the Enthalpy of neutralisation of strong base Vs strong acid and weak acid/weak base Vs. strong base/strong acid and determine the enthalpy of ionisation of the weak acid/weak base 8. Determine the rate constant of hydrolysis of ethyl acetate.	30
Suggested Evaluation Methods		
Internal Assessment:20+10* **Theory** • Class Participation: 5 • Seminar/presentation/assignment/quiz/class test etc.: 5 • Mid-Term Exam: 10 **Practicum** • Class Participation: NA • Seminar/Demonstration/Viva-voce/Lab records etc.: 10 • Mid-Term Exam: NA		**End Term Examination:** 50+20*
Part C-Learning Resources		
Recommended Books/e-resources/LMS: 1. Lee, J.D.; (2010), **Concise Inorganic Chemistry**, Wiley India. 2. Kapoor, K.L. (2015), **A Textbook of Physical Chemistry**, Vol 1, 6 th Edition, Mc Graw Hill Education. 3. Morrison, R. N.; Boyd, R. N. **Organic Chemistry**, Dorling Kindersley (India) Pvt. Ltd. (Pearson Education). 4. Finar, I. L. **Organic Chemistry** (Volume 1& 2), Dorling Kindersley (India) Pvt. Ltd.		

(Pearson Education)

5. Solomons, T. W. G.; Fryhle, C. B. ; Snyder, S. A. (2016), **Organic Chemistry**, 12th Edition, Wiley.

6. Clayden, J.; Greeves, N.; Warren, S. (2012), **Organic Chemistry**, Oxford.

7. Nasipuri, D. (2018), **Stereochemistry of Organic Compounds: Principles and Applications**, 3rd Edition, New Age International.

8. Gunstone, F. D. (1975), **Guidebook to Stereochemistry**, Prentice Hall Press.

*Applicable for courses having practical component.

MCC-5

Session: 2023-24			
Part A - Introduction			
Subject	Chemistry		
Semester	III		
Name of the Course	**Inorganic Chemistry-I**		
Course Code	B23-CHE-302		
Course Type: (CC/MCC/MDC/CC-M/DSEC/VOC/DSE/PC/AEC/VAC)	MCC		
Level of the course (As per Annexure-I	100-199		
Pre-requisite for the course (if any)	4.0		
Course Learning Outcomes(CLO):	After completing this course, the learner will be able to: 1. To learn about the bonding fundamentals for transition elements. 2. To learn on Qualitative ideas of valence bond and bond theories of metallic bond. 3. To learn about general physical properties, reactivities and application of coordination complexes. 4. To get knowledge on General physical properties, reactivities and application of coordination complexes. 5* To learn about on quantitative estimation of Cu^{2+} ions. Also get knowledge to the calculation of ΔH, ΔG and ΔS for dissolving a salts at given temperature.		
Credits	Theory	Practical	Total
	3	1	4
Contact Hours	45	30	75

Max. Marks:70+30* **Internal Assessment Marks:20+10*** **End Term Exam Marks:** 50+20*	**Time:03+03***

Part B- Contents of the Course

Instructions for Paper- Setter

Note: The examiner is requested to set nine questions in all, selecting two questions from each SECTION and one question (Question No.1 based on entire syllabus will consist of short answer type. All questions carry equal marks. The candidate is required to attempt five questions in all selecting one from each SECTION. Question No.1 is compulsory. Log table and non-programmable calculator is allowed.

Unit	Topics	Contact Hours
I	Coordination Chemistry: Recapitulation of Werner's Coordination theory. IUPAC nomenclature of coordination Compounds, isomerism in coordination compounds. with coordination numbers 4 and 6. A brief idea about chelate effect and labile and inert complexes.	12
II	Valence bond theory and its application to complexes of coordination numbers 4 and 6. Examples of inner and outer orbital complexes, Crystal field theory, measurement of Δo. Calculation of CFSE in weak and strong fields, concept of pairing energies, factors affecting the magnitude of Δo. Octahedral vs. tetrahedral coordination, tetragonal distortions from octahedral geometry Jahn-Teller theorem, square planar geometry. Qualitative aspect of Ligand field and MO Theory (for octahedral σ-donor, π- acceptor and π- donor complexes).	11
III	A brief discussion of differences between the first, second and third transition series. Some important compounds of Cr, Mn, Fe and Co and their roles as laboratory reagents; Potassium dichromate, potassium permanganate, potassium ferrocyanide, potassium ferricyanide, sodium nitroprusside and sodium cobaltinitrite. Lanthanoids and Actinoids: A brief discussion of electronic configuration, oxidation states, colour, spectral and magnetic properties.	11
IV	Inorganic Reaction Mechanism: Introduction to inorganic reaction mechanisms. Concept of reaction pathways, transition state, intermediate and activated complex. Substitution reactions in square planar complexes, Trans- effect, theories of	11

	trans-effect.	
V*	1. **Gravimetriic Analysis:** Estimation of Cu^{2+}as copper isothiocyanate. 2. **Colorimetry:** To verify Beer-Lambert law for $KMnO_4$ /$K_2Cr_2O_7$ and determine the unknown concentration of the given solution of $KMnO_4$ /$K_2Cr_2O_7$ solution. 3. To prepare acidic and basic buffer solutions of pH 5 and 9 respectively. 4. Preparation of Cuprous chloride, tetra ammine cupric sulphate. 5. To determine the CST of phenol-water system. 6. To determine the solubility of Benzoic acid at various temperatures and to determine the ΔH of the dissolution process. 7. To determine the Enthalpy of neutralisation of strong base Vs strong acid and weak acid/weak base Vs. strong base/strong acid and determine the enthalpy of ionisation of the weak acid/weak base	30
Suggested Evaluation Methods		
Internal Assessment:20+10* **Theory** • Class Participation: 5 • Seminar/presentation/assignment/quiz/class test etc.: 5 • Mid-Term Exam: 10 **Practicum** • Class Participation: NA • Seminar/Demonstration/Viva-voce/Lab records etc.: 10 • Mid-Term Exam: NA		**End Term Examination:** 50+20*
Part C-Learning Resources		
Recommended Books/e-resources/LMS: 1. Lee, J.D.; (2010), **Concise Inorganic Chemistry**, Wiley India. 2. Huheey, J.E.; Keiter, E.A.; Keiter; R. L.; Medhi, O.K. (2009), **Inorganic Chemistry, Principles of Structure and Reactivity**, Pearson Education. 3. Douglas, B.E.; McDaniel, D.H.; Alexander, J.J. (1994), **Concepts and Models of Inorganic**		

Chemistry, John Wiley & Sons.

4. Atkins, P.W.; Overton, T.L.; Rourke, J.P.; Weller, M.T.; Armstrong, F.A. (2010), **Shriver and Atkins Inorganic Chemistry**, 5th Edition, Oxford University Press.

*Applicable for courses having practical component.

MDC-3

<table>
<tr><td colspan="4">Session: 2023-24</td></tr>
<tr><td colspan="4">Part A - Introduction</td></tr>
<tr><td>Subject</td><td colspan="3">Chemistry</td></tr>
<tr><td>Semester</td><td colspan="3">III</td></tr>
<tr><td>Name of the Course</td><td colspan="3">Introductory Chemistry-III</td></tr>
<tr><td>Course Code</td><td colspan="3">B23-CHE-303</td></tr>
<tr><td>Course Type: (CC/MCC/MDC/CC-M/DSEC/VOC/DSE/PC/AEC/VAC)</td><td colspan="3">MDC</td></tr>
<tr><td>Level of the course (As per Annexure-I</td><td colspan="3">0-99</td></tr>
<tr><td>Pre-requisite for the course (if any)</td><td colspan="3">Higher secondary other than science discipline</td></tr>
<tr><td>Course Learning Outcomes(CLO):</td><td colspan="3">After completing this course, the learner will be able to:
1. To learn about different energy resources.
2. To learn about the purification process of water quality
3. To Know more about Pesticides and their bad impacts on health
4. To get more knowledge on the impacts of pollution on environment
5*. To get acquaint about the pH of different food items.</td></tr>
<tr><td rowspan="2">Credits</td><td>Theory</td><td>Practical</td><td>Total</td></tr>
<tr><td>2</td><td>1</td><td>3</td></tr>
<tr><td>Contact Hours</td><td>30</td><td>30</td><td>60</td></tr>
<tr><td colspan="2">Max. Marks:50+25*
Internal Assessment Marks:15+5*
End Term Exam Marks: 35+20*</td><td colspan="2">Time:03+03*</td></tr>
<tr><td colspan="4">Part B- Contents of the Course</td></tr>
<tr><td colspan="4"><u>Instructions for Paper- Setter</u></td></tr>
</table>

Note: The examiner is requested to set nine questions in all, selecting two questions from each SECTION and one question (Question No.1 based on entire syllabus will consist of short answer type. All questions carry equal marks. The candidate is required to attempt five questions in all selecting one from each SECTION. Question No.1 is compulsory. Log table and non-programmable calculator is allowed.

Unit	Topics	Contact Hours
I	Pollution and their types: Plastic and polyethene pollution, pollution sources, Recycling of plastic, greenhouse effect, ozone depletion	8
II	Energy: Energy sources, renewable and non-renewable sources, cells and batteries, fuel cell, solar cell, polymer cell	8
III	Water: Sources of drinking water and uses, water conservation, Permissible TDS, Techniques of purification of water, R.O. water purification process (Osmosis and Reverse Osmosis), wastewater management	7
IV	Pesticides and Herbicides: General introduction and definition, biological control and chemical control: natural and synthetic pesticides, benefits and adverse effects of DDT, BHC, malathion.	7
V*	**Practicals:** 1. To check the TDS of different samples of water. 2. Purify the given sample of water using different purification techniques. 3. Identify the pH of different samples of food items. 4. Nutralize the given samples of base using acids	30

Suggested Evaluation Methods

Internal Assessment: 15 + 5* **Theory** • Class Participation: 4 • Seminar/presentation/assignment/quiz/class test etc.: 4 • Mid-Term Exam: 7 **Practicum** • Class Participation: NA • Seminar/Demonstration/Viva-voce/Lab records etc.: 5 • Mid-Term Exam: NA	**End Term Examination:** **35+20***

Part C-Learning Resources
Recommended Books/e-resources/LMS: 1. **Zero Waste: Management Practices for Environmental Sustainability** by Ashok K. Rathoure 2. **Sustainable Solid Waste Management** by Ni-Bin Chang 3. **Handbook of Advanced Industrial and Hazardous Wastes Treatment** by Lawrence K. Wang (Editor); Nazih K. Shammas (Editor); Yung Tse Hung (Editor) 4. Pesticides and Insecticides, Development and Use, Bobby Jones|2018 5. WATER TREATMENT, How To Make Water Safe To Drink, David Holman 6. Energy,A Beginner's Guide,Vaclav Smil,2017 7. Advanced Physical Chemistry, Practical Handbook, Gurdeep Raj, Edition (2016) 8. Advanced Practical Physical Chemistry, Handbook, J.B.Yadav, Edition (2016) 9. Goyal, P K, Water Pollution Causes, Effects and Control New age International Publishers

*Applicable for courses having practical component.

CC-4/MCC-6

Session: 2023-24			
Part A - Introduction			
Subject	Chemistry		
Semester	IV		
Name of the Course	**Chemistry-IV**		
Course Code	B23-CHE-401		
Course Type: (CC/MCC/MDC/CC-M/DSEC/VOC/DSE/PC/AEC/VAC)	CC/MCC		
Level of the course (As per Annexure-I	100-199		
Pre-requisite for the course (if any)	4.0		
Course Learning Outcomes(CLO):	After completing this course, the learner will be able to: 1. Classify d block and f block elements and also know their properties 2. Learn about the basic idea of analysis with respect to qualitative as well as quantitative measures 3. Know about the first and second law of thermodynamics and also their implications and also know about the concept of chemical equilibrium 4. Know about the alcohols, phenols, aldehydes and ketones with respect to their general characteristics and their important reactions 5*. To get knowledge about identification and confirmation of acidic and basic radicals in a given inorganic salts/mixtures		
Credits	Theory	Practical	Total
	3	1	4
Contact Hours	45	30	75

Max. Marks:70+30* **Internal Assessment Marks:20+10*** **End Term Exam Marks:** 50+20*	**Time:03+03***

Part B- Contents of the Course

Instructions for Paper- Setter

Note: The examiner is requested to set nine questions in all, selecting two questions from each SECTION and one question (Question No.1 based on entire syllabus will consist of short answer type. All questions carry equal marks. The candidate is required to attempt five questions in all selecting one from each SECTION. Question No.1 is compulsory. Log table and non-programmable calculator is allowed.

Unit	Topics	Contact Hours
I	**Chemistry of d-Block elements** Definition of transition elements, General characteristic properties of d-Block elements, Comparison of ionic radii 3d, 4d and 5d series elements, magnetic properties, Stability of various oxidation states and Latimer and Frost diagrams, Structure of some compounds of transition elements- TiO_2, $VOCl_2$, $FeCl_3$, $CuCl_2$ and $Ni(CO)_4$. **Chemistry of f-Block elements** Lanthanide contraction, oxidation states, magnetic properties, complex formation, colour and ionic radii. Actinides: General characteristics of actinides, Transuranic elements, comparison of properties of Lanthanides and actinides with transition elements.	12
II	**Theory of Qualitative and Quantitative Analysis** Chemistry of analysis of various groups of basic and acidic radicals, chemistry of identification of acid radicals in typical combination, common ion effect, solubility product, theory of precipitation, co-precipitation, post precipitation, purification of precipitates.	11
III	**Thermodynamics-I** First law of thermodynamics: statement, concepts of internal energy and enthalpy. Heat capacity, heat capacities at constant volume and pressure and their relationship. Joule– Thomson coefficient for ideal gas and real gas and inversion temperature. Calculation of w, q, dU & dH for the expansion of ideal gases under isothermal and adiabatic conditions for reversible process.	11

	Second law of thermodynamics, Carnot cycles and its efficiency, Concept of entropy, entropy as a function of V & T, entropy as a function of P & T. **Chemical Equilibrium** Concept of Equilibrium constant, Temperature dependence of equilibrium constant, Clausius–Clapeyron equation and its applications.	
IV	**Alcohols** Monohyric alcohols: nomenclature, methods of formation by reduction of aldehydes, ketones, carboxylic acids, and esters. Hydrogen bonding, Acidic nature, Reactions of alcohols. **Phenols** Nomenclature, structure, and bonding. Preparation: Cumene hydroperoxide method, from diazonium salts, physical properties, and acidic character. Chemical Reactions: — electrophilic aromatic substitution, Mechanisms of Fries rearrangement, Claisen rearrangement, Reimer-Tiemann reaction, Kolbe's reaction. **Aldehydes and Ketones** Nomenclature and structure of the carbonyl group. Preparation: oxidation of alcohols, from acid chlorides and from nitriles, Comparison of reactivities of aldehydes and ketones. Mechanism of nucleophilic additions to carbonyl group: benzoin, aldol, Perkin and Knoevenagel condensations. Condensation with ammonia and its derivatives. Wittig reaction. Mannich reaction, Baeyer–Villiger oxidation of ketones, Cannizzaro reaction, MPV, Clemmensen and Wolff-Kishner reductions.	11
V*	**Practicals:** 1. To prepare salicylic acid from Aspirin. 2. To prepare m-nitroaniline from m-dinitrobenzene. 3. Semimicro qualitative analysis of mixture containing not more than four radicals (excluding interfering, Combinations and insoluble):Pb^{2+}, Cu^{2+}, Fe^{3+}, Ni^{2+}, Ca^{2+}, NH_4^+, CO_3^{2-}, NO_3^-, CH_3COO^-, Cl^-, Br^-, I^-, PO_4^{3-}, SO_4^{2-}	30
Suggested Evaluation Methods		

Internal Assessment:20+10* **Theory** • Class Participation: 5 • Seminar/presentation/assignment/quiz/class test etc.: 5 • Mid-Term Exam: 10 **Practicum** • Class Participation: NA • Seminar/Demonstration/Viva-voce/Lab records etc.: 10 • Mid-Term Exam: NA	**End Term Examination:** 50+20*

Part C-Learning Resources

Recommended Books/e-resources/LMS:

1. Huheey, J.E.; Keiter, E.A.; Keiter; R. L.; Medhi, O.K. 009), **Inorganic Chemistry-Principles of Structure and Reactivity**, Pearson ucation.
2. Atkins, P.W.; Paula, J.de. (2014), **Atkin's Physical Chemistry Ed**., 10th Edition, Oxford University Press.
3. Kapoor, K.L.(2015), **A Textbook of Physical Chemistry**,Vol 1, 6 th Edition, McGraw Hill Education.
4. Clayden, J.; Greeves, N.; Warren, S. (2012), **Organic Chemistry**, Oxford.
5. Morrison, R. N.; Boyd, R. N. **Organic Chemistry**, Dorling Kindersley (India) Pvt. Ltd. (Pearson Education).
6. Nasipuri, D.(2018), **Stereochemistry of Organic Compounds: Principles and Applications**, 3 rd Edition, New Age International.
7. Gunstone, F. D. (1975), **Guidebook to Stereochemistry**, Prentice Hall Press.

*Applicable for courses having practical component.

MCC-7

Session: 2023-24			
Part A - Introduction			
Subject	Chemistry		
Semester	IV		
Name of the Course	**Organic Chemistry-I**		
Course Code	B23-CHE-402		
Course Type: (CC/MCC/MDC/CC-M/DSEC/VOC/DSE/PC/AEC/VAC)	MCC		
Level of the course (As per Annexure-I	100-199		
Pre-requisite for the course (if any)	4.0		
Course Learning Outcomes(CLO):	After completing this course, the learner will be able to: 1. Understand about Amino Acids, Peptides and Proteins Amino acids, Peptides and their classification and their properties 2. Know about the basic structure of proteins with reference to DNA and RNA and also the phenomenon of transcription and translation 3. Learn about basic idea of carbohydrates and lipids including their classification and importance 4. Learn about the Organic Synthesis via Enolates and some simple heterocyclic compounds _____ 5*. To get knowledge about identification and confirmation of acidic basic radicals in a given inorganic salts/mixtures		
Credits	Theory	Practical	Total
	3	1	4
Contact Hours	45	30	75

Max. Marks:70+30* **Internal Assessment Marks:20+10*** **End Term Exam Marks:** 50+20*	**Time:03+03***

Part B- Contents of the Course

Instructions for Paper- Setter

Note: The examiner is requested to set nine questions in all, selecting two questions from each SECTION and one question (Question No.1 based on entire syllabus will consist of short answer type. All questions carry equal marks. The candidate is required to attempt five questions in all selecting one from each SECTION. Question No.1 is compulsory. Log table and non-programmable calculator is allowed.

Unit	Topics	Contact Hours
I	Amino Acids, Peptides and Proteins Amino acids, Peptides, and their classification. α-Amino Acids - Synthesis, ionic properties, and reactions. Zwitterions, pKa values, isoelectric point, and electrophoresis; Study of peptides: determination of their primary structure-end group analysis. Synthesis of peptides using N-protecting, C-protecting, and C- activating groups.	12
II	**Nucleic Acids:** Structure of components of nucleic acids: Bases, Sugars, Nucleosides and Nucleotides. Nomenclature of nucleosides and nucleotides, structure of polynucleotides (DNA and RNA), concept of DNA duplex formation and its characterization. Biological roles of DNA and RNA. Concept of heredity: Genetic Code, Replication, Transcription and Translation.	11
III	**Carbohydrates** Occurrence, classification, and their biological importance. Monosaccharides: Constitution and absolute configuration of glucose and fructose, epimers and anomers, mutarotation, determination of ring size of glucose and fructose, Haworth projection and conformational structures; Interconversion of aldoses and ketoses; Killiani-Fischer synthesis and Ruff degradation; Disaccharides – Structure elucidation of maltose and sucrose. **Lipids** Occurrence, classification, and their biological importance. Introduction to oils and fats; common fatty acids present in oils and fats, Hydrogenation of fats and oils, Saponification value,	11

	acid value, iodine number.	
IV	**Organic Synthesis via Enolates** Acidity of α-hydrogens, alkylation of diethyl malonate and ethyl acetoacetate. Synthesis of ethyl acetoacetate: the Claisen condensation. Keto-enol tautomerism of ethyl acetoacetate. **Heterocyclic Compounds** Introduction: Molecular orbital picture and aromatic characteristics of pyrrole, furan, thiophene and pyridine. Methods of synthesis and chemical reactions with particular emphasis on the mechanism of electrophilic substitution. Mechanism of nucleophilic substitution reactions in pyridine derivatives. Comparison of basicity of pyridine, piperidine and pyrrole.	11
V*	**Practicals:** 1. To prepare salicylic acid from Aspirin. 2. Identification and confirmation of acidic radicals in a given inorganic mixture via Semimicro qualitative analysis of mixture containing not more than two radicals (excluding interfering, Combinations and insoluble): CO_3^{2-}, S^{2-}, SO_3^{2-}, $S_2O_3^{2-}$, NO_2^-, CH_3COO^-, Cl^-, Br^-, I^-, NO_3^-, BO_3^{3-}, SO_4^{2-}	30
Suggested Evaluation Methods		
Internal Assessment:20+10* **Theory** • Class Participation: 5 • Seminar/presentation/assignment/quiz/class test etc.: 5 • Mid-Term Exam: 10 **Practicum** • Class Participation: NA • Seminar/Demonstration/Viva-voce/Lab records etc.: 10 • Mid-Term Exam: NA		**End Term Examination:** 50+20*
Part C-Learning Resources		

Recommended Books/e-resources/LMS:

1. Morrison, R. N.; Boyd, R. N. **Organic Chemistry**, Dorling Kindersley (India) Pvt. Ltd. (Pearson Education).
2. Finar, I. L. **Organic Chemistry** (Volume 1& 2), Dorling Kindersley (India) Pvt. Ltd. \(Pearson Education)
3. Solomons, T. W. G.; Fryhle, C. B. ; Snyder, S. A. (2016), **Organic Chemistry**, 12th Edition, Wiley.
4. Bruice, P. Y. (2017), **Organic Chemistry**, 8th Edition, Pearson.
5. Clayden, J.; Greeves, N.; Warren, S. (2012), **Organic Chemistry**, Oxford.
6. Nasipuri, D.(2018), **Stereochemistry of Organic Compounds: Principles and Applications**, 3rd Edition, New Age International.
7. Gunstone, F. D. (1975), **Guidebook to Stereochemistry**, Prentice Hall Press

MCC-8

Session: 2023-24			
Part A - Introduction			
Subject	Chemistry		
Semester	IV		
Name of the Course	**Physical Chemistry-II**		
Course Code	B23-CHE-403		
Course Type: (CC/MCC/MDC/CC-M/DSEC/VOC/DSE/PC/AEC/VAC)	MCC		
Level of the course (As per Annexure-I	100-199		
Pre-requisite for the course (if any)	4.0		
Course Learning Outcomes(CLO):	After completing this course, the learner will be able to: 1. Know the concept of phase rule and equillibria with reference to two component system 2. Learn about the Binary solutions and also some theoretical aspects related with this concept 3. Know about the general concept of electrochemistry and also various laws associated with this concept 4. Know about the Concentration cells with and without transference, liquid junction potential and also the basic idea about the surface chemistry 5* To get knowledge about identification and confirmation of basic radicals in a given inorganic salts/mixtures		
Credits	Theory	Practical	Total
	3	1	4
Contact Hours	45	30	75

Max. Marks:70+30* **Internal Assessment Marks:20+10*** **End Term Exam Marks:** 50+20*	**Time:03+03***

Part B- Contents of the Course

Instructions for Paper- Setter

Note: The examiner is requested to set nine questions in all, selecting two questions from each SECTION and one question (Question No.1 based on entire syllabus will consist of short answer type. All questions carry equal marks. The candidate is required to attempt five questions in all selecting one from each SECTION. Question No.1 is compulsory. Log table and non-programmable calculator is allowed.

Unit	Topics	Contact Hours
I	Statement and meaning of the terms – phase, component and degree of freedom, thermodynamic derivation of Gibbs phase rule, phase equilibria of one component system –Example – water system. Phase equilibria of two component systems solid-liquid equilibria, simple eutectic Example Pb-Ag system, desilverisation of lead.	12
II	Binary solutions: Gibbs-Duhem-Margules equation, its derivation, and applications to fractional distillation of binary miscible liquids (ideal and non-ideal), azeotropes, lever rule, partial miscibility of liquids, CST, miscible pairs, steam distillation. Electrochemical Cells: Rules of oxidation/reduction of ions based on half-cell potentials, Chemical cells, reversible and irreversible cells with examples	11
III	Electromotive force of a cell and its measurement, Nernst equation; Standard electrode (reduction) potential and its application to different kinds of half-cells. Application of EMF measurements in determining (i) free energy, enthalpy, and entropy of a cell reaction, (ii) equilibrium constants, and (iii) pH values, using hydrogen, quinone-hydroquinone.	11
IV	Concentration cells with and without transference, liquid junction potential; determination of activity coefficients and transference numbers. Qualitative	11

	discussion of potentiometric titrations (acid-base, redox). Surface chemistry: Physical adsorption, chemisorption, adsorption isotherms (Langmuir and Freundlich).	
V*	**Practicals:** Identification and confirmation of basic radicals in a given inorganic mixture via Semimicro qualitative analysis of mixture containing not more than two radicals (excluding interfering, Combinations and insoluble): Pb^{2+}, Cu^{2+}, Fe^{3+}, Ni^{2+}, Ca^{2+}, NH_4^+, Al^{3+}, Co^{2+}, Zn^{2+}, Mg^{2+}.	30
Suggested Evaluation Methods		
Internal Assessment:20+10* **Theory** • Class Participation: 5 • Seminar/presentation/assignment/quiz/class test etc.: 5 • Mid-Term Exam: 10 **Practicum** • Class Participation: NA • Seminar/Demonstration/Viva-voce/Lab records etc.: 10 • Mid-Term Exam: NA		**End Term Examination:** 50+20*
Part C-Learning Resources		
Recommended Books/e-resources/LMS: 1. Atkins, P.W.; Paula, J.de. (2014), **Atkin's Physical Chemistry Ed**., 10th Edition, Oxford University Press. 2. Ball, D. W. (2017), **Physical Chemistry,** 2nd Edition, Cengage Learning, India. 3. Castellan, G. W. (2004), **Physical Chemistry**, 4th Edition, Narosa. 4. Kapoor, K.L. (2015), **A Textbook of Physical Chemistry**, Vol 1, 6th Edition, McGraw Hill Education.		

*Applicable for courses having practical component.

DSE-1

Session: 2023-24			
Part A - Introduction			
Subject	Chemistry		
Semester	IV		
Name of the Course	**Elective Chemistry -I**		
Course Code	B23-CHE-404		
Course Type: (CC/MCC/MDC/CC-M/DSEC/VOC/DSE/PC/AEC/VAC)	DSE		
Level of the course (As per Annexure-I	100-199		
Pre-requisite for the course (if any)	4.0		
Course Learning Outcomes(CLO):	After completing this course, the learner will be able to: 1. Know the basics of polymers, their classification and uses. 2. Get aware of the different methods to calculate the molecular weight of polymers. 3. Know the Properties of Polymers (Physical, thermal, Flow & Mechanical Properties). 4. Have an detail idea about some specific polymers like polyolefin, polystyrene and styrene copolymers, poly (vinyl chloride) _____ 5*. To do the hand on practice in the preparation of polymers and also analysis the role of initiator/binders in the synthesis.		
Credits	Theory	Practical	Total
	3	1	4
Contact Hours	45	30	75
Max. Marks:70+30* **Internal Assessment Marks:20+10*** **End Term Exam Marks:** 50+20*		**Time:03+03***	

Part B- Contents of the Course

Instructions for Paper- Setter

Note: The examiner is requested to set nine questions in all, selecting two questions from each SECTION and one question (Question No.1 based on entire syllabus will consist of short answer type. All questions carry equal marks. The candidate is required to attempt five questions in all selecting one from each SECTION. Question No.1 is compulsory. Log table and non-programmable calculator is allowed.

Unit	Topics	Contact Hours
I	Introduction and history of polymeric materials: History of polymeric materials, Different schemes of classification of polymers, Polymer nomenclature, Molecular forces and chemical bonding in polymers, Texture of Polymers Functionality and its importance: Criteria for synthetic polymer formation, classification of polymerization processes, Relationships between functionality, extent of reaction and degree of polymerization Bifunctional systems, Mechanism of copolymerization, polymerization techniques	12
II	Determination of molecular weight of polymers (Mn, Mw, etc.) by end group analysis, viscometry, light scattering, and osmotic pressure methods. Molecular weight distribution and its significance. Polydispersity index Polymer Solution Criteria for polymer solubility and Solubility parameter.	11
III	Thermodynamics of polymer solutions, entropy, enthalpy, and free energy change of mixing of polymers solutions. Polymer Degradation Thermal, oxidative, hydrolytic and photodegradation, Properties of Polymers (Physical, thermal, Flow & Mechanical Properties).	11
IV	Brief introduction to preparation, structure, properties and application of the following polymers: polyolefins, polystyrene and styrene copolymers, poly (vinyl chloride) and related polymers and poly (vinyl acetate), acrylic polymers, fluoro polymers, polyamides and related polymers. Phenol formaldehyde resins (Bakelite), silicone polymers	11
V*	**Practicals:** 1. To determine the Numer average molecular weight of polymers by viscometry method. 2. To prepare Copolymers using atleast two monomers. 3. Study the role of initiator in the synthesis of polymers.	30

	4. To synthesize the polymers using different binding reagent 5. To determine the weight average molecular weight of polymers by viscometry method.	
Suggested Evaluation Methods		
Internal Assessment:20+10* **Theory** • Class Participation: 5 • Seminar/presentation/assignment/quiz/class test etc.: 5 • Mid-Term Exam: 10 **Practicum** • Class Participation: NA • Seminar/Demonstration/Viva-voce/Lab records etc.: 10 • Mid-Term Exam: NA		**End Term Examination:** 50+20*
Part C-Learning Resources		
Recommended Books/e-resources/LMS: 1. Hill, J.W.; McCreary, T.W.; Kolb, D.K. (2013), **Chemistry for changing times**, Pearson. 2. Carraher,C. E. Jr. (2013), **Seymour's Polymer Chemistry**, Marcel Dekker, Inc. 3. Odian, G. (2004), **Principles of Polymerization**, John Wiley. 4. Billmeyer, F.W. (1984), **Text Book of Polymer Science**, John Wiley. 5. Ghosh, P. (2001), **Polymer Science & Technology**, Tata Mcgraw-Hill. 6. Lenz, R.W. (1967), **Organic Chemistry of Synthetic High Polymers**, Intersecience (Wiley) 7. Polymer chemistry by Gowarikar 8. Principles of Polymerization by George G. Odian 9. Introduction to Polymer Chemistry by Charles E. carraher 10. Polymer chemistry by Paul C. Hiemenz		

*Applicable for courses having practical component.

DSE-1

Session: 2023-24			
Part A - Introduction			
Subject	Chemistry		
Semester	IV		
Name of the Course	**Elective Chemistry -II**		
Course Code	B23-CHE-405		
Course Type: (CC/MCC/MDC/CC-M/DSEC/VOC/DSE/PC/AEC/VAC)	DSE		
Level of the course (As per Annexure-I)	100-199		
Pre-requisite for the course (if any)	4.0		
Course Learning Outcomes(CLO):	After completing this course, the learner will be able to: 1. Learn the basic concept of Acid base theory. 2. Aware about organometallic chemistry and the uses of metal carbonyls. 3. Having an idea of bioinorganic chemistry and role of different ions in the biological system 4.Get aware about properties of silicones and phosphazenes. 5*. To get knowledge about the functioning of different metal ions in biological system		
Credits	Theory	Practical	Total
	3	1	4
Contact Hours	45	30	75
Max. Marks:70+30* **Internal Assessment Marks:20+10*** **End Term Exam Marks:** 50+20*		**Time:03 + 03***	
Part B- Contents of the Course			

Instructions for Paper- Setter

Note: The examiner is requested to set nine questions in all, selecting two questions from each SECTION and one question (Question No.1 based on entire syllabus will consist of short answer type. All questions carry equal marks. The candidate is required to attempt five questions in all selecting one from each SECTION. Question No.1 is compulsory. Log table and non-programmable calculator is allowed.

Unit	Topics	Contact Hours
I	Acids and Bases Arrhenius, Bronsted-lowry, Lux-flood, solvent system and Lewis concept of acids and bases, relative strength of acids and bases, levelling solvents, hard and soft acids and bases (HSAB), Applications of HSAB principle.	12
II	Organometallic chemistry Definition, classification and nomenclature of organometallic compounds, preparation, properties, and bonding of alkyls of Li, Al, Hg and Sn, concept of hapticity of organic ligand, Structure and bonding in metal-ethylenic complexes, Structure of Ferrocene, classification in metal carbonyls, preparation, properties and bonding in mononuclear carbonyls.	11
III	Bioinorganic chemistry Metal ions present in biological system, classification based on action (essential, non-essential, trace, toxic), Metalloporphyrins with special reference to haemoglobin and myoglobin. Biological role of Na^{+}, K^{+}, Ca^{+2}, Mg^{+2}, Fe^{+2} ions, Cooperative effect, Bohr effect.	11
IV	Silicones and Phosphazenes Nomenclature, classification, prepration and uses of silicones, elastomers, polysiloxane copolymers, poly phosphazenes and bonding in triphosphazene.	11
V*	**Practicals:** 1. To analyse the various heavy metal ions present in the various natural and biological samples. 2. To identify and quantify the calcium present in the various biological samples 3. Determination of stability constant of a chelate i.e complex between metal ion and ligand. 4. To identify the different types of contrasting agents and their interactions as used in diagnostic procedures	30

Suggested Evaluation Methods	
Internal Assessment:20+10* **Theory** • Class Participation: 5 • Seminar/presentation/assignment/quiz/class test etc.: 5 • Mid-Term Exam: 10 **Practicum** • Class Participation: NA • Seminar/Demonstration/Viva-voce/Lab records etc: 10 • Mid-Term Exam: NA	**End Term Examination:** 50+20*

Part C-Learning Resources

Recommended Books/e-resources/LMS:

1. Svehla, G. (1996), **Vogel's Qualitative Inorganic analysis**, 7th Edition, Prentice Hall.
2. Huheey, J.E.; Keiter, E.A., Keiter; R. L.; Medhi, O.K.(2009), **Inorganic ChemistryPrinciples of Structure and Reactivity**, Pearson Education.
3. Shriver, D.D.; Atkins, P.; Langford, C.H. (1994), **Inorganic Chemistry** 2nd Ed**.,** Oxford UniversityPress.
4. Atkins, P.W.; Overton, T.L.; Rourke, J.P.; Weller, M.T.; Armstrong, F.A. (2010), **Shriver and Atkins Inorganic Chemistry**, 5th Edition, W. H. Freeman and Company.
5. Cotton, F.A.; Wilkinson, G.; Gaus, P.L. **Basic Inorganic Chemistry**, 3rd Edition,Wiley India.
6. Greenwood, N.N.; Earnshaw, A.(1997), **Chemistry of the Elements**, 2nd Edition, Elsevier(Ziegler Natta Catalyst and Equilibria in Grignard solution).
7. Powell, P.(1988), **Principles of Organometallic Chemistry**, Chapman and Hall.

*Applicable for courses having practical component.

DSE-1

Session: 2023-24			
Part A – Introduction			
Subject	Chemistry		
Semester	IV		
Name of the Course	**Elective Chemistry-III**		
Course Code	B23-CHE-406		
Course Type: (CC/MCC/MDC/CC-M/DSEC/VOC/DSE/PC/AEC/VAC)	DSE		
Level of the course (As per Annexure-I)	100-199		
Pre-requisite for the course (if any)	4.0		
Course Learning Outcomes (CLO):	After completing this course, the learner will be able to: 1. Get the knowledge of drug development; 2. Learn about several types of drugs; 3. Understand about several types of cardiovascular drugs: 4. To know the basics of nutritional chemistry. _____ 5*. To create and analyse drug molecules.		
Credits	Theory	Practical	Total
	3	1	4
Contact Hours	45	30	75
Max. Marks: 70+30* **Internal Assessment Marks: 20 + 10*** **End Term Exam Marks: Theory: 50 + 20***		**Time: Theory: 03 hrs** **Practicum: 03 hrs**	
Part B- Contents of the Course			
Instructions for Paper- Setter Note: The examiner is requested to set nine questions in all, selecting two questions from each			

SECTION and one question (Question No.1 based on entire syllabus will consist of short answer type. All questions carry equal marks. The candidate is required to attempt five questions in all selecting one from each SECTION. Question No.1 is compulsory.		
Unit	**Topics**	**Contact Hours**
I	**Brief history of drug development.** **Definition, uses and side effects of the following categories of drugs:** **Antipyretics, analgesics & anti-inflammatory agents** (paracetamol, asprin, ibuprofen and diclofenac); **Anti-tussive and expectorant** (dextromethorphan, bromhexene); Decongestant (pseudoephedrine, phenylpropanolamine); **Anti-alergic** (Citrizine, Leavocitrizine, diphenhydramine).	12
II	**Definition, uses and side effects of the following categories of drugs:** **Antibacterial drugs** (ampicillin, amoxycillin, cephalexin, ciprofloxacin); **Antimalarial** (Chloroquine, chloroguanide), **Anti-amoebic** (Metronidazole, tinidazole); **Anthelmintic and anti-parasitic** (Mebendazole, Albendazole); **Anticancer** (Chlorambucil, cyclophosphamide), **Antihypertensive** (amlodepin, atenolol);	11
III	**Definition, uses and side effects of the following categories of drugs:** Cardiovascular drugs (sorbitrate, diltiazem). Electrolytes (Sodium, Potassium, Chlorides), Renal (Kidney) Function Tests (Creatinine, Blood urea nitrogen), Liver Function Test (Total Protein (Serum), Bilirubin; direct; indirect; total) Cardiac Markers, Minerals (Calcium, magenisium, Phosphate, Potassium), Blood Disorders (Iron, Vitamin B12, Vitamin D, Folic acid) Miscellaneous (Glucose, Glycosylated hemoglobin, Uric acid).	11
IV	**Nutritional Chemistry** Fat Soluble and water-soluble vitamins (Sources, recommended levels and deficiency diseases; Vitamin A, Vitamin B1, Vitamin B2, Vitamin B3, Vitamin B5, Vitamin B6, Vitamin B7, Vitamin B9, Vitamin B12, Vitamin C, Vitamin D, Vitamin E and Vitamin K). **Daily Intake and Roles in Biological processes of following essential dietary minerals** Major Minerals- Calcium, Phosphorus, potassium, sodium and magenesium; trace elements-sulfur, Iron, Chlorine, cobalt, Copper, Molybdenum, Iodine and Seleneium.	11

V*	1. Preparation of Aspirin and its analysis. 2. Preparation of Paracetamol and its analysis. 3. Preparation of Ibuprofen and its analysis. 4. Preparation of magnesium bisilicate (Antacid).	30
Suggested Evaluation Methods Short Answer and MCQ Type QUESTIONS		
Internal Assessment: 20+10*=30 ➢ **Theory: 20** ● Class Participation: 05 ● Seminar/presentation/assignment/quiz/class test etc.:05 ● Mid-Term Exam: 10 ➢ **Practicum:10** ● Class Participation: NA ● Seminar/Demonstration/Viva-voce/Lab records etc.: 10 ● Mid-Term Exam: NA		**End Term Examination: 50+20***
Part C-Learning Resources		
Recommended Books/e-resources/LMS: ✓ Medicinal chemistry; 7th edition, New age international publisher by Ashutosh Kar ✓ Medicinal chemistry; 3rd edition, Handbook of Nutrition and Food, CRC Press by D. Sriram, P. Yogeshwari, Berdanier, Carolyn D., Dwyer, Johanna T., Heber, and David. ✓ The vitamins: fundamental aspects of nutrition and health; Academic press by G. F. Combs Jr. and G.F. combs Sr ✓ Organic Chemistry, Volume-II, Stereochemistry and the chemistry of natural products by IL Finar, 5th edition, Pearson Education India.		

*Applicable for courses having practical component.

KURUKSHETRA UNIVERSITY

KURUKSHETRA

(Established by the state legislature Act XII of 1964)
A+ Grade NAAC Accredited)

Scheme of Examination and Syllabus for

Under-Graduate Programme:

(VOC, SEC, VAC)

Under Multiple Entry-Exit, Internship and CBCS-LOCF in accordance to NEP-2020 w.e.f. 2023-24 (in phased manner)

DEPARTMENT OF CHEMISTRY, KURUKSHETRA UNIVERSITY, KURUKSHETRA

Remarks	Course	Paper(s)	Nomenclature of Paper	Credits	Hours / Week	Internal marks	External Marks	Total Marks	Exam Duration
Scheme A, B & C	**VOC**	B23-VOC-122	Chemistry of Fertilizers and Pesticides	3	3	20	50	70	3 hrs.
			Practical	1	2	10	20	30	3 hrs.
Scheme A, B, C & D	**VOC**	B23-VOC-123	Chemistry of Cosmetics and Perfumes	3	3	20	50	70	3 hrs.
			Practical	1	2	10	20	30	3 hrs.
Scheme A, B & C	**VOC**	B23-VOC-222	Agriculture Chemistry	3	3	20	50	70	3 hrs.
			Practical	1	2	10	20	30	3 hrs.
Scheme A, B, C & D	**VOC**	B23-VOC-321	Green Laboratory Practical	3	3	20	50	70	3 hrs.
			Practical	1	2	10	20	30	3 hrs.
Scheme A, B & C	**SEC**	B23-SEC- 205	Chemistry of Food, Flavours and Colorants	2	2	15	35	50	3 hrs.
			Practical	1	2	5	20	25	3 hrs.
Scheme A, B, C & D	**SEC**	B23-SEC- 221	Analytical Chemistry	2	2	15	35	50	3 hrs.
			Practical	1	2	5	20	25	3 hrs.
Scheme A, B, C & D	**SEC**	B23-SEC- 404	Food Adulteration Testing	2	2	15	35	50	3 hrs.
			Practical	1	2	5	20	25	3 hrs.
Scheme A, B & C	**VAC**	B23-VAC- 420	Chemistry in everyday life	2	2	15	35	50	3 hrs.

VOC

Session: 2023-24			
Part A – Introduction			
Subject	Chemistry		
Semester	III		
Name of the Course	Chemistry of Fertilizers and Pesticides		
Course Code	B23-VOC-122		
Course Type: (CC/MCC/MDC/CC-M/DSEC/VOC/DSE/PC/AEC/VAC)	VOC		
Level of the course (As per Annexure-I	100-199		
Pre-requisite for the course (if any)	4.0		
Course Learning Outcomes (CLO):	After completing this course, the learner will be able to: 1. Know about fertilizers and nutrients; 2. Understand types of nitrate fertilizers; 3. Understand types of phosphate fertilizers: 4. Get the knowledge about pesticides. 5*. Understand the issues involved in pesticides and fertilizers		
Credits	Theory	Practical	Total
	3	1	4
Contact Hours	45	30	75
Max. Marks: 70 + 30* Internal Assessment Marks: 20 + 10* End Term Exam Marks: Theory: 50 + 20*		**Time: Theory: Three Hours Practicum: Three Hours**	
Part B- Contents of the Course			
Instructions for Paper- Setter Note: The examiner is requested to set nine questions in all, selecting two questions from each SECTION and one question (Question No.1 based on entire syllabus will consist of short answer type. All questions carry equal			

marks. The candidate is required to attempt five questions in all selecting one from each SECTION. Question No.1 is compulsory.		
Unit	**Topics**	**Contact Hours**
I	Methods and time of fertilizer applications, tips to get best efficiency of Applied fertilizers, Integrated nutrient management, fertilizers and its relations to plant nutrients, Factors effecting optimum fertilizer dose.	12 Hrs
II	Classification and types of fertilizers, Nitrogenous fertilizers: Ammonium nitrate, Urea, Calcium Cyanamide, Calcium Ammonium Nitrate, Sodium Nitrate, Ammonium Chloride: Introduction, Raw materials, Action of as a fertilizers.	11Hrs
III	Phosphate fertilizers: Normal super phosphate, Triple Super Phosphate, Ammonium Phosphate. Potassic fertilizers (Types and optimum doses)	11Hrs
IV	pesticides: Classification, synthesis, structure activity relationship (SAR), mode of action, uses and adverse effects of representative pesticides in the following classes: Organochlorines (DDT, Gammaxene); Organophosphates (Malathion, Parathion); Carbamates (Carbofuran and Carbaryl); Quinones (Chloranil), Anilides (Alachlor and Butachlor).	11Hrs
V*	1. To carryout market survey of potent pesticides with details as follows: a) Name of pesticide b) Chemical name, class and structure of pesticide c) Type of formulation available and Manufacturer's name d) Useful information on label of packaging regarding: Toxicity, LD50 ("Lethal Dose, 50%"), Side effects and Antidotes. 2. To carryout market survey of potent botanical pesticides with details as follows: a) Botanical name and family; b) Chemical name (active ingredient) and structure of active ingredient; c) Type of formulation available and Manufacturer's name; d) Useful information on label of packaging regarding: Toxicity, LD50 ("Lethal Dose, 50%"), Side effects and Antidotes. 3. Preparation of simple Organochlorine pesticides. 4. To calculate acidity/alkalinity in given sample of pesticide formulations as per BIS specifications. 5. To calculate active ingredient in given sample of pesticide formulations as per BIS specifications. 6. Preparation of Neem based botanical pesticides. 7. To study about identification of crops, seeds, fertilizers and pesticides.	30 Hrs

<table>
<tr><td colspan="2">Suggested Evaluation Methods
Short Answer and MCQ Type QUESTIONS</td></tr>
<tr><td>Internal Assessment: 20+10*=30
➢ Theory: 20
● Class Participation: 05
● Seminar/presentation/assignment/quiz/class test etc.:05
● Mid-Term Exam: 10
➢ Practicum:10
● Class Participation: 05
● Seminar/Demonstration/Viva-voce/Lab records etc.: 05
● Mid-Term Exam: N. A.</td><td>End Term Examination: 50+20*</td></tr>
<tr><td colspan="2">Part C-Learning Resources</td></tr>
<tr><td colspan="2">Recommended Books/e-resources/LMS:
✓ Gopal Rao: Outlines in Chemical Technology.
✓ Shukla and Pandey: Introduction to Chemical Technology
✓ Perry, A.S.; Yamamoto, I.; Ishaaya, I.; Perry, R.Y.(1998),Insecticides in Agriculture and Environment, Springer-Verlag Berlin Heidelberg.
✓ Kuhr, R.J. ; Derough, H.W.(1976),Carbamate Insecticides: Chemistry, Biochemistry and Toxicology, CRC Press,USA.</td></tr>
</table>

*Applicable for courses having practical component.

VOC

Session: 2023-24			
Part A – Introduction			
Subject	Chemistry		
Semester	III		
Name of the Course	Chemistry of cosmetics & perfumes		
Course Code	B23-VOC-123		
Course Type: (CC/MCC/MDC/CC-M/DSEC/VOC/DSE/PC/AEC/VAC)	VOC		
Level of the course (As per Annexure-I	0-99		
Pre-requisite for the course (if any)	--		
Course Learning Outcomes (CLO):	After completing this course, the learner will be able to: 1. Get the knowledge of cosmetics; 2. Logically think regarding preparation strategies and uses of cosmetic products; 3. Understand about preparation strategies and uses of cosmetic creams; 4. Get to know about the essential oils preset in nature & their importance towards industrial uses. 5*. learn about practical hands involved in preparation of cosmetic products.		
Credits	Theory	Practical	Total
	3	1	4
Contact Hours	45	30	75
Max. Marks: 70 + 30* **Internal Assessment Marks: 20 + 10*** **End Term Exam Marks: 50 + 20***		**Time: Theory: Three Hours** **Practicum: Three Hours**	
Part B- Contents of the Course			
Instructions for Paper- Setter			

Note: The examiner is requested to set nine questions in all, selecting two questions from each SECTION and one question (Question No.1 based on entire syllabus will consist of short answer type. All questions carry equal marks. The candidate is required to attempt five questions in all selecting one from each SECTION. Question No.1 is compulsory.

Unit	Topics	Contact Hours
I	Cosmetics- Definition, History, Classification, Ingredients, Nomenclature, A general study including preparation and uses of the following: Hair dye, Hair spray, Shampoo, conditioners, Suntan lotions.	12 Hrs
II	Preparation and uses of Face powder, Lipsticks, Talcum powder, Nail enamel.	11 Hrs
III	Preparation and uses of creams (cold, vanishing, and shaving creams), Antiperspirants and Artificial flavours.	11 Hrs
IV	Essential oils and their importance in cosmetic industries with reference to Eugenol, Geraniol, Sandalwood oil, Eucalyptus, Rose oil, 2-Phenyl ethyl alcohol, Jasmone, Civetone, Muscone.	11 Hrs
V*	1. Preparation of Talcum powder. 2. Preparation of Shampoo. 3. Preparation of Enamels. 4. Preparation of Hair remover. 5. Preparation of Face cream. 6. Preparation of Nail polish. 7. Preparation of Nail polish remover.	30 Hrs

Suggested Evaluation Methods
Short Answer and MCQ Type QUESTIONS

Internal Assessment: 20+10*=30

- **Theory: 20**
  - Class Participation: 05
  - Seminar/presentation/assignment/quiz/class test etc.:05
  - Mid-Term Exam: 10
- **Practicum:10**
  - Class Participation: 05
  - Seminar/Demonstration/Viva-voce/Lab records etc.: 05
  - Mid-Term Exam: N. A.

End Term Examination: 50+20*

Part C-Learning Resources

Recommended Books/e-resources/LMS:

- ✓ E. Stocchi: *Industrial Chemistry*, Vol -I, Ellis Horwood Ltd. UK.
- ✓ P.C. Jain, M. Jain: *Engineering Chemistry*, Dhanpat Rai & Sons, Delhi.
- ✓ B.K. Sharma: *Industrial Chemistry,* Goel Publishing House, Meerut.
- ✓ Textbook of Cosmetics; M Vimaladevi; CBS Publishers & Distributors; 2015,
- ✓ ISBN 81-239-1103-3
- ✓ TextBook of Cosmetics; Dr Akanksha Garud, Dr PK Sharma, Dr Navneet Garud; Pragati Prakashan; 2012, ISBN 978-93-5006-691-1
- ✓ Pharmaceutics and Cosmetics; Praveen K. Gupta, Sanjeev K. Gupta; Pragati Prakashan;2011, ISBN 978-81-8398-995-4
- ✓ Chemistry of Cosmetics; R. Kumari; Prestige Publisher, 2018,
- ✓ ISBN 978-81-936512-3-0
- ✓ Formulation Guide For Cosmetics; The Nisshin Oillio Group, Ltd.

*Applicable for courses having practical component.

VOC

Session: 2023-24			
Part A – Introduction			
Subject	Chemistry		
Semester	III		
Name of the Course	Agricultural chemistry		
Course Code	B23-VOC-222		
Course Type: (CC/MCC/MDC/CC-M/DSEC/VOC/DSE/PC/AEC/VAC)	VOC		
Level of the course (As per Annexure-I	100-199		
Pre-requisite for the course (if any)	4.0		
Course Learning Outcomes (CLO):	After completing this course, the learner will be able to: 1 Thinks about chemistry involved in agriculture 2 Know about chemical composition of soils; 3 Understand impacts of pollutions on soils and its productivity; 4 Critically think regrading sewage effluents. 5*. Practical training of soil analysis		
Credits	Theory	Practical	Total
	3	1	4
Contact Hours	45	30	75
Max. Marks: 70 + 30* Internal Assessment Marks: 20 +10* End Term Exam Marks: 50 + 20*		**Time: Theory: Three Hours Practicum: Three Hours**	
Part B- Contents of the Course			
Instructions for Paper- Setter Note: The examiner is requested to set nine questions in all, selecting two questions from each SECTION and one question (Question No.1 based on entire syllabus will consist of short answer type. All questions carry equal			

marks. The candidate is required to attempt five questions in all selecting one from each SECTION. Question No.1 is compulsory.		
Unit	**Topics**	**Contact Hours**
I	Plants as producers: Photosynthesis, pesticides, herbicide, insecticide, fungicide, storage and preservation of agriculture produce, food processing, chemicals (alcohol) from agriculture waste, use of polymers in agriculture	12 Hrs
II	Soil fertility and soil productivity: urea cycle, Organic and inorganic nitrogen (Haber Bosch Process), nutrient sources – fertilizers and manures; essential plant nutrients - functions and deficiency symptoms. Micronutrients – critical limits in soils and plants; factors affecting their availability and correction of their deficiencies in plants; role of chelates in nutrient availability.	11 Hrs
III	Chemical (elemental) composition of the earth's crust and soils, Chemistry of acid soils; active and potential acidity; lime potential, chemistry of acid soils; sub-soil acidity; Chemistry of salt-affected soils and amendments; soil pH, ECe, ESP, SAR and important relations; soil management and amendments.	11 Hrs
IV	Nature and sources of pollutants acid rains, oil spills etc.; air, water and soil pollutants - their CPC standards and effect on plants, animals and human beings. Sewage and industrial effluents – their composition and effect on soil properties/health, and plant growth and human beings; soil as sink for waste disposal.	11 Hrs
V*	1. pH of Soil 2. determine carbonate and bicarbonate in soil 3. Determine chloride in the soil sample 4. Determine starch in organic manure 5. Determine nitrate in the soil 6. Determine sulphate in the soil 7. To study Seed germination and viability test.	30 Hrs
Suggested Evaluation Methods Short Answer and MCQ Type QUESTIONS		

Internal Assessment: 20+10*=30 ➢ **Theory: 20** ● Class Participation: 05 ● Seminar/presentation/assignment/quiz/class test etc.:05 ● Mid-Term Exam: 10 ➢ **Practicum:10** ● Class Participation: 05 ● Seminar/Demonstration/Viva-voce/Lab records etc.: 05 ● Mid-Term Exam: N. A.	**End Term Examination: 70 (50+20*)**

Part C-Learning Resources

Recommended Books/e-resources/LMS:

- ✓ Bear RE. 1964. Chemistry of the Soil. Oxford and IBH. Bolt GH & Bruggenwert MGM. 1978. Soil Chemistry. Elsevier. Greenland DJ & Hayes MHB. 1981. Chemistry of Soil Processes. John Wiley & Sons.
- ✓ Brady NC & Weil RR. 2002. The Nature and Properties of Soils. 13 Ed. Pearson Edu.
- ✓ Kabata-Pendias A & Pendias H. 1992. Trace Elements in Soils and Plants. CRC Press.
- ✓ Kannaiyan S, Kumar K & Govindarajan K. 2004. Biofertilizers Technology. Scientific Publ.
- ✓ Leigh JG. 2002. Nitrogen Fixation at the Millennium. Elsevier.
- ✓ Mengel K & Kirkby EA. 1982. Principles of Plant Nutrition. International Potash Institute, Switzerland.
- ✓ Mortvedt JJ, Shuman LM, Cox FR & Welch RM. 1991. Micronutrients in nd Agriculture. 2 Ed. SSSA, Madison.
- ✓ Pierzinsky GM, Sims TJ & Vance JF. 2002. Soils and Environmental nd Quality. 2 Ed. CRC Press.
- ✓ Stevenson FJ & Cole MA. 1999. Cycles of Soil: Carbon, Nitrogen, Phosphorus, Sulphur, Micronutrients. John Wiley & Sons.
- ✓ Tisdale SL, Nelson SL, Beaton JD & Havlin JL. 1999. Soil Fertility and th Fertilizers. 5 Ed. Prentice Hall of India.
- ✓ Troeh FR & Thompson LM. 2005. Soils and Soil Fertility. Blackwell.

*Applicable for courses having practical component.

VOC

Session: 2023-24			
Part A – Introduction			
Subject	Chemistry		
Semester	VI		
Name of the Course	Green laboratory practices		
Course Code	B23-VOC-321		
Course Type: (CC/MCC/MDC/CC-M/DSEC/VOC/DSE/PC/AEC/VAC)	VOC		
Level of the course (As per Annexure-I	0-99		
Pre-requisite for the course (if any)	--		
Course Learning Outcomes (CLO):	After completing this course, the learner will be able to: 1. learn about green chemistry; 2. describe, how injudicious use of chemicals can have an adverse/potentially damaging effect on humans and the environment. 3. propose ideas for innovative approaches to energy challenges. 4. convert biomass into valuable chemicals through green technologies. 5*. Hands on training towards green chemistry		
Credits	Theory	Practical	Total
	3	1	4
Contact Hours	45	30	75
Max. Marks: 70 + 30* Internal Assessment Marks: 20 + 10* End Term Exam Marks: 50 + 20*		**Time: Theory: Three Hours Practicum: Three Hours**	
Part B- Contents of the Course			
Instructions for Paper- Setter Note: The examiner is requested to set nine questions in all, selecting two questions from each SECTION and one question (Question No.1 based on			

entire syllabus will consist of short answer type. All questions carry equal marks. The candidate is required to attempt five questions in all selecting one from each SECTION. Question No.1 is compulsory.		
Unit	**Topics**	**Contact Hours**
I	Scheme for the traditional as well as green method for the synthesis of ibuprofen. Compare the amount and hazards of waste generated in both Green Methods in Chemistry. Preparation of propene by two methods can be studied (I) Hoffman elimination (II) Dehydration of propanol	11 Hrs
II	Prevention/ minimization of hazardous/ toxic products reducing toxicity. Risk = (function) hazards exposure: (a) Nitration of salicylic acid using green method $Ca(NO_3)_2$ (b) Preparation of dibenzalacetone by cross aldol condensation reaction using base catalysed green method (c) Acetylation of primary aromatic amine using the green method. Use of Green solvents and comparison of greenness of solvents: (a) Introduction to water as a solvent for chemical reactions. preparation of Manganese (III) acetylacetonate using green method (b) Advantages and application of solventless processes in organic reactions. (c) Benzil- Benzilic acid rearrangement in solid State under solvent-free Condition.	12 Hrs
III	Energy requirements for reactions – alternative sources of energy: use of microwaves and photochemical energy. (a) Photoreduction of benzophenone to benzopinacol in the presence of sunlight. (b) Microwave assisted ammonium formate-mediated Knoevenagel reaction: p-anisaldehyde, ethyl cyanoacetate, ammonium formate.	11 Hrs
IV	Importance of using catalytic reagents in preference to stoichiometric reagents; catalysis and green chemistry, comparison of heterogeneous and homogeneous catalysis, biocatalysis, asymmetric catalysis and photocatalysis. (a) Benzoin condensation using Thiamine Hydrochloride as a catalyst instead of cyanide (b) Rearrangement of diazoamino benzene to p-aminoazo benzene using K10 montmorillonite clay	11 Hrs
V*	1. Dehydration of propanol 2. Nitration of salicylic acid using calcium nitrate 3. Photoreduction of benzophenone to benzopinacol in the	30 Hrs

	presence of sunlight 4. Microwave assisted solvent free synthesis of aspirin 5. Synthesisi of vitamin D3 using photochemical energy	
Suggested Evaluation Methods Short Answer and MCQ Type QUESTIONS		
Internal Assessment: 20+10*=30 ➢ **Theory: 20** ● Class Participation: 05 ● Seminar/presentation/assignment/quiz/class test etc.:05 ● Mid-Term Exam: 10 ➢ **Practicum:10** ● Class Participation: 05 ● Seminar/Demonstration/Viva-voce/Lab records etc.: 05 ● Mid-Term Exam: N. A.		**End Term Examination: 70 (50+20*)**
Part C-Learning Resources		

Recommended Books/e-resources/LMS:

Theory:

- ✓ Anastas, P.T., Warner, J.C. (2014), Green Chemistry, Theory and Practice, Oxford University Press.
- ✓ Lancaster, M. (2016), Green Chemistry: An Introductory Text, 3rd Ed., RSC Publishing.
- ✓ Cann, M.C., Connely, M. E. (2000), Real-World cases in Green Chemistry, American Chemical Society, Washington.
- ✓ Matlack, A.S. (2010), Introduction to Green Chemistry, 2nd Ed., CRC Press.
- ✓ Alhuwalia, V.K.; Kidwai, M.R. (2012), New Trends in Green chemistry, Kluwer Academic Publishers, Springer.
- ✓ Sidhwani, I.T; Sharma, R.K. (2020), An Introductory Text on Green Chemistry, Wiley India Pvt Ltd.
- ✓ Etzkorn, F. A . (2019), Green Chemistry: Principles and Case Studies, Royal Society of Chemistry.

Practicals:

- ✓ Kirchoff, M., Ryan, M.A. (2002), Greener approaches to undergraduate chemistry experiment, American Chemical Society, Washington DC.
- ✓ Sharma, R.K., Sidhwani, I.T., Chaudhari, M.K. (2013), Green Chemistry Experiments: A monograph, I.K. International Publishing House Pvt Ltd. New Delhi.
- ✓ Pavia, D.L., Lamponam, G.H., Kriz, G.S.W. (2006), Introduction to organic Laboratory Technique- A Microscale approach, 4th Edition, Brooks-Cole Laboratory Series for Organic chemistry.
- ✓ Sidhwani, I.T. ; Saini, G.; Chowdhury, S. Wealth from Waste: A green method to produce biodiesel from waste cooking oil and generation of useful products from waste further generated. University of Delhi, Journal of Undergraduate Research and Innovation, Volume 1, Issue 1, February 2015, ISSN: 2395-2334.
- ✓ Sharma, R. K., Gulati, S., Mehta, S. (2012), Preparation of Gold Nanoparticles Using Tea: A Green Chemistry Experiment, Journal of Chemical Education, 89 (10), 1316-1318.

*Applicable for courses having practical component.

SEC

Session: 2023-24			
Part A – Introduction			
Subject	Chemistry		
Semester	III		
Name of the Course	Chemistry of food flavours and colorants		
Course Code	B23-SEC-205		
Course Type: (CC/MCC/MDC/CC-M/DSEC/VOC/DSE/PC/AEC/VAC)	SEC		
Level of the course (As per Annexure-I	100-199		
Pre-requisite for the course (if any)	4.0		
Course Learning Outcomes (CLO):	After completing this course, the learner will be able to: 1 Know about basic food components; 2 Analyse the food flavors and pigments; 3 Think about the food additives; 4 Understand about food colorants. 5*. Analyse the extraction & reactions of food components.		
Credits	Theory	Practical	Total
	2	1	3
Contact Hours	30	30	60
Max. Marks: 50+25*= 75 **Internal Assessment Marks: 15+5*= 20** **End Term Exam Marks: 35+20*=55**		**Time: Theory: 3 Hours** **Practicum: 3 Hours**	
Part B- Contents of the Course			
Instructions for Paper- Setter Note: The examiner is requested to set nine questions in all, selecting two questions from each SECTION and one question (Question No.1 based on			

entire syllabus will consist of short answer type. All questions carry equal marks. The candidate is required to attempt five questions in all selecting one from each SECTION. Question No.1 is compulsory.		
Unit	**Topics**	**Contact Hours**
I	**Biological molcules in food processing** Water: Physical properties: specific heat, latent heat, vapor pressure, boiling point, water as dispersing medium, states of water, Water in food preparation and preservation Starch: Structure, functional properties - Gelatinization, pasting, syneresis, retrogradation, dextrinization. Factors affecting gelatinization and gelation, c) Gums – Functions, sources, applications. d) Pectic substances, pectin gels	8 Hrs
II	**Enzymes:** a) Biocatalysts, enzyme specificity b) Use of exogenous enzymes in foods – amylases, lipases, proteases c) Endogenous enzymes – phenol oxidases, peroxidases, oxido-reductases, lipoxygenases d) Factors affecting enzyme activity	8 Hrs
III	**Flavours & Pigments** Flavours: a) Molecular mechanism of flavor perception (sweet, bitter, salty, sour, umami, kokumi, pungent, cooling and astringent) b) Flavours from vegetables, fruits, spices, fats and oils, milk and meat products Pigments: a) Pigments in Animal and Plant tissues (Haeme compounds, Chlorophyll, Carotenoids, Anthocyanins, Betalins) b) Synthetic Food Colors (toxicity and regulatory aspects)	7 Hrs
IV	**Food Additives** Additives: a) Buffer systems and salts, chelating agents b) Antioxidants c) Antimicrobials d) Fat replacers, sweeteners e) Masticatory substances f) Firming texturizers g) Clarifying agents, bleaching agents h) Flour improvers, anti-caking agents, i) Gases and propellants.Color – Natural and synthetic food colors, their chemical structure, shades imparted, stability, permitted list of colors, usage levels and food application. Food colorants: sunset yellow, orange-B, citrus red No2, yellow No5, green No3.	7 Hrs
V*	1. Gelatinization of starch granules; 2. To study hydrolysis of starch through salivary amylase 3. To study hydrolysis of fatty acids 4. Extraction of chlorophyll from different leaves;	30 Hrs
Suggested Evaluation Methods Short Answer and MCQ Type QUESTIONS		

Internal Assessment: 15 ➢ **Theory** ● Class Participation: 04 ● Seminar/presentation/assignment/quiz/class test etc.: 04 ● Mid-Term Exam: 07 ➢ **Practicum: 05** ● Class Participation: 02 ● Seminar/Demonstration/Viva-voce/Lab records etc.: 03 ● Mid-Term Exam: NIL	**End Term Examination: 35+20***

Part C-Learning Resources

Recommended Books/e-resources/LMS:

- ✓ Bright Siaw Afriyie, Introduction to Computer fundamentals.
- ✓ Vacklavick, V. and Christian, E. (2003). Essentials of Food Science. New York: Kluwer Academic/ Plenu Publisher.
- ✓ Damodaran S., Parkin KL. and Fennema OR. Fennema's Food Chemistry (4th Edition), Florida: CRC Press
- ✓ Rick Parker (2003), Introduction to Food Science, New York: Delmar Thomson Learning Borvers, J. (1992).
- ✓ Food Theory and Application (2ndEd), New York: Maxwell MacMillan International Edition.
- ✓ Manay, N. S. and Sharaswamy, S. M. (1997). Foods: Facts and Principles New Delhi: New Age International Publishers.
- ✓ McWilliams, M (2007). Foods: Experimental Perspectives 5th Ed, New Jersey: Macmillar Publishing Co. Potter,
- ✓ N. N. and Hutchkiss, J. H. (1997). Food Science, 5th Ed, New Delhi: CBS Publishers and Distributors.
- ✓ Scottsmith and Hui Y.H (Editiors) (2004) Food Processing – Principles and Applications London Blackwell
- ✓ Carmen Socaciu, "Food Colorants Chemical and functional properties", CRC Press,2007
- ✓ Dr. Geetha Swaminathan & Mrs. Mary George, Laboratory chemical methods in food analysis, Margham Publishers, 2002.

*Applicable for courses having practical component.

SEC

Session: 2023-24			
Part A – Introduction			
Subject	Chemistry		
Semester	III		
Name of the Course	Analytical Chemistry		
Course Code	B23-SEC-221		
Course Type: (CC/MCC/MDC/CC-M/DSEC/VOC/DSE/PC/AEC/VAC)	SEC		
Level of the course (As per Annexure-I	0-99		
Pre-requisite for the course (if any)	4.0		
Course Learning Outcomes (CLO):	After completing this course, the learner will be able to: 1. Analyse concepts about chromatography & its types; 2. Understand about soil analysis; 3. Learn water purification methods; 4. Perform food processing analysis. 5*. Practically analyse the soil composition.		
Credits	Theory	Practical	Total
	2	1	3
Contact Hours	30	30	45
Max. Marks: 50+25*= 75 **Internal Assessment Marks: 15+5*= 20** **End Term Exam Marks: 35+20*=55**		**Time: Theory: 3 Hours** **Practicum: 3 Hours**	
Part B- Contents of the Course			
Instructions for Paper- Setter Note: The examiner is requested to set nine questions in all, selecting two questions from each SECTION and one question (Question No.1 based on			

entire syllabus will consist of short answer type. All questions carry equal marks. The candidate is required to attempt five questions in all selecting one from each SECTION. Question No.1 is compulsory.		
Unit	**Topics**	**Contact Hours**
I	Chromatography: Definition, general introduction on principles of chromatography, Column chromatography, paper chromatography, TLC& , ion-exchange chromatography.	8 Hrs
II	Analysis of soil: Composition of soil, Concept of pH and pH measurement, Complexometric titrations, Chelation, Chelating agents, use of indicators.	7 Hrs
III	Analysis of water: Definition of pure water, sources responsible for contaminating water, water sampling methods, water purification methods.	8 Hrs
IV	Analysis of food products: Nutritional value of foods, idea about food processing and food preservations and adulteration.	7 Hrs
V*	1. Paper chromatographic separation of mixture of metal ion (Fe^{3+} and Al^{3+}). 2. To compare samples of dyes/paints by TLC method. 3. Identification of adulterants in some common food items like coffee powder, asafoetida, chilli powder, turmeric powder, coriander powder and pulses, etc. 4. Determination of pH of soil samples. 5. Estimation of Calcium and Magnesium ions as Calcium carbonate by complexometric titration. 6. Determination of pH, acidity and alkalinity of a water	30 Hrs
Suggested Evaluation Methods Short Answer and MCQ Type QUESTIONS		
Internal Assessment: 15 ➢ **Theory** ● Class Participation: 04 ● Seminar/presentation/assignment/quiz/class test etc.: 04 ● Mid-Term Exam: 07 ➢ **Practicum: 05** ● Class Participation: 02 ● Seminar/Demonstration/Viva-voce/Lab records etc.: 03 ● Mid-Term Exam: NIL		**End Term Examination: 35+20***
Part C-Learning Resources		

Recommended Books/e-resources/LMS:

- ✓ E. Stocchi: *Industrial Chemistry*, Vol -I, Ellis Horwood Ltd. UK.
- ✓ Willard, H.H., Merritt, L.L., Dean, J. & Settoe, F.A. Instrumental Methods of Analysis. 7th Ed. Wadsworth Publishing Co. Ltd., Belmont, California, USA, 1988.
- ✓ Skoog, D.A. Holler F.J. & Nieman, T.A. Principles of Instrumental Analysis, Cengage Learning India Ed.
- ✓ Skoog, D.A.; West, D.M. & Holler, F.J. Fundamentals of Analytical Chemistry 6th Ed., Saunders College Publishing, Fort Worth (1992).
- ✓ Harris, D. C. Quantitative Chemical Analysis, W. H. Freeman.
- ✓ Dean, J. A. Analytical Chemistry Notebook, McGraw Hill.
- ✓ Day, R. A. & Underwood, A. L. Quantitative Analysis, Prentice Hall of India.
- ✓ Freifelder, D. Physical Biochemistry 2nd Ed., W.H. Freeman and Co., N.Y. USA (1982).
- ✓ Cooper, T.G. The Tools of Biochemistry, John Wiley and Sons, N.Y. USA. 16 (1977).
- ✓ Vogel, A. I. Vogel's Qualitative Inorganic Analysis 7th Ed., Prentice Hall.
- ✓ Vogel, A. I. Vogel's Quantitative Chemical Analysis 6th Ed., Prentice Hall.
- ✓ Robinson, J.W. Undergraduate Instrumental Analysis 5th Ed., Marcel Dekker, Inc., New York (1995).

*Applicable for courses having practical component.

SEC

Session: 2023-24			
Part A – Introduction			
Subject	Chemistry		
Semester	III		
Name of the Course	Food Adulteration Testing		
Course Code	B23-SEC-404		
Course Type: (CC/MCC/MDC/CC-M/DSEC/VOC/DSE/PC/AEC/VAC)	SEC		
Level of the course (As per Annexure-I	0-99		
Pre-requisite for the course (if any)	--		
Course Learning Outcomes (CLO):	After completing this course, the learner will be able to: 1 Know about common food adulterants 2 Learn methods of detection of adulterants in food 3 Get aware about laws related with adulteration 4 Understand the role of several agencies. _____ 5*. Practically detect adulteration in foods.		
Credits	Theory	Practical	Total
	2	1	3
Contact Hours	30	30	60
Max. Marks: 50+25* **Internal Assessment Marks: 15+5*** **End Term Exam Marks: 35+20***		**Time: Theory: 3 Hours** **Practicum: 3 Hours**	
Part B- Contents of the Course			
<u>Instructions for Paper- Setter</u> Note: The examiner is requested to set nine questions in all, selecting two questions from each SECTION and one question (Question No.1 based on			

entire syllabus will consist of short answer type. All questions carry equal marks. The candidate is required to attempt five questions in all selecting one from each SECTION. Question No.1 is compulsory.		
Unit	**Topics**	**Contact Hours**
I	**Common Foods and Adulteration** Common Foods subjected to Adulteration - Adulteration Definition – Types; Poisonous substances, Foreign matter, Cheap substitutes, Spoiled parts. Adulteration through Food Additives – Intentional and incidental. General Impact on Human Health.	8 Hrs
II	**Adulteration of Common Foods and Methods of Detection** Means of Adulteration, Methods of Detection Adulterants in the following Foods; Milk, Oil, Grain, Sugar, Spices, Processed food, Fruits and vegetables. Additives and Sweetening agents (at least three methods of detection for each food item).	8 Hrs
III	**Present Laws and Procedures on Adulteration** Highlights of Food Safety and Standards Act 2006 (FSSA) –Food Safety and Standards Authority of India–Rules and Procedures of Local Authorities.	7 Hrs
IV	Role of voluntary agencies such as, Agmark, I.S.I. Quality control laboratories of companies, Private testing laboratories, Quality control laboratories of consumer co-operatives. Consumer education, Consumer's problems rights and responsibilities, COPRA 2019 - Offenses and Penalties – Procedures to Complain – Compensation to Victims.	7 Hrs
V*	1. Determination of urea & starch in milk. 2. Determination of starch in Khoa products. 3. Determination of Margarine in Ghee. 4. Determination of Metanil yellow colour in Jaggery. 5. Determination of colored saw dust in turmeric powder.	30 Hrs
Suggested Evaluation Methods Short Answer and MCQ Type QUESTIONS		
Internal Assessment: 15 ➢ **Theory** ● Class Participation: 04 ● Seminar/presentation/assignment/quiz/class test etc.: 04 ● Mid-Term Exam: 07 ➢ **Practicum: 05** ● Class Participation: 02 ● Seminar/Demonstration/Viva-voce/Lab records etc.: 03 ● Mid-Term Exam: NIL		**End Term Examination: 35+20***

Part C-Learning Resources
Recommended Books/e-resources/LMS: ✓ Bright Siaw Afriyie, Introduction to Computer fundamentals. ✓ First course in Food Analysis – A.Y. Sathe, New Age International(P)Ltd.,1999 ✓ Food Safety, case studies – Ramesh. V. Bhat, NIN, 1992 ✓ https://old.fssai.gov.in/Portals/0/Pdf/Draft_Manuals/Beverages and confectionary.pdf ✓ https://cbseportal.com/project/Download-CBSE-XII-Chemistry-Project-Food-Adulteration#gsc.tab=0 ✓ https://www.fssai.gov.in/ ✓ https://indianlegalsolution.com/laws-on-food-adulteration/ ✓ https://fssai.gov.in/dart/ ✓ https://byjus.com/biology/food-adulteration/ ✓ Wikiepedia ✓ Vikaspedia

*Applicable for courses having practical component.

VAC

Session: 2023-24			
Part A – Introduction			
Subject	Chemistry		
Semester	I		
Name of the Course	Chemistry in everyday life		
Course Code	B23-VAC-420		
Course Type: (CC/MCC/MDC/CC-M/DSEC/VOC/DSE/PC/AEC/VAC)	VAC		
Level of the course (As per Annexure-I	100-199		
Pre-requisite for the course (if any)	4.0		
Course Learning Outcomes (CLO):	After completing this course, the learner will be able to: 1. Critically think about the presence of chemicals in daily life 2. Understand presence of chemicals used in food 3. Analyse importance of Vitamins and minerals 4. Think about general medicines 5*. -NA-		
Credits	Theory	Practical	Total
	2	N. A.	2
Contact Hours	30	N. A.	30
Max. Marks: 50 **Internal Assessment Marks: 15** **End Term Exam Marks: 35**		**Time: Three Hours**	
Part B- Contents of the Course			
Instructions for Paper- Setter Note: The examiner is requested to set nine questions in all, selecting two questions from each SECTION and one question (Question No.1 based on			

entire syllabus will consist of short answer type. All questions carry equal marks. The candidate is required to attempt five questions in all selecting one from each SECTION. Question No.1 is compulsory.		
Unit	**Topics**	**Contact Hours**
I	S**oaps and detergents, cleansing action of soap, Cleansing action of detergents** **Propellants, Solid propellant, liquid propellants, hybrid propellants dyes: Cause of exhibition of color, chromophore, auxochrome, classification of dyes** **Advanced chemical materials: Ceramics, Sunscreens**	8 Hrs
II	**Chemicals used in foods** Preservatives, coloring agents, sweetening agents, flavoring agents, antioxidants Chemicals used to grow, protect foods and crops: Fertilizers, Fungicides, Herbicide and Insecticide etc.	7 Hrs
III	**Vitamins and minerals** Definition, their significance, **Fat soluble vitamins** Names, daily dietary requirement, natural sources, Deficiency diseases **Water soluble vitamins** Names, daily dietary requirement, natural sources, Deficiency diseases **Minerals** Major and Minor nutrients, daily dietary requirement, natural sources, Deficiency diseases	7 Hrs
IV	**Chemicals in Medicine** Drug - target interaction (enzymes as drug targets and receptors as drug targets), chemical messengers, types of chemical messengers (hormones and neurotransmitters) **Chemotherapy** antipyretics, analgesics, antidepressants' antiseptics and disinfectants, antiviral drugs, antacids, antimalarial, anesthetics, tranquilizers, hypnotics and sedatives, ant allergic drugs and histamines	8 Hrs
V*	**N.A.**	
Suggested Evaluation Methods Short Answer and MCQ Type QUESTIONS		

Internal Assessment: ➢ **Theory: 15** ● Class Participation: 04 ● Seminar/presentation/assignment/quiz/class test etc.: 04 ● Mid-Term Exam: 07 ➢ **Practicum Nil** ● Class Participation: ● Seminar/Demonstration/Viva-voce/Lab records etc.: ● Mid-Term Exam:	**End Term Examination: 35**
Part C-Learning Resources	
Recommended Books/e-resources/LMS: ✓ NCERT Chemistry	

KURUKSHETRA UNIVERSITY

KURUKSHETRA

(Established by the state legislature Act XII of 1964)
A^{+} Grade NAAC Accredited)

Scheme of Examination and Syllabus for

Under-Graduate Programme

Subject: Industrial Chemistry

Under Multiple Entry-Exit, Internship and CBCS-LOCF in accordance to NEP-2020 w.e.f. 2023-24 (in phased manner)

DEPARTMENT OF CHEMISTRY, KURUKSHETRA UNIVERSITY, KURUKSHETRA

Scheme for Undergraduate Course Programme, Subject: Industrial Chemistry-Scheme A

FIRST YEAR: SEMESTER-1									
Remarks	**Course**	**Paper(s)**	**Nomenclature of Paper**	**Credits**	**Hours/ Week**	**Internal marks**	**External Marks**	**Total Marks**	**Exam Duration**
Scheme A	**CC-1 4 credit**	B23-ICH-101	Major Industrial Chemistry-I	3	3	20	50	70	3 hrs.
			Practical	1	2	10	20	30	3 hrs.
FIRST YEAR: SEMESTER-2									
Remarks	**Course**	**Paper(s)**	**Nomenclature of Paper**	**Credits**	**Hours/ Week**	**Internal marks**	**External Marks**	**Total Marks**	**Exam Duration**
Scheme A	**CC-2 4 credit**	B23-ICH-201	Major Industrial Chemistry-II	3	3	20	50	70	3 hrs.
			Practical	1	2	10	20	30	3 hrs.
Internship of 4 credits of 4-6 weeks duration after 2nd Semester									

SECOND YEAR: SEMESTER-3									
Remarks	**Course**	**Paper(s)**	**Nomenclature of Paper**	**Credits**	**Hours/ Week**	**Internal marks**	**External Marks**	**Total Marks**	**Exam Duration**
Scheme A	**CC-3 4 credit**	B23-ICH-301	Major Industrial Chemistry-III	**3**	**3**	**20**	**50**	**70**	**3 hrs.**
			Practical	**1**	**2**	**10**	**20**	**30**	**3 hrs.**

SECOND YEAR: SEMESTER-4									
Remarks	**Course**	**Paper(s)**	**Nomenclature of Paper**	**Credits**	**Hours/ Week**	**Internal marks**	**External Marks**	**Total Marks**	**Exam Duration**
Scheme A	**CC-4 4 credit**	B23-ICH-401	Major Industrial Chemistry-IV	**3**	**3**	**20**	**50**	**70**	**3 hrs.**
			Practical	**1**	**2**	**10**	**20**	**30**	**3 hrs.**
Internship of 4 credits of 4-6 weeks duration after 4th Semester (if not done after second semester)									

THIRD YEAR: SEMESTER-5									
Remarks	**Course**	**Paper(s)**	**Nomenclature of Paper**	**Credits**	**Hours/ Week**	**Internal marks**	**External Marks**	**Total Marks**	**Exam Duration**
Scheme A	**CC-5 4 credit**	B23-ICH-501	Major Industrial Chemistry-V	**3**	**3**	**20**	**50**	**70**	**3 hrs.**
			Practical	**1**	**2**	**10**	**20**	**30**	**3 hrs.**
THIRD YEAR: SEMESTER-6									
Remarks	**Course**	**Paper(s)**	**Nomenclature of Paper**	**Credits**	**Hours/ Week**	**Internal marks**	**External Marks**	**Total Marks**	**Exam Duration**
Scheme A	**CC-6 4 credit**	B23-ICH-601	Major Industrial Chemistry-VI	**3**	**3**	**20**	**50**	**70**	**3 hrs.**
			Practical	**1**	**2**	**10**	**20**	**30**	**3 hrs.**

CC-1

Session: 2023-24			
Part A – Introduction			
Subject	Industrial Chemistry		
Semester	I		
Name of the Course	Major Industrial Chemistry-I		
Course Code	B23-ICH-101		
Course Type: (CC/MCC/MDC/CC-M/DSEC/VOC/DSE/PC/AEC/VAC)	CC		
Level of the course (As per Annexure-I	100-199		
Pre-requisite for the course (if any)	4.0		
Course Learning Outcomes (CLO):	After completing this course, the learner will be able to: 1 Gain knowledge of various unit operation in chemical technology like distillation, evaporation and filtration 2 Understand catalysis and colloidal Chemistry and their role in various chemical processes. 3 Learn about various metallurgical operations and knowledge about extraction about metals from various ores. 4 Apply material balance with chemical equations in different industries. _____ 5*. Understand good laboratory practices, calibration of apparatuses, apply to prepare standard solution of various concentration and volumetric analysis.		
Credits	Theory	Practical	Total
	3	1	4
Contact Hours	45	30	75

Max. Marks: 70+ 30* **Internal Assessment Marks: 20 + 10*** **End Term Exam Marks: 50 + 20***	**Time: 3 hrs. for Theory and 3 hrs. for Practical**

Part B- Contents of the Course

Instructions for Paper- Setter

The examiner is requested to set 9 questions in all.

1. Question No. 1 will be compulsory and based on the conceptual aspects of the entire syllabus. This question may have five parts and answer should be in brief. Each part of this question is of two mark.
2. Eight questions will be set from all four sections by selecting two questions from each section.

Students should attempt four more question by selecting one question from each section. Each question carry equal marks.

Unit	Topics	Contact Hours
I	**Distillation Unit Process** Introduction, volatility, relative volatility, general equipment for distillation, types of distillation processes, concept of batch and continuous distillation, simple steam distillation, advantages and disadvantages of steam distillation, application of steam distillation in various chemical processes. **Evaporation and Drying** Introduction, factors affecting the rate of evaporation and choice of evaporators, application of evaporation in chemical process industries, equipment- climbing film evaporator, Introduction of drying process, free moisture, bound moisture and equilibrium moisture content, purpose of drying, equipment- rotary dryer.	12 Hrs.
II	**Filtration** Introduction, filter media and filter aids, characteristics of ideal filter aids, factors affecting the rate of filtration and choice of filter media, equipment- bag filters and candle filters. **Absorption** Introduction, desorption or gas stripping, equipment-spray column for absorption. **Material Balance** Introduction, steady and unsteady state of flow processes, material balance equation without chemical reactions, flow/block diagrams for various industrially important chemical engineering operations such as distillation, absorption and	11 Hrs.

	crystallization and their overall material balance equation. (Numerical problems excluded).	
III	**Metallurgical operations** Definition, crushing and pulverization, concentration methods- gravity separation, magnetic concentration, froth flotation process, chemical methods- calcination and roasting, reduction using carbon and carbon monoxide, Alumino thermite reduction, auto reduction, reduction using precipitation method, refining methods polling, parting and electrolyte refining. **Metallurgical Extraction** Metallurgical extraction and refining of the following metals from their important ores: Lead from galena, Aluminum from bauxite and Zinc from Zinc blende.	11 Hrs.
IV	Catalysis: Definition, positive and negative catalyst, homogeneous and heterogeneous catalysis, theories of catalysis- adsorption theory and intermediate complex formation theory, characteristics of catalytic reactions, catalytic inhibitors, catalytic promoters, auto catalysis, introduction to enzyme catalysis, optimum pH and optimum temperature. **Colloidal Chemistry** Colloidal dispersion, definition, types, emulsions and types, applications of emulsions, Gel formation and its types, their importance, micelles, types, preparation and uses.	11 Hrs.
V*	**Practical paper Syllabus: Basic Analytical Techniques** ❖ Good Laboratory Practices, Calibration of thermometer and burette. ❖ Simple Laboratory Techniques: Crystallization, fractional crystallization, distillation, filtration and evaporation. ✓ To purify $CuSO_4$ by the process of crystallization. ✓ To purify Potash Alum by the process of crystallization. ✓ To purify the given organic solvent by distillation process. ✓ To separate the different components of a solid mixture by the process ofFiltration and evaporation. ❖ Standardization of solutions ✓ Prepare and standardize the solution of sodium hydroxide. ✓ Prepare and standardize the given solution of $KMnO_4$. ✓ Prepare and standardize the given solution of hydrochloric acid against standard Sodium hydroxide solution. ✓ Prepare standard solution of $KMnO_4$ and ferrous ammonium sulphate Solution. Find out the strength of unknown ferrous ammonium sulphateSolution.	30 Hrs.

Suggested Evaluation Methods	
Internal Assessment: ➢ **Theory (20 Marks)** • Class Participation: 05 Marks • Seminar/presentation/assignment/quiz/class test etc.: 05 Marks • Mid-Term Exam: 10 Marks ➢ **Practicum (10 Marks)** • Class Participation: Nil • Seminar/Demonstration/Viva-voce/Lab records etc.: 10 Marks • Mid-Term Exam: Nil	**End Term Examination:** 50 Marks 20 Marks

Part C-Learning Resources

Recommended Books/e-resources/LMS:

- ✓ Physical chemistry by B.R Puri, I.R Sharma and M.S Pathania.
- ✓ Study Material in Vocational Subject to Industrial Chemistry (B.Sc. I, UGC) Sponsored (Text Book)
- ✓ Principles of Extractive Metallurgy, Herbashi Vol. 1 and 2.
- ✓ Introduction to Chemical Engineering W.L. Badger and J.T. Banchero, Mc Graw- Hill Book Co.,USA.
- ✓ Unit Operations in Chemical Engineering W.L. McCabe and J.C Smith, Mc Graw- Hill Books co.,New York.
- ✓ Physical Chemistry, G.M. Barrow, Tata McGraw-Hill.
- ✓ Riegel's Handbook of Industrial Chemistry, J.A. Kent, J.A.(ed), CBS Publishers, New Delhi.
- ✓ Saxena Ruchi, Srivastava Alok Kumar, "Read & Do Practical Chemistry", Kitab Mahal, New Delhi, India (2016).
- ✓ Skoog D. A., West. D.M and Holler .F.J., "Analytical Chemistry: An Introduction", 7th edition, Saunders college publishing, Philadelphia (2010).
- ✓ G. Larry Hargis, "Analytical Chemistry: Principles and Techniques" Pearson© (1988)

Suggested links for e-resources:

- ✓ https://swayam.gov.in/
- ✓ https://nptel.ac.in/courses/112/104/112104113/
- ✓ https://onlinecourses.nptel.ac.in/noc19_ph14/preview
- ✓ http://heecontent.upsdc.gov.in/Home.aspx
- ✓ https://ncert.nic.in/textbook.php?kech1=0-7
- ✓ https://www.labster.com/chemistry-virtual-labs/
- ✓ http://chemcollective.org/vlabs

*Applicable for courses having practical component.

CC-II

Session: 2023-24			
Part A – Introduction			
Subject	Industrial Chemistry		
Semester	II		
Name of the Course	Major Industrial Chemistry-II		
Course Code	B23-ICH-201		
Course Type: (CC/MCC/MDC/CC-M/DSEC/VOC/DSE/PC/AEC/VAC)	CC		
Level of the course (As per Annexure-I	100-199		
Pre-requisite for the course (if any)	4.0		
Course Learning Outcomes (CLO):	After completing this course, the learner will be able to: 1 Understand fundamental of Organic Chemistry, intermediates and reaction mechanism. 2 Get knowledge of various titration methods to estimate the purity of various compounds. 3 Understand about the various types of fuels, coal and their chemical analysis. 4 Learn about the petroleum industry and its products. _____ 5*. Estimate various natural ores, alloys and other compounds. Analyse and estimate iodine value of an oil sample, saponification value of oil and how to prepare different emulsions.		
Credits	Theory	Practical	Total
	3	1	4
Contact Hours	45	30	75
Max. Marks: 70+ 30* Internal Assessment Marks: 20 + 10* End Term Exam Marks: 50 + 20*		**Time: 3 hrs. for Theory and 3 hrs. for Practical**	

Part B- Contents of the Course		
Instructions for Paper- Setter The examiner is requested to set 9 questions in all. 1. Question No. 1 will be compulsory and based on the conceptual aspects of the entire syllabus. This question may have five parts and answer should be in brief. Each part of this question is of two marks. 2. Eight questions will be set from all four sections by selecting two questions from each section. Students should attempt four more question by selecting one question from each section. Each question carry equal marks.		
Unit	**Topics**	**Contact Hours**
I	**Fundamentals of Organic Chemistry** Cleavage of bonds (homolysis and heterolysis), reaction. intermediates (carbocation, carbanion and free radicals), electrophiles and nucleophiles, inductive effect, electrometric effect, mesomeric effect, resonance effect, hyperconjugation effect and stearic effect. **Halogenation Unit Process** Introduction, types of halogenation reaction, halogenating agents, kinetics and mechanism of halogenation, manufacturing process of chlorobenzene. **Sulphonation Unit Process** Introduction, types of sulphonation reaction, sulphonating agents, commercial sulphonation of alkyl benzene.	12 Hrs.
II	**Titrimetric Analysis** Primary and secondary standards, normality, molarity. Molality, indicators, mixed indicators, neutralization indicators, universal indicators, choice of indicators in neutralization reactions, complexation titrations and precipitation titrations. **Heat Transfer** Introduction, mode of heat transfer, Fourier's law of heat conduction, corrugation, types of corrugation, scraped surface heat exchanger. **Steam** Basic specification of water used for steam production, various applications of steam in industrial processes.	11 Hrs.
III	**Corrosion** Definition, oxidation corrosion, nature of corrosion layer formed, corrosion by hydrogen, concentration cell corrosion, microbiological corrosion, factors influencing corrosion,	

	position of the metal in galvenic series, relative cathodic and anodic area, nature of the surface film formed and nature of the medium. **Corrosion Control** Proper designing, cathodic protection, modification of the environment, use of cathodic and anodic inhibitors.	11 Hrs.
IV	**Fuels** Definition and classification, calorific value, higher or gross calorific value, lower or net calorific value, characteristics of a good fuel. **Coal** Analysis of coal, proximate analysis, determination and importance of moisture content, volatile matter, ash content and fixed carbon. Ultimate analysis, determination and importance of carbon, hydrogen and impurity like sulphur, nitrogen, ash and oxygen in coal. **Petroleum** Fractional distillation of crude oil using fractionating column, cracking- thermal and catalytic cracking of petroleum products, reforming- thermal and catalytic reforming.	11 Hrs.
V*	**Practical paper: Quantitative and Qualitative Analysis** ❖ Analysis of Dolomite ore. ❖ Analysis of Calcite ore. ❖ Analysis of lime stone. ❖ Analysis of Brass sample. ❖ Analysis of Lunar caustic. ❖ Determination of percentage of Fe in Mohr's salt. ❖ Determine the Iodine value of a given oil sample. ❖ Determine the saponification value of a given oil sample. ❖ Prepare a sample of an emulsion- Oil in water. ❖ Prepare a sample of an emulsion – Water in oil.	30 Hrs.
Suggested Evaluation Methods		
Internal Assessment: ➢ **Theory (20 Marks)** • Class Participation: 05 Marks • Seminar/presentation/assignment/quiz/class test etc.: 05 Marks • Mid-Term Exam: 10 Marks ➢ **Practicum (10 Marks)** • Class Participation: Nil • Seminar/Demonstration/Viva-voce/Lab records etc.: 10 Marks • Mid-Term Exam: Nil		**End Term Examination:** 50 Marks 20 Marks

Part C-Learning Resources
Recommended Books/e-resources/LMS: ✓ Study Material in Vocational Subject to Industrial Chemistry (B.Sc. I, UGC) Sponsored (TextBook) ✓ Introduction to Chemical Engineering W.L. Badger and J.T. Banchero, Mc Graw- Hill Book Co.,USA. ✓ Unit Operations in Chemical Engineering W.L. McCabe and J.C Smith, Mc Graw- Hill Books co.,New York. ✓ Physical Chemistry, G.M. Barrow, Tata McGraw-Hill. ✓ Riegel's Handbook of Industrial Chemistry, J.A. Kent, J.A.(ed), CBS Publishers, New Delhi. ✓ Reaction Mechanism in Organic Chemistry, S.P. Singh, OM, Prakash, Trinity Press imprint of Laxmi Publication Pvt. Ltd. ✓ Industrial Chemistry, B.K. Sharma, Krishna's Educational Publishers. ✓ Khopkar, S.M. Basic Concepts of Analytical Chemistry. New Age International Publisher (2009) ✓ Svehla, G. Vogel's Qualitative Inorganic Analysis, Pearson Education (2012). ✓ Mendham, J. Vogel's Quantitative Chemical Analysis, Pearson (2009) ✓ A.I. Vogel, A.R. Tatchell, B.S. Furnis, A.J. Hannaford, P.W.G. Smith, Vogel's Textbook of Practical Organic chemistry (1989). **Suggested links for e-resources:** ✓ https://swayam.gov.in/ ✓ https://nptel.ac.in/courses/112/104/112104113/ ✓ https://onlinecourses.nptel.ac.in/noc19_ph14/preview ✓ http://heecontent.upsdc.gov.in/Home.aspx ✓ https://ncert.nic.in/textbook.php?kech1=0-7 ✓ https://www.labster.com/chemistry-virtual-labs/ ✓ http://chemcollective.org/vlabs

*Applicable for courses having practical component.

CC-3

Session: 2023-24			
Part A – Introduction			
Subject	Industrial Chemistry		
Semester	III		
Name of the Course	Major Industrial Chemistry-III		
Course Code	B23-ICH-301		
Course Type: (CC/MCC/MDC/CC-M/DSEC/VOC/DSE/PC/AEC/VAC)	CC		
Level of the course (As per Annexure-I	100-199		
Pre-requisite for the course (if any)	4.0		
Course Learning Outcomes(CLO):	After completing this course, the learner will be able to: 1 Understand about various inorganic chemical industries like ceramics, refractories, glass and cement industry. 2 Apply knowledge of various material balance equation involving chemical reactions. 3 Apply skill related to various pollutants from the industries, their statutory limit and knowledge about air pollution, pesticide pollutions, noise pollution and radiation pollution. 4 Understand about unit process of crystallization in various industries. _____ 5*. Analyze alkalinity, acidity, hardness, permanent hardness, temporary hardness, total solids, dissolve solids, suspended solids and dissolved oxygen of water. Students will create various organic compounds in lab.		
Credits	Theory	Practical	Total
	3	1	4
Contact Hours	45	30	75
Max. Marks: 70+ 30* Internal Assessment Marks: 20 + 10* End Term Exam Marks: 50 + 20*		**Time: 3 hrs. for Theory and 3 hrs. for Practical**	

Part B- Contents of the Course

Instructions for Paper- Setter

The examiner is requested to set 9 questions in all.

1. Question No. 1 will be compulsory and based on the conceptual aspects of the entire syllabus. This question may have five parts and answer should be in brief. Each part of this question is of two marks.
2. Eight questions will be set from all four sections by selecting two questions from each section.

Students should attempt four more question by selecting one question from each section. Each question carry equal marks.

Unit	Topics	Contact Hours
I	**Ceramic Industry** Introduction, types of clay products, properties of clay, plasticity of clay, manufacturing of white wares, applications of white wares. **Refractories** Introduction, classification, properties of refractories body, manufacturing of silica bricks, high alumina bricks, dolomite bricks, carbon bricks, graphite bricks and their applications. **Cement Industry** Introduction, types of cement, chemical composition Portland cement, manufacturing process of Portland cement.	12 Hrs.
II	**Crystallization** Introduction, concept of super saturation, nucleation, primary nucleation and secondary nucleation, crystal growth, caking of crystals, factors affecting caking and prevention of caking, equipment- circulating liquid evaporator crystallizers. **Material balance involving chemical reactions** Introduction, conceptual study of terms involved- stoichiometric equation, stoichiometric coefficients, limiting reactant, excess reactant, conversion, recycling operations and need for their adoption in process industries.	11 Hrs.
III	**Air pollution** Air pollutants gases- sulphur dioxide, sulphur trioxide, oxides of nitrogen, carbon monoxide, particulate matter- dust, smoke, smog their sources and bad effects, remedial measures to control air pollution, processing of air using electrostatic precipitator. Greenhouse effect and its consequences, deforestation and its consequences. Industrial specification and uses of air. **Thermal pollution**	11 Hrs.

	Definition, sources of thermal pollution and bad effects of thermal pollution.	
IV	**Noise pollution** Definition, noise level bearable limit, sources of noise pollution, bad effects of noise pollution and prevention of noise pollution. (4Hrs) **Pesticide pollution** Classification of pesticides, sources of pesticides pollution, bad effects of pesticides and control measures of pesticides pollution. **Radiation pollution** Sources, hazards of nuclear radiations and methods of disposal of radioactive waste.	11 Hrs.
V*	**Practical paper: Water Analysis and Organic Synthesis** ❖ Determination of alkalinity of given water sample. ❖ Determination of acidity of given water sample. ❖ Determination of total hardness of given water sample. ❖ Determination of temporary and permanent hardness of water sample. ❖ Determination of dissolved oxygen of given water sample. ❖ Determination of calcium ions in a given water sample. ❖ To prepare a pure sample of m-dinitrobenzene. ❖ To prepare a pure sample of anthraquinone from anthracene. ❖ To prepare a pure sample of 1-phenyl azo B naphthol. ❖ To prepare a pure sample of anthranilic acid from phthalic anhydride	30 Hrs.
Suggested Evaluation Methods		
Internal Assessment: ➢ **Theory (20 Marks)** • Class Participation: 05 Marks • Seminar/presentation/assignment/quiz/class test etc.: 05 Marks • Mid-Term Exam: 10 Marks ➢ **Practicum (10 Marks)** • Class Participation: Nil • Seminar/Demonstration/Viva-voce/Lab records etc.: 10 Marks • Mid-Term Exam: Nil		**End Term Examination:** 50 Marks 20 Marks

Part C-Learning Resources
Recommended Books/e-resources/LMS: ✓ Industrial Chemistry, B.K. Sharma, GoeL, Publishing House. ✓ Industrial Pollution and Environmental Management, R.K, Trivedy, N.S. Raman, Scientific Publishers Journals. Environmental and Pollution Science, M. Brusseau, I. Pepper, C. Gerba, Third Edition, Elsevier Science. ✓ Study material in Vocational subject of Industrial Chemistry (B.Sc II UGC) sponsored text book. ✓ Engineering Chemistry, Jain & Jain, Dhanpat Rai Publishing Co. ✓ M. M. Benjamin, D. F. Lawler, Water Quality Engineering: Physical / Chemical Treatment Processes by La - John Wiley & Sons (2013). **Suggested links for e-resources:** ✓ https://swayam.gov.in/ ✓ https://www.coursera.org/learn/physical-chemistry ✓ https://nptel.ac.in/courses/104/108/104108124/ ✓ https://nptel.ac.in/courses/104/106/104106122/

*Applicable for courses having practical component.

CC-4

Session: 2023-24			
Part A – Introduction			
Subject	Industrial Chemistry		
Semester	IV		
Name of the Course	Major Industrial Chemistry-IV		
Course Code	B23-ICH-401		
Course Type: (CC/MCC/MDC/CC-M/DSEC/VOC/DSE/PC/AEC/VAC)	CC		
Level of the course (As per Annexure-I	100-199		
Pre-requisite for the course (if any)	4.0		
Course Learning Outcomes(CLO):	After completing this course, the learner will be able to: 1 Understand processing of industrial products like pulp and paper and sugar from sugar cane. 2 Prepare various organic compounds by applying the knowledge of unit processes like hydrogenation, oxidation, nitration and alkylation methods. 3 Understand various sources of water pollution and its management. 4 Understand about the solid waste management in various industries and apply the knowledge of various instruments for its analysis. _____ 5*. Determine the viscosity, surface tension, refractive index and molar refractive index of any liquid and qualitatively analyze various chemical processing industries like petroleum, food, oils and pharmaceutical industries.		
Credits	Theory	Practical	Total
	3	1	4
Contact Hours	45	30	75

Max. Marks: 70+ 30* **Internal Assessment Marks: 20 + 10*** **End Term Exam Marks: 50 + 20***	**Time: 3 hrs. for Theory and 3 hrs. for Practical**

Part B- Contents of the Course

Instructions for Paper- Setter

The examiner is requested to set 9 questions in all.

1. Question No. 1 will be compulsory and based on the conceptual aspects of the entire syllabus. This question may have five parts and answer should be in brief. Each part of this question is of two marks.
2. Eight questions will be set from all four sections by selecting two questions from each section.

Students should attempt four more question by selecting one question from each section. Each question carry equal marks.

Unit	Topics	Contact Hours
I	**Pulp and Paper Industry** Introduction, methods of pulping, manufacturing of wood pulp by sulphate process, bleaching of wood pulp, refining of pulp, sizing, coloring and manufacturing of paper by fourdrinier machine. **Sugar Industry** Introduction, manufacturing and refining of sugar from sugar cane.	12 Hrs.
II	**Hydrogenation Unit Process** Introduction, types of catalysts used for hydrogenation, commercial process of hydrogenation of vegetable oil. **Alkylation Unit Process** Introduction, types of alkylation reactions, alkylating agents, manufacturing process of ethyl benzene. **Oxidation Unit Process** Introduction, types of oxidation reactions, oxidizing agents, commercial manufacturing process of benzoic acid and acetic acid. **Nitration Unit Process** Introduction, types of reaction, nitrating agents, mechanism of nitration and manufacturing process of nitrobenzene.	11 Hrs.
III	**Water pollution** Definition, sources and bad effects of water pollution, water analysis, determination of alkalinity, acidity, hardness, dissolved oxygen and chloride content.	

	Water Treatments Treatments of waste water, preliminary treatment- removal of solids, grit, oil and greases, primary treatment of water- sedimentation and flocculation, secondary treatment- filters i.e. trickling filter, tertiary treatment- chlorination and chemical treatment.	11 Hrs.
IV	**Solid Waste Management** Classification of solid waste, microbiology of solid waste, disposal processes- composting, sanitary land filling incineration and pyrolysis. **Process Instrumentation** Principle, construction and working of the following instruments - Glass thermometer, bimetallic thermometer, pressure manometer and Barometers. (11Hrs)	11 Hrs.
V*	**Practical paper: Material Analysis and Organic Synthesis** ❖ Determine the Viscosity of a given liquid by Ostwald's Viscometer. ❖ Determine the Surface tension of a given liquid by Stalagmometer. ❖ Determine the Surface tension of a given liquid in the presence of surfactant. ❖ Determination of Refractive index of a given liquid by Abbe's refractometer. ❖ Determination of Molar refractivity and specific refractivity of a liquid by using Abbe's refractometer. ❖ To prepare a pure sample of Sulphanilic acid. ❖ To prepare a pure sample of m-nitroaniline from m-dinitrobenzene. ❖ To prepare a pure sample of p-nitro benzoic acid from p-nitroaniline. ❖ To prepare 4-amino benzoic acid from 4-nitrobenzoic acid.	30 Hrs.
Suggested Evaluation Methods		
Internal Assessment: ➢ **Theory (20 Marks)** • Class Participation: 05 Marks • Seminar/presentation/assignment/quiz/class test etc.: 05 Marks • Mid-Term Exam: 10 Marks ➢ **Practicum (10 Marks)** • Class Participation: Nil • Seminar/Demonstration/Viva-voce/Lab records etc.: 10 Marks • Mid-Term Exam: Nil		**End Term Examination:** 50 Marks 20 Marks

Part C-Learning Resources
Recommended Books/e-resources/LMS: ✓ Organic Chemistry, J.G. Smith, Tata McGraw-Hill Publishing Company Limited. ✓ Guidebook to Mechanism in Organic Chemistry, P.A. Sykes, Pearson Education. ✓ Advanced Organic Chemistry, J. March, Fourth edition, Wiley. ✓ Industrial Chemistry, B.K. Sharma, GOEL, Publishing House. ✓ Handbook of Pulp and Paper technology Book on Pulp and Paper Industries, K.W. Britt, 2 Ed. ✓ Industrial Pollution and Environmental Management, R.K, Trivedy, N.S. Raman, Scientific Publishers Journals.Environmental and Pollution Science, M. Brusseau, I. Pepper, C. Gerba, Third Edition, Elsevier Science. ✓ Study material in Vocational subject of Industrial Chemistry (B.Sc. II UGC) sponsored text book. **Suggested links for e-resources:** ✓ https://swayam.gov.in/ ✓ https://www.coursera.org/learn/physical-chemistry ✓ https://nptel.ac.in/courses/104/106/104106122/

*Applicable for courses having practical component.

CC-5

Session: 2023-24			
Part A – Introduction			
Subject	Industrial Chemistry		
Semester	V		
Name of the Course	Major Industrial Chemistry-V		
Course Code	B23-ICH-501		
Course Type: (CC/MCC/MDC/CC-M/DSEC/VOC/DSE/PC/AEC/VAC)	CC		
Level of the course (As per Annexure-I	100-199		
Pre-requisite for the course (if any)	4.0		
Course Learning Outcomes(CLO):	After completing this course, the learner will be able to: 1 Understand chromatography and accuracy analysis. 2 Know about modern instrumental analysis methods for qualitative measurements. 3 Get Knowlegde about spectrophotometer and refrectrometer. 4 Understand skills related to the instrumental analysis of various raw materials used in the industry for the production of various compounds. 5*. Analyze various properties by applying instruments pH meter, Refractrometer, Polarimeter, Nephelometer and Spectrophotometer.		
Credits	Theory	Practical	Total
	3	1	4
Contact Hours	45	30	75
Max. Marks: 70+ 30* Internal Assessment Marks: 20 + 10* End Term Exam Marks: 50 + 20*		**Time: 3 hrs. for Theory and 3 hrs. for Practical**	
Part B- Contents of the Course			

Instructions for Paper- Setter

The examiner is requested to set 9 questions in all.

1. Question No. 1 will be compulsory and based on the conceptual aspects of the entire syllabus. This question may have five parts and answer should be in brief. Each part of this question is of two marks.
2. Eight questions will be set from all four sections by selecting two questions from each section.

Students should attempt four more question by selecting one question from each section. Each question carry equal marks.

Unit	Topics	Contact Hours
I	**Chemometrics** Accuracy and precision, classification of errors and their minimization. Significant figures and computations. Standard deviation and relative standard deviation. **Chromatography** Principle and classification of chromatographic method, paper chromatography, Thin layer chromatography, HPLC and gas chromatography.	12 Hrs.
II	**Buffer solutions** Types of buffer solutions, buffer action, buffer capacity, importance of pH and its measurement. **Spectrophotometry** Principle, instrumentation for absorption measurements, qualitative and quantitative applications.	11 Hrs.
III	**Solvent Extraction** General discussion, factors favoring solvent extraction, classification of solvent extraction systems, applications of solvent extraction. **Amperometric titration** Theory, types and applications of amperometric titration. **Polarimetry** Principle, instrumentation and applications of polarimetry.	11 Hrs.
IV	**Refractometry** Principle, instruments and application of refractometry. **Nephelometry** Principle, instruments, factors affecting intensity of scattered radiations and application of nephelometry.	11 Hrs.
V*	**Practical paper : Material Analysis and Organic Synthesis** ❖ Study of λ_{max} of an absorbing sample by spectrophotometer. ❖ Determine the specific and molar rotation of an optically active substance like sucrose.	

	❖ Identification of cations in the mixture by paper chromatography. ❖ Study of number of components in the organic mixture by TLC. ❖ Separation of a mixture of organic compound by column chromatography. ❖ To determine the pH value of a given solution with pH meter. ❖ To determine the turbidity of a given solution by nephlometer. ❖ To find out the partition coefficient of iodine between CCL4 and water.	30 Hrs.

Suggested Evaluation Methods

Internal Assessment: ➢ **Theory (20 Marks)** • Class Participation: 05 Marks • Seminar/presentation/assignment/quiz/class test etc.: 05 Marks • Mid-Term Exam: 10 Marks ➢ **Practicum (10 Marks)** • Class Participation: Nil • Seminar/Demonstration/Viva-voce/Lab records etc.: 10 Marks • Mid-Term Exam: Nil	**End Term Examination:** 50 Marks 20 Marks

Part C-Learning Resources

Recommended Books/e-resources/LMS:

- ✓ Vogel's Text book of Quatitative Chemical Analysis, G.H. Jeffery, J. Basset, J. Mendham
- ✓ Study Material in vocational subject, Industrial Chemistry (UGC Sponsored)
- ✓ Handbook of instrumental techniques for Analytical chemistry, F.A. Settle, Prentice Hall.
- ✓ Quantitative Inorganic Analysis, K. Kodama Interscience Publishers, New York.

Suggested links for e-resources:

- ✓ https://fac.ksu.edu.sa/sites/default/files/vogel_practical_organic_chemistry_5th_edition.pdf
- ✓ http://faculty.chas.uni.edu/~manfredi/860-121/ORG%20LAB%20MAN%20S08.pdf
- ✓ https://www.ipinnovative.com/media/open-access-books/Practical_Lab_Manua%20l_of_%20Pharmaceutical_Organic_Chemistry_-1_%20Low.pdf

*Applicable for courses having practical component.

CC-6

Session: 2023-24			
Part A – Introduction			
Subject	Industrial Chemistry		
Semester	VI		
Name of the Course	Major Industrial Chemistry-VI		
Course Code	B23-ICH-601		
Course Type: (CC/MCC/MDC/CC-M/DSEC/VOC/DSE/PC/AEC/VAC)	CC		
Level of the course (As per Annexure-I	100-199		
Pre-requisite for the course (if any)	4.0		
Course Learning Outcomes(CLO):	After completing this course, the learner will be able to: 1 Understand the skills related to pharmaceutical industry and pharmacopoeias. 2 Learn about the various pharmaceutical excipients and their specification in various dosage forms. 3 Know about the methods of evaluation of the crude drugs, packing material and liquid dosage form. 4 Learn the techniques for bulk production of analgesic, anti-inflammatory, sulpha drugs, vitamins and sedative and hypnotic drugs and fermentation technology for the synthesis of antibiotics. 5*. Upon successful completion of this lab course students should be able to know about the various pharmaceutical preparation and evaluation of the quality of various dosage forms.		
Credits	Theory	Practical	Total
	3	1	4
Contact Hours	45	30	75
Max. Marks: 70+ 30* Internal Assessment Marks: 20 + 10* End Term Exam Marks: 50 + 20*		**Time: 3 hrs. for Theory and 3 hrs. for Practical**	

Part B- Contents of the Course		
Instructions for Paper- Setter The examiner is requested to set 9 questions in all. 1. Question No. 1 will be compulsory and based on the conceptual aspects of the entire syllabus. This question may have five parts and answer should be in brief. Each part of this question is of two marks. 2. Eight questions will be set from all four sections by selecting two questions from each section. Students should attempt four more question by selecting one question from each section. Each question carry equal marks.		
Unit	**Topics**	**Contact Hours**
I	**Pharmacopoeias** Introduction to pharmacopoeias, contents of pharmacopoeias, Introduction to various formulations and routes of administration. Legal aspects of drugs: Important FDA schedules. **Dosage** Dosage forms and their classification on the basis of physical state with important characteristics, Solid dosages forms including tablets, capsules, powders, cachets, pills and suppositories, Liquid dosages forms including injection, aromatic water inhalations, colloidions, draughts, mixtures, irrigations, lotions, mouthwashes, nosal drops, ophthalmic drops, paints and solution tablets.	12 Hrs.
II	**Pharmaceuticals Excipients** Various types of excipients used of tablets, capsules, emulsions, suspensions, ointments, creams, pills, powders and in menophasic liquids (clears products). Need for use of excipients in pharmaceuticals. **Pharmaceuticals quality testing** sterility testing, pyrogen testing, glass testing.	11 Hrs.
III	**Synthesis of the bulk drugs** Antimicrobial agents – Isoniazid, p-amino salicylic acid. Synthesis of Antiinflammatory and analgesic compounds – Salicylic acid and its derivatives, ibuprofen. Synthesis of Vitamins – Vitamin A, Vitamin C and Vitamin B6 (Pyridoxine) Synthesis of Sulphur Drugs – Sulfonamides, sulphamethoxazole Synthesis of Hypnotics and sedatives – barbiturates, pentobarbital	11 Hrs.
IV	**Fermentation** General principle, types of fermentation processes, outline of	

	fermentation process unit, preparation of inoculum, fermentation media, recovery of products. Manufacturing processes of antibiotics. Penicillin G, Rifamycin, Tetracycline and cyanocobalamine.	11 Hrs.
V*	**Practical paper : Pharmaceutical preparation and analysis** ❖ To prepare chloroform spirit ❖ To prepare camphor water ❖ To prepare chloroform water ❖ To prepare cetrimide cream. ❖ To prepare a sample of zinc sulphate lotion. ❖ Monograph of aspirin tablet ❖ Monograph of paracetamol tablet. ❖ To estimate the amount of aspirin in a given tablet.	30 Hrs.

Suggested Evaluation Methods

Internal Assessment:	**End Term Examination:**
➢ **Theory (20 Marks)** • Class Participation: 05 Marks • Seminar/presentation/assignment/quiz/class test etc.: 05 Marks • Mid-Term Exam: 10 Marks	50 Marks 20 Marks
➢ **Practicum (10 Marks)** • Class Participation: Nil • Seminar/Demonstration/Viva-voce/Lab records etc.: 10 Marks • Mid-Term Exam: Nil	

Part C-Learning Resources

Recommended Books/e-resources/LMS:

- ✓ L. Patrick. L. Graham, An Introduction to Medicinal Chemistry, OUP Oxford; 4th edition (2009).
- ✓ C. O. Wilson, O. Gisvold & R. F. Doerge, Textbook of Organic Medicinal and Pharmaceutical Chemistry, Lippincott Williams and Wilkins; 8th edition (1982).
- ✓ W. O. Foye, T. L. Lemice and D. A. Williams Principles of Medicinal Chemistry (2019).
- ✓ D J. Abraham, M. Myers, Burger's Medicinal Chemistry, Drug Discovery and Development (1-8
- ✓ G.L. Patrick, An Introduction to Medicinal Chemistry, Oxford; Fifth edition (2013).
- ✓ John T. Arnason, Rachel Mata, John T. Romeo, Phytochemistry of Medicinal Plants, Springer (2019).
- ✓ Medicinal Chemistry – Ashutoskar (Vol – I, Vol – II)
- ✓ Study material in vocational subjects of industrial chemistry (UGC sponsored) Paper – II Pharmaceuticals.

Suggested links for e-resources:

- ✓ https://nptel.ac.in/courses/104/106/104106106/
- ✓ https://nptel.ac.in/noc/courses/noc20/SEM1/noc20-cy16/
- ✓ https://nptel.ac.in/LocalChapter/statistics/2537

*Applicable for courses having practical component.

Kurukshetra University, Kurukshetra

(Established by the State Legislature Act-XII of 1956)
("A+" Grade, NAAC Accredited)

Scheme of Examination
for
Mathematics Subject
in
Under Graduate Programmes
as per NEP 2020
Curriculum and Credit Framework for Undergraduate Programmes
(Multiple Entry-Exit, Internships and Choice Based Credit System LOCF)

With effect from the session 2023-24 (in phased manner)

DEPARTMENT OF MATHEMATICS

KURUKSHETRA UNIVERSITY, KURUKSHETRA -136119

HARYANA, INDIA

Kurukshetra University, Kurukshetra

Scheme of Examination for the Mathematics Subject in Under Graduate Programmes
as per NEP 2020 Curriculum and Credit Framework for Undergraduate Programmes
(Multiple Entry-Exit, Internships and Choice Based Credit System LOCF) with effect from the session 2023-24 (in phased manner)

Semester	Course Type	Applicable Scheme	Course Code	Nomenclature of course	Credits			Contact hours L: Lecture P: Practical T: Tutorial			Internal Assessment Marks		End term Examination Marks		Total Marks	Examination hours	
					Total	Theory (T)	Practical (P)	L	P	Total	T	P	T	P		T	P
1	CC-1 MCC-1	Scheme A, B & C	B23-MAT-101	CALCULUS	4	3	1	3	2	5	20	10	50	20	100	3	3
	MCC-2	Scheme C	B23-MAT-102	ADVANCED CALCULUS	4	3	1	3	2	5	20	10	50	20	100	3	3
	CC-M1	Scheme A, B & D	B23-MAT-103	BASIC CALCULUS	2	1	1	1	2	3	10	5	20	15	50	3	3
	MDC 1	Scheme A, B, C & D	B23-MAT-104	INTRODUCTORY MATHEMATICS	3	2	1	2	2	4	15	5	35	20	75	3	3
2	CC-2 MCC-3	Scheme A, B & C	B23-MAT-201	ALGEBRA AND NUMBER THEORY	4	3	1	3	2	5	20	10	50	20	100	3	3
	DSEC-1	Scheme C	B23-MAT-202	PROGRAMMING IN C	4	3	1	3	2	5	20	10	50	20	100	3	3

	CC-M2	Scheme A, B & D	B23-MAT-203	BASIC ALGEBRA	2	1	1	1	2	3	10	5	20	15	50	3	3
	MDC 2	Scheme A, B, C & D	B23-MAT-204	MATHEMATICS FOR COMMERCE & SOCIAL SCIENCES	3	2	1	2	2	4	15	5	35	20	75	3	3
3	CC-3 MCC-4	Scheme A, B & C	B23-MAT-301	DIFFERENTIAL EQUATIONS-I	4	3	1	3	2	5	20	10	50	20	100	3	3
	MCC-5	Scheme B & C	B23-MAT-302	GROUPS AND RINGS	4	3	1	3	2	5	20	10	50	20	100	3	3
	MDC 3	Scheme A, B, C & D	B23-MAT-303	MATHEMATICS FOR ALL	3	2	1	2	2	4	15	5	35	20	75	3	3
4	CC-4 MCC-6	Scheme A, B & C	B23-MAT-401	ANALYTICAL GEOMETRY & VECTOR CALCULUS	4	3	1	3	2	5	20	10	50	20	100	3	3
	MCC-7	Scheme B & C	B23-MAT-402	LINEAR ALGEBRA	4	3	1	3	2	5	20	10	50	20	100	3	3
	MCC-8	Scheme B & C	B23-MAT-403	DIFFERENTIAL EQUATIONS-II	4	3	1	3	2	5	20	10	50	20	100	3	3
	DSE-1	Scheme B & C	B23-MAT-404	PROBABILITY THEORY & STATISTICS	4	3	1	3	2	5	20	10	50	20	100	3	3
			Or														

		Scheme B & C	B23-MAT-405	SPECIAL FUNCTIONS	4	3	1	3	2	5	20	10	50	20	100	3	3
5	CC-5 MCC-9	Scheme A, B & C	B23-MAT-501	SEQUENCES AND SERIES	4	3	1	3	2	5	20	10	50	20	100	3	3
	MCC-10	Scheme B & C	B23-MAT-502	MECHANICS-I	4	3	1	3	2	5	20	10	50	20	100	3	3
	DSE-2	Scheme B & C	B23-MAT-503	LINEAR PROGRAMMING	4	3	1	3	2	5	20	10	50	20	100	3	3
			Or														
		Scheme B & C	B23-MAT-504	COMPUTER PROGRAMMING	4	3	1	3	2	5	20	10	50	20	100	3	3
	DSE-3	Scheme B & C	B23-MAT-505	NUMBER THEORY & CRYPTOGRAPHY	4	3	1	3	2	5	20	10	50	20	100	3	3
			Or														
		Scheme B & C	B23-MAT-506	INTEGRAL TRANSFORMS AND FOURIER ANALYSIS	4	3	1	3	2	5	20	10	50	20	100	3	3
6	CC-6 MCC-11	Scheme A, B & C	B23-MAT-601	NUMERICAL ANALYSIS	4	3	1	3	2	5	20	10	50	20	100	3	3
	MCC-12	Scheme B & C	B23-MAT-602	REAL ANALYSIS	4	3	1	3	2	5	20	10	50	20	100	3	3

	DSE-4	Scheme B & C	B23-MAT-603	MECHANICS-II	4	3	1	3	2	5	20	10	50	20	100	3	3
			Or														
		Scheme B & C	B23-MAT-604	CLASSICAL MECHANICS	4	3	1	3	2	5	20	10	50	20	100	3	3
	DSE-5	Scheme B & C	B23-MAT-605	DISCRETE MATHEMATICS	4	3	1	3	2	5	20	10	50	20	100	3	3
			Or														
		Scheme B & C	B23-MAT-606	MATHEMATICAL MODELLING	4	3	1	3	2	5	20	10	50	20	100	3	3
		Scheme B & C			**Total**	**Theory**	**Tutorial/ Practical**	**L**	**T**	**Total**	**Internal Assessment Marks**		**End term Examination Marks**		**Total Marks**	**Examination hours**	
7	CC-H1	Scheme B & C	B23-MAT-701	REAL ANALYSIS-II	4	3	1	3	1	4	30		70		100	3	
	CC-H2	Scheme B & C	B23-MAT-702	COMPLEX ANALYSIS	4	3	1	3	1	4	30		70		100	3	
	CC-H3	Scheme B & C	B23-MAT-703	THEORY OF ORDINARY DIFFERENTIAL EQUATIONS	4	3	1	3	1	4	30		70		100	3	
	DSE-6	Scheme B & C	B23-MAT-704	MECHANICS OF SOLIDS	4	3	1	3	1	4	30		70		100	3	

			Or											
		Scheme B & C	B23-MAT-705	DIFFERENTIAL GEOMETRY	4	3	1	3	1	4	30	70	100	3
	PC-H1	Scheme B & C	B23-MAT-706	PROGRAMMING WITH MATLAB	4	2	2 Practical	2	4	6	15(T)+15(P)	35(T)+35(P)	100	3 +3
8	CC-H4	Scheme B & C	B23-MAT-801	ABSTRACT ALGEBRA	4	3	1	3	1	4	30	70	100	3
	CC-H5	Scheme B & C	B23-MAT-802	TOPOLOGY	4	3	1	3	1	4	30	70	100	3
	CC-H6	Scheme B & C	B23-MAT-803	MEASURE AND INTEGRATION	4	3	1	3	1	4	30	70	100	3
	DSE-7	Scheme B & C	B23-MAT-804	FIELD THEORY	4	3	1	3	1	4	30	70	100	3
			Or											
		Scheme B & C	B23-MAT-805	FLUID MECHANICS	4	3	1	3	1	4	30	70	100	3
	PC-H2	Scheme B & C	B23-MAT-806	MATHEMATICAL SOFTWARES	4	0	4 Practical	0	8	8	30	70	100	3

	Research	Scheme B & C	B23-MAT-807	DISSERTATION	12					300	300		
	Scheme of VAC, SEC and VOC courses												

Semester	Course Type	Applicable Scheme	Course Code	Nomenclature of the Course	Credits			Contact hours L: Lecture P: Practical			Internal Assessment Marks		End term Examination Marks		Total Marks	Examination hours	
					Total	Theory (T)	Practical (P)	L	P	Total	T	P	T	P		T	P
3/4	VAC-3	Scheme A, B, C & D	B23-VAC-308	Mathematics in India: From Vedic Period to Modern Times	2	2	0	2	0	2	15	0	35		50	3	
4	VAC-4	Scheme A, B, C & D	B23-VAC-418	Mathematics in Everyday Life	2	2	0	2	0	2	15	0	35		50	3	
2	SEC-2	Scheme A, B, C & D	B23-SEC-203	Calculation Skills with Vedic Mathematics-I	3	2	1	2	2	4	15	5	35	20	75	3	3
2	SEC-2	Scheme A, B, C & D	B23-SEC-225	Numerical Ability Enhancement Skills	3	2	1	2	2	4	15	5	35	20	75	3	3

3	SEC-3	Scheme A, B, C & D	B23-SEC-303	Calculation Skills with Vedic Mathematics-II	3	2	1	2	2	4	15	5	35	20	75	3	3
3	SEC-3	Scheme A, B, C & D	B23-SEC-324	Learning MATLAB Skills	3	2	1	2	2	4	15	5	35	20	75	3	3
3	SEC-3	Scheme A, B, C & D	B23-SEC-326	Quantitative Aptitude	3	2	1	2	2	4	15	5	35	20	75	3	3
6	SEC-4	Scheme A, B, C & D	B23-SEC-406	Basic Mathematical Techniques	3	2	1	2	2	4	15	5	35	20	75	3	3

Course composition- Theory/ Theory +Tutorial			
Course Credit	**Internal Assessment marks**	**End term exam marks**	**Total marks**
2	**15**	**35**	**50**
3	**25**	**50**	**75**
4	**30**	**70**	**100**

Course composition- Theory + Practical					
Course Credit	**Theory**		**Practical**		**Total marks**
Theory +Practical	**Internal Assessment marks**	**End term exam marks**	**Internal Assessment marks**	**End term exam marks**	
1+1	**10**	**20**	**5**	**15**	**50**
2+1	**15**	**35**	**5**	**20**	**75**
2+2	**15**	**35**	**15**	**35**	**100**
3+1	**20**	**50**	**10**	**20**	**100**
0+4	**NA**	**NA**	**30**	**70**	**100**

1. **Internal assessment (30%) shall be broadly based on the following defined components of;**
    a. **Class participation**
    b. **Seminar/Presentation/Assignment/Quiz/class test, etc.**
    c. **Mid Term Exam**

Total Internal Assessment Marks (Theory)	Class Participation	Seminar/Presentation/Assignment/Quiz/class test, etc.	Mid-Term Exam
10	**4**	**-**	**6**
15	**4**	**4**	**7**
20	**5**	**5**	**10**
25	**5**	**7**	**13**
30	**5**	**10**	**15**
Total Internal Assessment Marks (Practicum)	**Class Participation**	**Seminar/Demonstration/Viva-Voce/Lab record, etc.**	**Mid-Term Exam**
5		**5**	**NA**
10		**10**	**NA**
15	**5**	**10**	**NA**

30	**5**	**10**	**15**

CC-1 /MCC-1

Session: 2023-24	
Part A – Introduction	
Subject	Mathematics
Semester	I
Name of the Course	Calculus
Course Code	B23-MAT-101
Course Type: (CC/MCC/MDC/CC-M/DSEC/VOC/DSE/PC/AEC/VAC)	CC
Level of the course	100-199
Pre-requisite for the course (if any)	Mathematics as a subject at 4.0 Level (Class-XII)
Course Learning Outcomes(CLOs): CLO 5 is related to the practical component of the course.	**After completing this course, the learner will be able to**: 1. Gain knowledge of the concepts and theory of limit, continuity and differentiability of functions. Attain skills of calculating the limit of functions and examining the continuity and differentiability of different types of functions, and perform successive differentiation of functions. To apply the procedural knowledge to obtain the series expansions of functions which find multidisciplinary applications. 2. Understand concepts of asymptotes and curvature, the geometrical meaning of these terms and to have procedural knowledge to solve related problems. 3. Determine singular points of a curve and classify them. Understand the concept of rectification of curves and derive the reduction formulae. 4. Have theoretical knowledge and practical skills to evaluate the area bounded by the curves, and volume and surface area of solids formed by revolution of curves. 5. Attain cognitive and technical skills required for solving different problems of calculus associated with

	tracing of curves, determination of curvature, and rectification of curves, volume and surface area of solids of revolution. Have technical and practical skills of solving calculus problems related to differentiation and integration of functions by using MAXIMA software.		
Credits	Theory	Practical	Total
	3	1	4
Contact Hours	3	2	5
Internal Assessment Marks	20	10	30
End Term Examination Marks	50	20	70
Examination Time	3 Hours	3 Hours	
Max. Marks:100			

Part B- Contents of the Course

Instructions for Paper- Setter

Note: The examiner will set 9 questions asking two questions from each unit and one compulsory question by taking course learning outcomes (CLOs) into consideration. The compulsory question (Question No. 1) will contain 5 parts covering entire syllabus. The examinee will be required to attempt 5 questions, selecting one question from each unit and the compulsory question.

Unit	Topics	Contact Hours
I	ε-δ definition of limit and continuity of a real valued function, Basic properties of limits, Types of discontinuities, Differentiability of functions, Application of L'Hospital rule to indeterminate forms, Successive differentiation, Leibnitz theorem, Taylor's and Maclaurin's series expansion with different forms of remainder.	12
II	Asymptotes: Horizontal, vertical and oblique asymptotes for algebraic curves, Asymptotes for polar curves, Intersection of a curve and its asymptotes, Curvature and radius of curvature of curves (cartesian, parametric, polar & intrinsic forms), Newton's method, Centre of curvature and circle of curvature.	12

III	Multiple points, Node, Cusp, Conjugate point, Tests for concavity and convexity, Points of inflexion, Tracing of curves, Reduction formulae.	12
IV	Rectification, intrinsic equation of a curve, Quadrature, Area bounded by closed curves, Volumes and surfaces of solids of revolution**.**	12
	Practical	
	The practical component of the course has two parts, Problem Solving and Practical's using MAXIMA software. The examiner will set 4 questions at the time of practical examination asking two questions from the part (A) and two questions from the part (B) by taking course learning outcomes (CLO) into consideration. The examinee will be required to solve one problem from the part (A) and to execute one problem successfully from the part (B). Equal weightage will be given to both the parts. The evaluation will be done on the basis of practical record, viva-voce, write up and execution of the program. **(A) Problem Solving**- Questions related to the following problems will be solved and their record will be maintained in the Practical Notebook: 1. Problems of curve tracing when equation is given in Cartesian coordinates. 2. Problems of curve tracing when equation is given in Parametric form. 3. Problems of curve tracing when equation is given in Polar coordinates. 4. Problem of determination of length of a curve expressed in Cartesian coordinates. 5. Problem of determination of length of a curve expressed in Polar coordinates.	30

	6. Problem of determination of radius of curvature expressed in Cartesian coordinates. 7. Problem of determination of radius of curvature expressed in Polar coordinates. 8. Problem of determination of radius of curvature expressed in Parametric form. 9. Problem of determination of volumes and surfaces of solids of revolution for Cartesian curve. 10. Problem of determination of volumes and surfaces of solids of revolution for Parametric curve. 11. Problem of determination of volumes and surfaces of solids of revolution for Polar curve. **(B)The following practicals will be done using MAXIMA software and their record will be maintained in the practical note book:** 1. Learn to use basic operators and functions in Maxima software. 2. Simplify algebraic expressions and expressions containing radicals, logarithms, exponentials and trigonometric functions. 3. Expand algebraic, rational, trigonometric and logarithmic expressions. 4. Find derivatives of algebraic, trigonometric, exponential and logarithmic functions. 5. Find derivatives of functions involving above mentioned functions. 6. Problems of successive differentiation. 7. Find indefinite integrals of different functions. 8. Find definite integrals of different functions. 9. To plot curves involving Cartesian, parametric and polar forms. 10. To demonstrate singular points.	
Suggested Evaluation Methods		

Internal Assessment: ➢ **Theory 20** • Class Participation: 5 • Seminar/presentation/assignment/quiz/class test etc.: 5 • Mid-Term Exam: 10 ➢ **Practicum 10** • Class Participation: • Seminar/Demonstration/Viva-voce/Lab records etc.: 10 • Mid-Term Exam:	**End Term Examination:** ➢ **Theory 50** Written Examination ➢ **Practicum 20** Lab record, viva-voce, write up and execution of the program

Part C-Learning Resources

Recommended Books:

1. Howard Anton, I. Bivens & Stephan Davis (2021). *Calculus* (12th edition). J. Wiley & Sons.

2. Gabriel Klambauer (1986). *Aspects of Calculus* (4th edition). Springer.

3. Wieslaw Krawcewicz & Bindhyachal Rai (2003). *Calculus with Maple Labs*. Alpha Science Int'l Ltd.

4. Gorakh Prasad (2016). *Differential Calculus* (19th edition). Pothishala Pvt. Ltd.

5. George B. Thomas Jr., Joel Hass, Christopher Heil & Maurice D. Weir (2018). *Thomas' Calculus* (14th edition). Pearson Education.

6. Monty J. Strauss, Gerald L. Bradley & Karl J. Smith (2002). *Calculus* (3rd edition). Dorling Kindersley (India) Pvt. Ltd.

MCC-2

Session: 2023-24	
Part A – Introduction	
Subject	Mathematics
Semester	I
Name of the Course	Advanced Calculus
Course Code	B23-MAT-102
Course Type: (CC/MCC/MDC/CC-M/DSEC/VOC/DSE/PC/AEC/VAC)	MCC
Level of the course	100-199
Pre-requisite for the course (if any)	Mathematics as a subject at 4.0 Level (Class-XII).
Course Learning Outcomes(CLOs):	**After completing this course, the learner will be able to**: 1. Have theoretical knowledge about various mean value theorems and their geometrical interpretations. 2. Learn conceptual variations while advancing from dealing with functions of one variable to several variables in calculus and discuss limit and continuity of such functions. Have deeper understanding of Euler's theorem and Taylor's theorem and practice to attain skill in multidisciplinary contexts. 3. Know about differentiability of real valued functions of two variables and understand Young's, theorem Schwarz's theorem and implicit function theorem. Determine maxima and minima of functions of two variables, learn Lagrange's method of undetermined multipliers and exploit this procedural knowledge for various realistic optimization problems. 4. Understand and acquire theoretical knowledge about Jacobians, Beta and Gamma functions, with acquisition of skill to analyse various methods of integration and evaluate double and triple integrals which find application in the determination of areas and volumes.

CLO 5 is related to the practical component.	5. Attain cognitive skills required for solving problems associated with continuity, differentiability of functions of several variables and applications of double and triple integrals. Have technical and practical skills of solving problems related to plotting of curves in two and three dimensions and evaluating double and triple integrals by using built in functions of MAXIMA software.		
	Theory	Practical	Total
Credits	3	1	4
Contact Hours	3	2	5
Internal Assessment Marks	20	10	30
End Term Examination Marks	50	20	70
Examination Time	3 Hours	3 Hours	
Max. Marks:100			

Part B- Contents of the Course

Instructions for Paper- Setter

Note: The examiner will set 9 questions asking two questions from each unit and one compulsory question by taking course learning outcomes (CLOs) into consideration. The compulsory question (Question No. 1) will contain 5 parts covering entire syllabus. The examinee will be required to attempt 5 questions, selecting one question from each unit and the compulsory question.

Unit	Topics	Contact Hours
I	Continuous functions, Sequential criterion for continuity, Properties of continuous functions, Uniform continuity, Chain rule of differentiability, Mean value theorems: Rolle's Theorem, Lagrange's mean value theorem and their geometrical interpretations, Cauchy mean value theorem. Taylor's theorem with various forms of remainders.	12
II	Limit and continuity of real valued functions of two variables, Partial differentiation. Total Differentials; Composite functions & implicit functions. Change of variables. Homogenous functions & Euler's theorem on homogeneous functions. Taylor's theorem for functions of two variables.	12

III	Differentiability of real valued functions of two variables. Young's theorem, Schwarz's theorem, Implicit function theorem. Extrema of functions of two and more variables: Maxima, minima and saddle points. Lagrange's method of undetermined multipliers.	12
IV	Jacobians. Beta and Gamma functions, Relation between Beta and Gamma functions, Legendre's duplication formula. Double integration over rectangular and non rectangular regions, Double integrals in polar co-ordinates. Change of order of integration. Volume by triple integrals, Triple integration in cylindrical and spherical co-ordinates. Dirichlet integrals, Liouville's extension of Dirichlet's integral.	12
	Practical	
	This course has two components, Problem Solving and Practical's using MAXIMA software. The examiner will set 4 questions at the time of practical examination asking two questions from the part (A) and two questions from the part (B) by taking course learning outcomes (COs) into consideration. The examinee will be required to solve one problem from the part (A) and to execute one problem successfully from the part (B). Equal weightage will be given to both the parts. The evaluation will be done on the basis of practical record, viva-voce, write up and execution of the program. **(A) Problem Solving**- Questions related to the following problems will be solved and record of those will be maintained in the Practical Notebook: 1. Problems to check continuity of functions of several variables. 2. Problems of checking differentiability of functions of several variables. 3. Problems of finding maxima /minima of functions of two variables.	30

	4. Problems of determination of surface area through application of double integrals in Cartesian and Polar coordinates. 5. Problems of determination of volume using triple integrals. 6. Problem to demonstrate uniform continuity of a function of single variable. 7. Problem to demonstrate the existence of a continuous function which is not uniformly continuous. 8. Problem to demonstrate that for a function f of two variables f_{xy} need not be equal to f_{yx}. **(B)The following practicals will be done using MAXIMA software and record of those will be maintained in the practical note book:** 1. To find partial derivatives of a function. 2. To find total differential of a function of several variables. 3. To plot a curve for a function of two variables. 4. To plot a curve for a function of three variables. 5. To solve practical problems using method of Lagranges multipliers. 6. To evaluate double integrals. 7. To evaluate triple integrals. 8. To demonstrate Young's theorem.	
Suggested Evaluation Methods		
Internal Assessment: ➢ **Theory 20** • Class Participation: 5 • Seminar/presentation/assignment/quiz/class test etc.: 5 • Mid-Term Exam: 10 ➢ **Practicum 10** • Class Participation: • Seminar/Demonstration/Viva-voce/Lab records etc.: 10 • Mid-Term Exam:		**End Term Examination:** ➢ **Theory 50** Written Examination ➢ **Practicum 20** Lab record, viva-voce, write up and execution of the program
Part C-Learning Resources		

Recommended Books:

1. Howard Anton, I. Bivens & Stephan Davis (2021). *Calculus* (12th edition). Wiley India.

2. Gabriel Klambauer (1986). *Aspects of Calculus*. Springer-Verlag.

3. Wieslaw Krawcewicz & Bindhyachal Rai (2003). *Calculus with Maple Labs*. Narosa.

4. Gorakh Prasad (2016). *Differential Calculus* (19th edition). Pothishala Pvt. Ltd.

5. George B. Thomas Jr., Joel Hass, Christopher Heil & Maurice D. Weir (2018). *Thomas*' *Calculus* (14th edition). Pearson Education.

6. Monty J. Strauss, Gerald L. Bradley & Karl J. Smith (2011). *Calculus* (3rd edition). Pearson Education. Dorling Kindersley (India) Pvt. Ltd.

7. Jerrold Marsden, Anthony J. Tromba & Alan Weinstein (2009). *Basic Multivariable Calculus*, Springer India Pvt. Limited.

8. James Stewart (2012). *Multivariable Calculus* (7th edition). Brooks/Cole. Cengage.

9. Murray R Spiegel & Robert Wrede (2011). *Schaum's Advanced Calculus*.(3rd edition). McGraw Hill Publication.

CC-M1

Session: 2023-24	
Part A - Introduction	
Subject	Mathematics
Semester	I
Name of the Course	Basic Calculus
Course Code	B23-MAT-103
Course Type: (CC/MCC/MDC/CC-M/DSEC/VOC/DSE/PC/AEC/VAC)	CC-M
Level of the course	100-199
Pre-requisite for the course (if any)	Mathematics as a subject at 4.0 Level (Class-XII)
Course Learning Outcomes(CLOs):	**After completing this course, the learner will be able to**: 1. Gain knowledge of the concepts of limit, continuity and differentiability of functions, calculate the limit of functions and examine the continuity and differentiability of different types of functions, and perform successive differentiation of functions and obtain their series expansions, which find multidisciplinary applications within the chosen field of learning. 2. Have deeper understanding of Taylor's and Maclaurin's theorem and use this knowledge for series expansion of various functions, which find multidisciplinary applications within the chosen field of learning. 3. Understand and acquire procedural skills required for accomplishing assigned tasks of determining asymptotes and analyze them geometrically. 4. Comprehend the process of deriving reduction formulae and use this skill to solve typical integrals easily and quickly.

CLO 5 is related to the practical component.	5. Attain cognitive and theoretical skills to find successive derivatives of a function, higher derivative of the product of two functions using Leibnitz' s rule and apply this skill for expansion of functions. Have technical and practical skills of solving problems related to differentiation and integration of functions by using built in functions of MAXIMA software.		
Credits	Theory	Practical	Total
	1	1	2
Contact Hours	1	2	3
Internal Assessment Marks	10	5	15
End Term Examination Marks	20	15	35
Contact Hours	3 Hours	3 Hours	
Max. Marks:50			

Part B- Contents of the Course

Instructions for Paper- Setter

Note: The examiner will set 9 questions asking two questions from each unit and one compulsory question by taking course learning outcomes (CLOs) into consideration. The compulsory question (Question No. 1) will contain 4 parts covering entire syllabus. The examinee will be required to attempt 5 questions, selecting one question from each unit and the compulsory question.

Unit	Topics	Contact Hours
I	Limit and continuity of a real valued function, basic properties of limits, types of discontinuities, Differentiability of functions. Application of L'Hospital rule to Indeterminate forms.	4
II	Successive differentiation, Leibnitz theorem (statement only), Taylor's and Maclaurin's series expansions with different forms of remainder.	4
III	Asymptotes: Horizontal, vertical and oblique asymptotes for algebraic curves, Asymptotes for polar curves, Intersection of a curve and its asymptotes.	4

IV	Reduction formulae.	4
	Practical	
	This course has two components, Problem Solving and Practical's using MAXIMA software. The examiner will set 4 questions at the time of practical examination asking two questions from the part (A) and two questions from the part (B) by taking course learning outcomes (CLOs) into consideration. The examinee will be required to solve one problem from the part (A) and to execute one problem successfully from the part (B). Equal weightage will be given to both the parts. The evaluation will be done on the basis of practical record, viva-voce, write up and execution of the program. (**A) Problem Solving**- Questions related to the following problems will be solved and their record will be maintained in the Practical Notebook: 1.Practical problems to check the limit and continuity of a function. 2. Practical problems to check the differentiability of a function. 3. Practical problems of finding derivatives of algebraic, trigonometric, exponential and logarithmic functions. 4. Practical problems of finding n^{th} derivatives using Leibnitz theorem. 5. Practical problems related to application of Taylor's theorem. 6. Practical problems to find the asymptotes of a given	30

	algebraic curve. 7. Practical application of L'Hospital rule to evaluate indeterminate forms. 8. Practical problems to find the asymptotes of a polar curve. 9. Practical problems to find Maclaurin's series expansion of various functions. 10. Practical problems based on reduction formulae. **(B)**The following practicals will be done using MAXIMA software and record of those will be maintained in the practical note book: 1. Introduce basic operators and functions in Maxima software. 2. Simplify algebraic expressions and expressions containing radicals, logarithms, exponentials and trigonometric functions. 3. Expand algebraic, rational, trigonometric and logarithmic expressions. 4. Find derivatives of algebraic, trigonometric, exponential and logarithmic functions. 5. Find derivatives of functions involving above mentioned functions. 6. Find indefinite integrals of different functions. 7. Find definite integrals of different functions.	
Suggested Evaluation Methods		
Internal Assessment: ➢ **Theory 10** • Class Participation: 4 • Seminar/presentation/assignment/quiz/class test etc.: • Mid-Term Exam: 6 ➢ **Practicum 5** • Class Participation: • Seminar/Demonstration/Viva-voce/Lab records etc.: 5 • Mid-Term Exam:		**End Term Examination:** ➢ **Theory 20** Written Examination ➢ **Practicum 15** Lab record, viva-voce, write up and execution of the program
Part C-Learning Resources		

Recommended Books:

1. Howard Anton, I. Bivens & Stephan Davis (2021). *Calculus* (12th edition). Wiley India.
2. Gabriel Klambauer (1986). *Aspects of Calculus.* Springer-Verlag.
3. Wieslaw Krawcewicz & Bindhyachal Rai (2003). *Calculus with Maple Labs.* Narosa.
4. Gorakh Prasad (2016). *Differential Calculus* (19th edition). Pothishala Pvt. Ltd.
5. George B. Thomas Jr., Joel Hass, Christopher Heil & Maurice D. Weir (2018). *Thomas' Calculus* (14th edition). Pearson Education.
6. Monty J. Strauss, Gerald L. Bradley & Karl J. Smith (2011). *Calculus* (3rd edition). Pearson Education. Dorling Kindersley (India) Pvt. Ltd.

MDC-1

Session: 2023-24	
Part A– Introduction	
Subject	Mathematics
Semester	I
Name of the Course	Introductory Mathematics
Course Code	B23-MAT-104
Course Type: (CC/MCC/MDC/CC-M/DSEC/VOC/DSE/PC/AEC/VAC)	MDC
Level of the course	100-199
Pre-requisite for the course (if any)	NA
Course Learning Outcomes(CLOs):	**After completing this course, the learner will be able to:** 1. Gain the knowledge of set theory, types of sets and operations on sets. Understand various concepts of matrices and determinants, and acquire the cognitive skills to apply different operations on matrices and determinants. 2. Have the knowledge of the basic concepts of complex numbers and acquire skills to solve linear inequalities and quadratic equations. 3. Gain the knowledge of the concepts of Arithmetic progression, Geometric progression and Harmonic progression, and find A.M., G.M. and H.M. of given numbers. 4. Have the conceptual knowledge of straight lines and circles. Find out the slope of a line, angle between two lines, and know about various forms of a straight line and the standard form of a circle.
CLO 5 is related to the practical components of the course.	5. Attain the skills to make use of the learnt concepts of Introductory Mathematics in multidisciplinary learning contexts and to know their applications.

	Theory	Practical	Total
Credits	2	1	3
Contact Hours	2	2	4
Internal Assessment Marks	15	5	20
End Term Examination Marks	35	20	55
Examination Time	3 Hrs	3Hrs	

Max. Marks:75

Part B-Contents of the Course

Instructions for Paper- Setter

Note: The examiner will set 9 questions asking two questions from each unit and one compulsory question by taking course learning outcomes (CLOs) into consideration. The compulsory question (Question No. 1) will contain 7 parts covering entire syllabus. The examinee will be required to attempt 5 questions, selecting one question from each unit and the compulsory question.

Unit	Topics	Contact Hours
I	Sets and their representations, Empty set, Finite and infinite sets, Subsets, Equal sets, Power sets, Universal set, Union and intersection of sets, Difference of two sets, Complement of a set, Venn diagram, De-Morgan's laws and their applications. An introduction to matrices and their types, Operations on matrices, Symmetric and skew-symmetric matrices, Minors, Co-factors. Determinant of a square matrix, Adjoint and inverse of a square matrix, Solutions of a system of linear equations up to order 3.	8
II	Complex numbers, Operations on complex numbers, Modulus and argument of a complex number. Linear inequalities, Algebraic solutions of linear inequalities in two variables and their graphical representation. Quadratic equations, Solution of quadratic equations.	8

III	Arithmetic progression, Geometric progression, Harmonic progression, Arithmetic mean (A.M.), Geometric mean (G.M.), Harmonic mean (H.M.), Relation between A.M., G.M. and H.M.	8
IV	Straight lines: Slope of a line and angle between two lines, Different forms of equation of a line: Parallel to co-ordinate axes, Point-slope form, Slope-intercept form, Two-point form, General form; Distance of a point from a straight line. Standard form of a circle and its properties.	8
	Practical	
	The examiner will set 4 questions at the time of practical examination by taking course learning outcomes (CLOs) into consideration. The examinee will be required to solve 2 questions. The evaluation will be done on the basis of practical record, viva-voce and written examination. **Problem Solving**- Questions related to the practical problems based on following topics will be worked out and record of those will be maintained in the Practical Note Book: 1. Problems related to union, intersection, difference and complement of sets. 2. Problems based on De Morgan's Laws. 3. Problems related to Venn diagrams. 4. Problems to find inverse of a matrix. 5. Problems to find determinant of a square matrix of order 3. 6. Problems to find nth term of A.P., G.P. and H.P. 7. Problems to find sum of n terms of A.P., G.P. and H.P. 8. Problems to find A.M., G.M. and H.M. of given numbers.	30

	9. Problems to find modulus and argument of a complex number. 10. Problems involving formulation and solution of quadratic equations in one variable. 11. Problems to represent solutions of linear inequalities graphically. 12. Problems based on angle between two lines. 13. Problems involving straight lines and their slope. 14. Problems related to a circle.	

Suggested Evaluation Methods

Internal Assessment: ➢ **Theory 15** • Class Participation: 4 • Seminar/presentation/assignment/quiz/class test etc.: 4 • Mid-Term Exam: 7 ➢ **Practicum 5** • Class Participation: • Seminar/Demonstration/Viva-voce/Lab records etc.: 5 • Mid-Term Exam:	**End Term Examination:** ➢ **Theory 35** Written Examination ➢ **Practicum 20** Lab record, viva-voce, written examination.

Part C-Learning Resources

Recommended Books:

1. C. Y. Young (2021). *Algebra and Trigonometry*. Wiley.
2. S.L. Loney (2016). *The Elements of Coordinate Geometry (Cartesian Coordinates)*(2nd Edition). G.K. Publication Private Limited.
3. Seymour Lipschutz and Marc Lars Lipson (2013). *Linear Algebra.* (4th Edition) Schaum's Outline Series, McGraw-Hill.
4. C.C. Pinter (2014). *A Book of Set Theory*. Dover Publications.
5. J. V. Dyke, J. Rogers and H. Adams (2011). *Fundamentals of Mathematics* (10th Edition), Brooks/Cole.
6. A.Tussy, R. Gustafson and D. Koenig (2010). *Basic Mathematics for College Students* (4th Edition). Brooks Cole.

CC-2/MCC-3

Session: 2023-24	
Part A – Introduction	
Subject	Mathematics
Semester	II
Name of the Course	Algebra and Number Theory
Course Code	B23-MAT-201
Course Type: (CC/MCC/MDC/CC-M/DSEC/VOC/DSE/PC/AEC/VAC)	CC
Level of the course	100-199
Pre-requisite for the course (if any)	Mathematics as a subject at level 4.0 (Class XII)
Course Learning Outcomes(CLOs):	After completing this course, the learner will be able to: 1. Gain knowledge of the concepts of symmetric, skew-symmetric, Hermitian, skew-Hermitian, Orthogonal and Unitary matrices, Linear dependence and independence of rows and columns of a matrix. Have knowledge of procedure and cognitive skills used in calculating rank of a matrix, eigen values, characteristic equation, minimal polynomial of a matrix and technical skills used in solving problems based on Cayley- Hamilton theorem. 2. Have knowledge of the concepts used in solving problems based on relations between the roots and coefficients of general polynomial equation

	in one variable, solutions of polynomial equations having conditions on roots, common roots and multiple roots. Understand Descarte's rule of signs and learn cognitive and technical skills required in assessing nature of the roots of an equation and solving problems based on these. 3. Have deeper and procedural knowledge required for solving cubic and biquadratic equations used in Mathematics as well as many other learning fields of study. To understand the basic concepts of number theory and their applications in problem solving and life- long learning. 4. Have knowledge of concepts, facts, principles and theories of Linear Congruences, Fermat's theorem, Euler's theorem, Wilson's theorem and its converse, Chinese Remainder theorem. Attain cognitive skills used in solving linear Diophantine equations in two variables.
CLO 5 is related to the practical component of the course.	5. Attain cognitive and technical skills required to formulate and solve practical problems involving rank of a matrix, inverse of a matrix, Cardon's method, Ferrari's method, Descarte's method, Cayley-Hamilton theorem, Euler's theorem and Chinese Remainder theorem. Have technical and practical skills required for solving algebraic equations, finding inverse and eigen values of matrices by using built in functions of MAXIMA software.

Credits	Theory	Practical	Total
	3	1	4
Contact Hours	3	2	5
Internal Assessment Marks	20	10	30
End term Examination Marks	50	20	70
Examination Time	3 Hours	3 Hours	

Max. Marks:100

Part B- Contents of the Course

Instructions for Paper- Setter

The examiner will set 9 questions asking two questions from each unit and one compulsory question by taking course learning outcomes (CLOs) into consideration. The compulsory question (Question No. 1) will contain 5 parts covering entire syllabus. The examinee will be required to attempt 5 questions, selecting one question from each unit and the compulsory question.

Unit	Topics	Contact Hours
I	Symmetric, Skew symmetric, Hermitian and skew Hermitian matrices, Elementary operations on matrices, Rank of a matrix, Inverse of a matrix, Linear dependence and independence of rows and columns of matrix, Row rank and column rank of a matrix, Eigen values, Eigen vectors and characteristic equation of a matrix, Minimal polynomial of a matrix, Cayley-Hamilton theorem and its use in finding the inverse of a matrix, Unitary and orthogonal matrices.	12
II	Relations between the roots and coefficients of general polynomial equation in one variable, Solutions of polynomial equations having conditions on roots, Common roots and multiple roots, Transformation of equations, Nature of the roots of an equation, Descarte's rule of signs.	12

III	Solutions of cubic equations (Cardon's method), Biquadratic equations and their solutions. Divisibility, Greatest common divisor (gcd), Least common multiple (lcm), Prime numbers, Fundamental theorem of arithmetic.	12
IV	Linear congruences, Fermat's theorem, Euler's theorem, Wilson's theorem and its converse, Chinese Remainder theorem, Linear Diophantine equations in two variables.	12
	Practical	
	The practical component of the course has two parts, Problem Solving and Practical's using MAXIMA software. The examiner will set 4 questions at the time of practical examination asking two questions from the part (A) and two questions from the part (B) by taking course learning outcomes (CLOs) into consideration. The examinee will be required to solve one problem from the part (A) and to execute one problem successfully from the part (B). Equal weightage will be given to both the parts. The evaluation will be done on the basis of practical record, viva-voce, write up and execution of the program. **A) Problem Solving: Questions related to the following problems will be worked out and record of those will be maintained in the Practical Notebook:** 1. Problems to find the row rank and column rank of a matrix. 2. Problems to find the eigen values and eigen vectors of a matrix. 3. Problems to find the minimal polynomial of a matrix.	30

	4. Problems of finding inverse of a matrix using Cayley-Hamilton theorem. 5. Problems of solving cubic equations by Cardon's method. 6. Problems of solving biquadratic equations by Descarte's method. 7. Problems of solving biquadratic equations by Ferrari's method. 8. Problems to find gcd and lcm of two integers. 9. Problems to find solution of linear congruence using Euler's theorem. 10. Problems to find common solution of congruences using Chinese remainder theorem. B) **The following practicals will be done using MAXIMA Software and their record will be maintained in the practical note Book:** 1. To find roots of algebraic equations using MAXIMA. 2. To find multiple roots of algebraic equations using MAXIMA 3. To find the value of a determinant using MAXIMA. 4. To compute inverse of a square matrix using MAXIMA. 5. To find Eigen values of a square matrix using MAXIMA. 6. To find Eigen vectors of a square matrix using MAXIMA. 7. To solve system of linear equations using MAXIMA. 8. Problems to find gcd and lcm of two or more	

	integers using MAXIMA. 9. Problems of solving biquadratic equations by Ferrari's method using MAXIMA.	

Suggested Evaluation Methods

Internal Assessment: ➢ **Theory 20** • Class Participation: 5 • Seminar/presentation/assignment/quiz/class test etc.: 5 • Mid-Term Exam: 10 ➢ **Practicum 10** • Class Participation: - • Seminar/Demonstration/Viva-voce/Lab records etc.: 10 • Mid-Term Exam: -	**End Term Examination:** ➢ **Theory 50** Written Examination ➢ **Practicum 20** Lab record, viva-voce, write up and execution of the program

Part C- Learning Resources

Recommended Books/e-resources:

1) Stephen H. Friedberg, Arnold J. Insel & Lawrence E. Spence (2022). *Linear Algebra* (5th edition). Prentice Hall of India Pvt. Ltd.
2) Seymour Lipschutz and Marc Lars Lipson (2013). *Linear Algebra*. (4th Edition) Schaum's Outline Series, McGraw-Hill.
3) K. B. Dutta (2004). *Matrix and Linear Algebra*. Prentice Hall of India Pvt. Ltd.
4) Vivek Sahai & Vikas Bist (2013). *Linear Algebra* (2nd edition). Narosa Publishing House.
5) I. Niven (1991). *An Introduction to the Theory of Numbers* (5th edition). John Wiley & Sons.
6) H.S. Hall and S.R. Knight (2023). *Higher Algebra* (7th edition). Arihant Publications.
7) Leonard Eugene Dickson (2009). *First Course in the Theory of Equations*. The Project Gutenberg EBook (http://www.gutenberg.org/ebooks/29785).

DSEC-1

Session: 2023-24	
Part A – Introduction	
Subject	Mathematics
Semester	II
Name of the Course	PROGRAMMING IN C
Course Code	B23-MAT-202
Course Type: (CC/MCC/MDC/CC-M/DSEC/VOC/DSE/PC/AEC/VAC)	DSEC
Level of the course	100-199
Pre-requisite for the course (if any)	Mathematics as a subject at level 4.0(Class XII)
Course Learning Outcomes (CLOs):	**After completing this course, the learner will be able to:** 1. Gain the knowledge and understanding of the concepts of C programming language. Learn elements of C, data types, constants and variables, operations and operators, statements and expressions. Attain the skills to write C programs. 2. Have the conceptual knowledge of Input/ Output functions in C, decision making statements in C. Acquire the technical skills to develop C programs for practical problems. 3. Gain the knowledge of loops and arrays, their types, characteristics and structures. Attain the skills to write C programs with loops and arrays

CLO 5 is related to practical component of the course	for solving mathematical and realistic problems. 4. Have the procedural knowledge required for performing skilled task associated with C language. Learn strings of characters, their declaration, input/output, operations on strings and functions which handle strings. Acquire knowledge of the concepts of user defined functions in C. Attain the skills to write codes in C using functions. 5. Attain cognitive and technical skills for solving problems with the C programming language. Have hands-on experience to run and debug programs in C for different mathematical and other practical problems of daily or scientific use.		
	Theory	Practical	Total
Credits	3	1	4
Contact Hours	3	2	5
Internal Assessment Marks	20	10	30
End Term Examination Marks	50	20	70
Examination Time	3Hrs	3Hrs	
Max. Marks:100			
Part B-Contents of the Course			
Instructions for Paper- Setter **Note:** The examiner will set 9 questions asking two questions from each unit and one compulsory question by taking course learning outcomes (CLOs) into consideration. The compulsory question (Question No. 1) will contain 5 parts covering entire syllabus. The examinee will be required to attempt 5 questions, selecting one question from each unit and the compulsory question.			

Unit	Topics	Contact Hours
I	Overview of C: Introduction and importance of C, Basic structure of a C program, Executing a C program. Elements of C: C character set, C tokens, Identifiers and keywords, Constants and variables, Data types, Assignment statement, Symbolic constants. Operators and expressions: Arithmetic, relational, logical, bitwise, unary, assignment, conditional and special operators. Arithmetic expressions, Evaluation of arithmetic expression, Type casting and conversion, Operators hierarchy.	12
II	Input/output: Unformatted and formatted I/O functions, Input functions viz. scanf(), getch(), getche(), getchar(), gets(), Output functions viz. printf(), putch(), putchar(), puts(). Decision making and branching: Decision making with IF statement, if-else statement, Nested IF statement, else-if ladder, switch statement, goto statement.	12
III	Looping: For, while and do-while loops, Jumps in loops, break, continue statement. Arrays: Definition, Types, Initialization, Processing an array.	12
IV	Character Strings: Declaration and initialization, Reading and writing, Arithmetic operations on characters, Putting strings together, Comparison of strings, String handling functions. User defined functions: Need for user defined functions, Form of C functions, Return values and their types, Calling a function,	12

	Category of functions, Nesting of functions, Recursion, Functions with arrays, Scope of variables in functions, ANSI C functions.	
	Practical	
	The practical component will involve coding based on Programming in C for mathematical and scientific problems. The examiner will set 4 programs at the time of practical examination by taking course learning outcomes (CLOs) into consideration. The examinee will be required to execute two programs. The evaluation will be done on the basis of practical record, viva-voce, write-up and execution of the program. **Practical**: The following practicals will be done using the programming language C and record of those will be maintained in the practical Note Book: 1. To find greatest and smallest of three numbers. 2. To find the roots of a quadratic equation. 3. To check whether a given year is leap year or not. 4. To prepare electricity bill. 5. To calculate the Letter grades and Grade points of a student according to marks obtained in 4 subjects on the basis of following table:	30

Marks	Grade Point	Letter Grade
>85	10	O (Outstanding)
>75	9	A+ (Excellent)
>65	8	A (Very Good)
>55	7	B+ (Good)
>50	6	B (Above Average)
>40	5	C (Average)
40	4	P (Pass)
<40	0	F (Fail)

	6. To check a given number for being palindrome or Armstrong. 7. To generate Fibonacci sequence. 8. Write a function to check a given number for being prime number. Use the same to generate the prime numbers less than or equal to a given number m. 9. To find area of circle, triangle and rectangle depending on choice using switch statement. 10. To find sum of cosine series and sine series up to n terms. 11. To find sum of any n numbers. 12. To find transpose of a matrix. 13. To find sum and product of two matrices. 14. To find factorial of a number using (a) iteration (b) function. 15. To sort given numbers in ascending/descending order using (a) selection sort (b) bubble sort	

Suggested Evaluation Methods

Internal Assessment: ➢ **Theory 20** • Class Participation: 5 • Seminar/presentation/assignment/quiz/class test etc.: 5 • Mid-Term Exam: 10 ➢ **Practicum 10** • Class Participation: • Seminar/Demonstration/Viva-voce/Lab records etc.: 10 • Mid-Term Exam:	**End Term Examination:** ➢ **Theory 50** Written Examination ➢ **Practicum 20** Lab record, viva-voce, write-up and execution of programs.

Part C-Learning Resources

Recommended Books:

1) E. Balagurusamy (2019). *Programming in ANSI C* (8th Edition). Tata McGraw-Hill Publishing Co. Ltd.
2) R. Threja (2016). *Computer Fundamentals and Programming in C* (2nd Edition), Oxford University Press.
3) B. S. Gottfried (1998). *Theory and Problems of Programming with C*. Tata McGraw-

Hill Publishing Co. Ltd.

4) V. Rajaraman (1994). *Computer Programming in C.* Prentice Hall of India.

5) B.W. Kernighan and D.M. Ritchie (1988). *The C Programming Language* (2nd Edition). Pearson.

CC-M2

Session: 2023-24	
Part A – Introduction	
Subject	Mathematics
Semester	II
Name of the Course	Basic Algebra
Course Code	B23-MAT-203
Course Type: (CC/MCC/MDC/CC-M/DSEC/VOC/DSE/PC/AEC/VAC)	CC-M
Level of the course	100-199
Pre-requisite for the course (if any)	Mathematics as a subject at 4.0 level (Class XII)
Course Learning Outcomes (CLOs):	After completing this course, the learner will be able to: 1. Gain knowledge of facts, principles and theories to determine rank of a matrix, eigen values, eigen vectors, characteristic equation and minimal polynomial of square matrices. 2. Have procedural knowledge, cognitive and technical skills of solving problems based on Cayley-Hamilton theorem. Gain knowledge about unitary and orthogonal matrices and have skills to solve problems related to them. 3. Understand consistency of homogeneous and non-homogeneous system of linear equations and to learn cognitive and technical skills required for solving such type of problems

CLO 5 is related to the practical component of the course.	using matrices. 4. Have procedural knowledge to determine relation between roots and coefficients of a general polynomial and find solutions of polynomial equations having conditions on roots. 5. Attain cognitive and technical skills required for using relevant methods and procedures to solve algebraic equations, finding inverse and eigen values of matrices. Have technical and practical skills of solving algebraic equations, finding inverse and eigen values of matrices by using built in functions of MAXIMA software.

Credits	Theory	Practical	Total
	1	1	2
Contact Hours	1	2	3
Internal Assessment Marks	10	5	15
End term Examination Marks	20	15	35
Examination Time	3 Hours	3 Hours	

Max. Marks:50

Part B - Contents of the Course

Instructions for Paper- Setter

Note: The examiner will set 9 questions asking two questions from each unit and one compulsory question by taking course learning outcomes (CLOs) into consideration. The compulsory question (Question No. 1) will contain 4 parts covering entire syllabus. The examinee will be required to attempt 5 questions, selecting one question from each unit and the compulsory question.

Unit	Topics	Contact Hours
I	Rank of a matrix, Row rank and column rank of a matrix, Eigen values, Eigen vectors and the characteristic equation of a matrix, Minimal polynomial of a matrix.	4
II	Cayley-Hamilton theorem and its use in finding the inverse of a matrix, Unitary and orthogonal matrices.	4
III	Applications of matrices to a system of linear (both homogeneous and non–homogeneous) equations, Theorems on consistency of a system of linear equations.	4
IV	Relations between the roots and coefficients of general polynomial equation in one variable, Solutions of polynomial equations having conditions on roots.	4
Practical		
	The practical component of the course has two parts, Problem Solving and Practical's using MAXIMA software. The examiner will set 4 questions at the time of practical examination asking two questions from the part (A) and two questions from the part (B) by taking course learning outcomes (CLOs) into consideration. The examinee will be required to solve one problem from the part (A) and to execute one problem successfully from the part (B). Equal weightage will be given to both the parts. The evaluation will be done on the basis of practical record, viva-voce, write up and execution of the program. A) **Problem Solving**- Questions related to the practical applications based on following problems will be worked out and record of those will be maintained in the Practical Note Book:	30

	1. Problems to find the row rank and column rank of a matrix. 2. Problems to find the eigen values and eigen vectors of a matrix. 3. Problems of finding inverse of a matrix using Cayley-Hamilton theorem. 4. Problems to find the minimal polynomial of a matrix. 5. Problems to check the consistency of a system of linear equations. B) **The following practicals will be worked out using MAXIMA Software and their record will be maintained in the Practical Notebook:** 1. To find roots of algebraic equations using MAXIMA. 2. To find the value of determinant using MAXIMA. 3. To compute inverse of a square matrix using MAXIMA. 4. To find Eigen values and Eigen vectors of a square matrix using MAXIMA. 5. To solve system of linear equations using MAXIMA.	
Suggested Evaluation Methods		
Internal Assessment: ➢ **Theory 10** • Class Participation: 4 • Seminar/presentation/assignment/quiz/class test etc.:- • Mid-Term Exam: 6 ➢ **Practicum 5** • Class Participation: • Seminar/Demonstration/Viva-voce/Lab records etc.: 5 • Mid-Term Exam:		**End Term Examination:** ➢ **Theory 20** Written Examination ➢ **Practicum 15** Lab record, viva-voce, write up and execution of the program

Part C-Learning Resources

Recommended Books/e-resources:

1. Stephen H. Friedberg Arnold J. Insel Lawrence E. (2022). *Linear Algebra* (5th edition). Prentice Hall of India Pvt. Ltd.
2. Seymour Lipschutz and Marc Lars Lipson (2013). *Linear Algebra.* (4th Edition) Schaum's Outline Series, McGraw-Hill.
3. K. B. Dutta (2004). *Matrix and Linear Algebra*. Prentice Hall of India Pvt. Ltd.
4. H.S. Hall and S.R. Knight (2023). *Higher Algebra (*7th edition). Arihant Publications.
5. Leonard Eugene Dickson (2009). *First Course in the Theory of Equations*. The Project Gutenberg EBook (http://www.gutenberg.org/ebooks/29785).

MDC-2

Session: 2023-24	
Part A – Introduction	
Subject	Mathematics
Semester	II
Name of the Course	Mathematics for Commerce and Social Sciences
Course Code	B23-MAT-204
Course Type: (CC/MCC/MDC/CC-M/DSEC/VOC/DSE/PC/AEC/VAC)	MDC
Level of the course	100-199
Pre-requisite for the course (if any)	NA
Course Learning Outcomes(CLOs): CLO 5 is related to practical	**After completing this course, the learner will be able to:** 1. Understand and have the procedural knowledge of the concepts of matrices and determinants to solve simultaneous linear equations. 2. Gain the knowledge to find derivatives and integration of simple functions related to commerce and social sciences. Acquire skills to make use of derivatives and integration in realistic problems of the discipline. 3. Have the conceptual knowledge of compound interest, annuity, loan, debenture and sinking funds and attain skills to use these concepts in problem solving. 4. Gain the knowledge and understanding of the concepts of Linear programming and develop skills of formulating and solving linear programming problems based on real world problems. 5. Attain the cognitive and technical skills required for accomplishing assigned tasks relating to the chosen

components of the course.	fields of learning in the context of broad multidisciplinary contexts to solve commercial and social real world problems using Mathematics.		
	Theory	Practical	Total
Credits	2	1	3
Contact Hours	2	2	4
Internal Assessment Marks	15	5	20
End Term Examination Marks	35	20	55
Examination Time	3Hrs	3Hrs	
Max. Marks: 75			

Part B- Contents of the Course

Instructions for Paper- Setter

Note: The examiner will set 9 questions asking two questions from each unit and one compulsory question by taking course learning outcomes (CLOs) into consideration. The compulsory question (Question No. 1) will contain 7 parts covering entire syllabus. The examinee will be required to attempt 5 questions, selecting one question from each unit and the compulsory question.

Unit	Topics	Contact Hours
I	Matrices and Determinants: Definition of a matrix, Order, Equality, Types of matrices, Operations on matrices: addition, multiplication and multiplication with a scalar and their simple properties. Minors, Co-factors, Determinant, Properties of determinants and applications of determinants in finding the area of a triangle, Adjoint and inverse of a square matrix, Solutions of simultaneous linear equations.	8

II	Differentiation, Derivatives of simple functions and other functions having applications in business and social studies, Maxima and minima of a function and their applications to Revenue, Cost, Demand, Production, Profit functions and other functions related to commercial and social Problems. Integration of simple functions and its applications in commercial and economic problems.	8
III	Simple interest and compound interest. Annuities: Types of annuities, Present value and amount of an annuity (including the case of continuous compounding), Valuation of simple loans and debentures, Problems related to sinking funds.	8
IV	Linear Programming: Formulation of linear programming problems (LPP) and their solution by graphical and Simplex methods. Applications of linear programming in solving social science and business problems.	8
Practical		
	The examiner will set 4 questions at the time of practical examination by taking course learning outcomes (CLOs) into consideration. The examinee will be required to solve 2 questions. The evaluation will be done on the basis of practical record, viva-voce and written examination. **Problem Solving**-Questions related to the practical applications based on following problems will be worked out and record of those will be maintained in the Practical Note Book: 1. Problems to find sum of matrices. 2. Problems to find product of matrices.	30

	3. Problems to find determinant of a matrix. 4. Problems to find inverse of a matrix. 5. Problems to find solution of system of linear equations. 6. Problems to find derivatives of simple functions related to commerce and social sciences. 7. Problems to find integration of simple functions related to economic problems. 8. Problems to find maxima of profit function, production, demand function and minima of cost function. 9. Problems to find simple and compound interest. 10. Problems based on annuity. 11. Formulation of real life commercial and social science problems (LPP) related to maximizing profits, minimizing costs, minimal usage of resources etc. and their solutions.	

Suggested Evaluation Methods

Internal Assessment: ➢ **Theory 15** • Class Participation: 4 • Seminar/presentation/assignment/quiz/class test etc.: 4 • Mid-Term Exam: 7 ➢ **Practicum 5** • Class Participation: • Seminar/Demonstration/Viva-voce/Lab records etc.: 5 • Mid-Term Exam:	**End Term Examination:** ➢ **Theory 35** Written Examination ➢ **Practicum 20** Lab record, viva-voce, written examination.

Part C-Learning Resources

Recommended Books:

1. E.T. Dowling(2020). *Schaum outlines of Calculus for Business, Economics and the Social Sciences*. McGraw Hill.
2. S.C. Gupta and V.K. Kapoor (2014). *Fundamentals of Mathematical Statistics*. S. Chand & Sons, Delhi.
3. Seymour Lipschutz and Marc Lars Lipson (2013). *Linear Algebra.* (4th Edition) Schaum's Outline Series, McGraw-Hill.

4. D.C. Sancheti and V.K. Kapoor (2011). *Business Mathematics*. Sultan Chand and Sons.
5. Holden(2010). *Introductory Mathematics for Business and Economics*. Ane/pal Exclusive.
6. E.T. Dowling(2009). *Schaum outlines of Mathematical methods for Business and Economics*. McGraw Hill.
7. E. Don and J. Lerner(2009). *Schaum's outline of Basic Business Mathematics* (2nd Edition). McGraw Hill.
8. L.N.Paul (2002). *Linear Programming: an introductory analysis*. Tata Mcgraw Hill. New Delhi.

CC-3/ MCC-4

Session: 2023-24	
Part A – Introduction	
Subject	Mathematics
Semester	III
Name of the Course	Differential Equations-1
Course Code	B23-MAT-301
Course Type: (CC/MCC/MDC/CC-M/ DSEC/VOC/DSE/PC/AEC/VAC)	CC
Level of the course	200-299
Pre-requisite for the course (if any)	Mathematics as a subject at 4.0 Level (Class XII)
Course Learning Outcomes(CLOs):	**After completing this course, the learner will be able to:** 1. Gain knowledge of the basic concepts of ordinary differential equations and learn various techniques of finding exact solutions of certain solvable first order differential equations. 2. Have procedural knowledge and cognitive and technical skills of solving homogeneous and non-homogeneous second order linear ordinary differential equations with constant coefficients and with variable coefficients. 3. Gain knowledge of theory of total differential equations and basic concepts of partial differential equations. To learn methods and techniques for solving linear PDEs of first order and to acquire technical skills

	for accomplishing assigned tasks relating to formulation and solution of PDEs in broad multidisciplinary contexts. 4. Have knowledge of concepts and theories of second order PDEs and to apply theory of PDEs to determine integral surfaces through a given curve and to find orthogonal surfaces. To understand compatible systems and to learn cognitive and technical skills required for selecting and using relevant Charpit method, Jacobi method methods to assess the appropriateness of approaches for solving PDEs.
CLO 5 is related to the practical component.	5. To attain cognitive and technical skills required for selecting and using relevant methods and techniques to assess the appropriateness of approaches to solving problems associated with the differential equations. To attain technical skill of solving differential equations by using built in functions of MAXIMA software.

	Theory	Practical	Total
Credits	3	1	4
Contact Hours	3	2	5
Internal Assessment Marks	20	10	30
End Term Examination Marks	50	20	70
Examination Time	3 Hours	3 Hours	

Max. Marks:100

Part B- Contents of the Course

Instructions for Paper- Setter

Note: The examiner will set 9 questions asking two questions from each unit and one compulsory question by taking course learning outcomes (CLOs) into consideration. The compulsory question (Question No. 1) will contain 5 parts covering entire syllabus. The examinee will be required to attempt 5

questions, selecting one question from each unit and the compulsory question.		
Unit	**Topics**	**Contact Hours**
I	Basic concepts and genesis of ordinary differential equations, Order and degree of a differential equation, Solutions of differential equations of first order and first degree, Exact differential equations, Integrating factor, First order higher degree equations solvable for x, y and p, Lagrange's equations, Clairaut's form and singular solutions. Orthogonal trajectories of one-parameter families of curves in a plane.	12
II	Solutions of linear ordinary differential equations with constant coefficients, linear non-homogeneous differential equations. Linear differential equation of second order with variable coefficients. Method of reduction of order, method of undetermined coefficients, method of variation of parameters. Cauchy-Euler equation.	12
III	Solution of simultaneous differential equations, total differential equations. Genesis of Partial differential equations (PDE), Concept of linear and non-linear PDEs. Complete solution, general solution and singular solution of a PDE. Linear PDE of first order. Lagrange's method for PDEs of the form: $P(x, y, z)\, p + Q(x, y, z)\, q = R(x, y, z)$, where $p=\partial z/\partial x$ and $q=\partial z/\partial y$.	12
IV	Integral surfaces passing through a given curve. Surfaces orthogonal to a given system of surfaces. Compatible systems of first order equations. Charpit's method, Special types of first order PDEs, Jacobi's method. Second Order Partial Differential Equations with Constant Coefficients.	12

	Practical	
	The practical component of the course has two parts, Problem Solving and Practical's using MAXIMA software. The examiner will set 4 questions at the time of practical examination asking two questions from the part (A) and two questions from the part (B) by taking course learning outcomes (COs) into consideration. The examinee will be required to solve one problem from the part (A) and to execute one problem successfully from the part (B). Equal weightage will be given to both the parts. The evaluation will be done on the basis of practical record, viva-voce, write up and execution of the program. **(A) Problem Solving**- Questions related to the following problems will be solved and record of those will be maintained in the Practical Notebook: 1. Problems solving for differential equations which are reducible to homogeneous. 2. Problems solving for differential equations which are Exact differential equations. 3. Problems solving for linear differential equations with constant coefficient. 4. Problems solving for linear differential equations with variable coefficient. 5. Problems solving for differential equations by method of variation of parameters. 6. Problems solving for differential equations by method of undetermined coefficients. 7. Problems solving for simultaneous differential equations. 8. Problems solving for different PDEs using Lagrange's method. 9. Problems solving for PDEs with Charpit's method and Jacobi's	30

	method. **(B)The following practicals will be done using MAXIMA software and record of those will be maintained in the practical note book:** 1. Solutions of first and second order differential equations. 2. Plotting of family of solutions of differential equations of first, second and third order. 3. Solution of differential equations using method of variation of parameters. 4. Growth and decay model (exponential case only). 5. Lake pollution model (with constant/seasonal flow and pollution concentration). 6. Density-dependent growth model. 7. Predatory-prey model (basic Volterra model, with density dependence, effect of DDT, two prey one predator). 8. To find the solutions Linear differential equations of second order using built in functions of MAXIMA software. 9. To find numerical solution of a first order ODE using plotdf built in function of MAXIMA. 10. To find exact solutions of first and second order ODEs using ode2 and ic1/ic2 built in functions of MAXIMA. 11. To find exact solutions of first and second order ODEs using desolve and atvalue built in functions of MAXIMA.	
➢ **Suggested Evaluation Methods**		
Internal Assessment: ➢ **Theory 20** • Class Participation: 5 • Seminar/presentation/assignment/quiz/class test etc.: 5 • Mid-Term Exam: 10 ➢ **Practicum 10** • Class Participation: • Seminar/Demonstration/Viva-voce/Lab records etc.: 10 • Mid-Term Exam:		**End Term Examination:** ➢ **Theory 50** Written Examination ➢ **Practicum 20** Lab record, viva-voce, write up and execution of the program
Part C-Learning Resources		

Recommended Books:

1. Erwin Kreyszig (2011). *Advanced Engineering Mathematics* (10th edition). J. Wiley & Sons.
2. B. Rai & D. P. Choudhury (2006). *Ordinary Differential Equations - An Introduction*. Narosa Publishing House Pvt. Ltd. New Delhi.
3. Shepley L. Ross (2014). *Differential Equations* (3rd edition). Wiley India Pvt. Ltd.
4. George F. Simmons (2017). *Differential Equations with Applications and Historical Notes* (3rd edition). CRC Press. Taylor & Francis.
5. Ian N. Sneddon (2006). *Elements of Partial Differential Equations*. Dover Publications.

MCC-5

Session: 2023-24	
Part A – Introduction	
Subject	Mathematics
Semester	III
Name of the Course	Groups and rings
Course Code	B23-MAT-302
Course Type: (CC/MCC/MDC/CC-M/DSEC/VOC/DSE/PC/AEC/VAC)	MCC
Level of the course	200-299
Pre-requisite for the course (if any)	Basic Algebra of 100-199 Level
Course Learning Outcomes(CLOs):	**After completing this course, the learner will be able to:** 1. Gain theoretical knowledge of the concept of a group, subgroup, abelian group, cyclic group, normal group, quotient group and have understanding of the results based on these concepts. 2. Have knowledge and understanding of the theory of group homomorphisms, group isomorphisms and group automorphisms. Learn about the permutation groups, permutations, centre of a group and theorems based on these concepts. 3. Gain the deeper knowledge of the concepts of a ring, subring, ideal, integral domain, field of quotient and understanding of the results based on these concepts. 4. Know about Euclidean rings, Polynomial rings and

CLO 5 is related to the practical component.	Unique factorization domain. 5. Attain the deeper knowledge and understanding of groups and rings, their underlying principles and theories, by solving some problems based on them.		
	Theory	Practical	Total
Credits	3	1	4
Contact Hours	3	2	5
Internal Assessment Marks	20	10	30
End Term Examination Marks	50	20	70
Examination Time	3 Hours	3 Hours	
Max. Marks:100			

Part B- Contents of the Course

Instructions for Paper- Setter

Note: The examiner will set 9 questions asking two questions from each unit and one compulsory question by taking course learning outcomes (CLOs) into consideration. The compulsory question (Question No. 1) will contain 5 parts covering entire syllabus. The examinee will be required to attempt 5 questions, selecting one question from each unit and the compulsory question.

Unit	Topics	Contact Hours
I	Definition of a group, Elementary properties of groups, Subgroups and subgroup criteria, Cosets, Index of a sub-group, Coset decomposition, Lagrange's theorem and its consequences, Cyclic groups, Normal subgroups, Quotient groups.	12
II	Homomorphisms, Isomophisms, Automorphisms and inner Automorphisms of groups, Automorphisms of cyclic groups, Permutation groups, Even and odd permutations, Alternating groups, Cayley's theorem, Centre of a group.	12

III	Introduction to rings, Subrings, Integral domains and fields, Characteristic of a ring, Ring homomorphism, Ideals: principal, prime and maximal ideals, Quotient ring, Field of quotients of an integral domain.	12
IV	Euclidean rings, Polynomial rings, Polynomials over the rational field, The Eisenstein's criterion, Polynomial rings over commutative rings, Unique factorization domain.	12
Practical		
	The examiner will set 4 questions at the time of practical examination by taking course learning outcomes (CLOs) into consideration. The examinee will be required to solve 2 questions. The evaluation will be done on the basis of practical record, viva-voce and written examination. **Problem Solving**-Questions related to the practical applications based on following problems will be worked out and record of those will be maintained in the Practical Note Book: 1. Problems to find the order and inverse of the elements of a group. 2. Problems to find the generators of a cyclic group. 3. Problem to find all possible subgroups of a finite group. 4. Problems to verify Lagrange's theorem. 5.Problems to verify Cayley's theorem and theorem of isomorphism. 6. Problems to find index of a group. 7. Problems related to automorphisms of finite or infinite cyclic groups. 8. Problems related to the multiplication of permutations and to write a permutation as the product of transpositions. 9. Problems to find the inverse of a permutation. 10. Problems to determine whether a subset of a ring is an ideal or not. 11. Problems related to maximal and prime ideals. 12. Problems to find the units of a commutative ring with unity. 13. Problems to determine whether a polynomial is irreducible over the field of rational numbers or not. 14. Problem to determine whether an integral domain is Euclidean domain or not. 15. Problem to determine whether an integral domain is unique factorization domain or not.	30
➢ **Suggested Evaluation Methods**		

Internal Assessment: ➢ **Theory 20** • Class Participation: 5 • Seminar/presentation/assignment/quiz/class test etc.: 5 • Mid-Term Exam: 10 ➢ **Practicum 10** • Class Participation: • Seminar/Demonstration/Viva-voce/Lab records etc.: 10 • Mid-Term Exam:	**End Term Examination:** **Theory : 50** Written Examination **Practicum: 20** Lab record, viva-voce, write up and execution of the program

Part C-Learning Resources

Recommended Books:

1. M. Artin (2011). *Abstract Algebra* (2nd Edition). Pearson.
2. V. Sahai and V. Bist (2010). *Algebra* (3rd Edition). Narosa Publishing House.
3. N. Herstein (2008). *Topics in Algebra* (2nd Edition). Wiley India Pvt. Ltd.
4. S. Singh and Q. Zameeruddin (2006). *Modern Algebra* (8th Edition). Vikas Publishing House Pvt. Ltd.
5. John B. Fraleigh (2002). *A First Course in Abstract Algebra* (7th Edition). Pearson.
6. D.A.R. Wallace (1998). *Groups, Rings and Fields*. Springer
7. J. J. Rotman (1995). *An Introduction to the Theory of Groups* (4th Edition). Springer Verlag.

MDC-3

Session: 2023-24	
Part A – Introduction	
Subject	Mathematics
Semester	III
Name of the Course	Mathematics for All
Course Code	B23-MAT-303
Course Type: (CC/MCC/MDC/CC-M/DSEC/VOC/DSE/PC/AEC/VAC)	MDC
Level of the course	100-199
Pre-requisite for the course (if any)	NA
Course Learning Outcomes (CLOs): CLO 5 is related to practical components of the course.	**After completing this course, the learner will be able to:** 1. Gain knowledge of the concepts of sets, Venn diagrams, De-Morgan's laws, basic set operations and apply this factual knowledge to solve daily life mathematical problems which can be formulated in terms of sets. 2. Understand the concept of differentiation as the rate of change of dependent variable with respect to the change in independent variable. Gain knowledge of differentiation of various functions and apply it to the problems of its own discipline and other disciplines for computing the rate of change. 3. Acquire cognitive and technical knowledge about a variety of methods of representation of statistical data and methods of measure of central tendency. Analyze the problem and apply the best measure of central tendency to draw inferences from the available data. 4. Understand the concept of correlation, correlation methods and conclude about the type of correlation for the available data. Comprehend the skills of curve fitting. 5. Attain a range of cognitive and technical skills to differentiate and integrate various functions. Use

	procedural knowledge to solve simple first order differential equations. Have technical and practical skills required for selecting and using suitable methods for data representation and measure of central tendency.		
	Theory	Practical	Total
Credits	2	1	3
Contact Hours	2	2	4
Internal Assessment Marks	15	5	20
End Term Examination Marks	35	20	55
Examination Time	3Hrs	3Hrs	
Max. Marks:75			

Part B-Contents of the Course

Instructions for Paper- Setter

Note: The examiner will set 9 questions asking two questions from each unit and one compulsory question by taking course learning outcomes (CLOs) into consideration. The compulsory question (Question No. 1) will contain 7 parts covering entire syllabus. The examinee will be required to attempt 5 questions, selecting one question from each unit and the compulsory question.

Unit	Topics	Contact Hours
I	The concept of a set, Types of sets, Operations on sets, Venn diagram, De-Morgan's laws. The concept of a function, Elementary functions and their graphical representation. Solution of simple quadratic and cubic equations, Solution of simultaneous linear equations up to three variables. Arithmetic progression, Geometric progression.	8
II	The concept of differentiation, differentiation of simple functions, second order differentiation, Maxima and minima of a function, Use of differentiation for solving problems related to real-life situations. Integration of simple algebraic, trigonometric and exponential functions.	8

III	Presentation of data: Frequency distribution and cumulative frequency distribution, Diagrammatic and graphical presentation of data, Construction of bar, Pie diagrams, Histograms, Frequency polygon, Frequency curve and Ogives. Measures of central tendency: Arithmetic mean, Median, Mode, Geometric mean and Harmonic mean for ungrouped and grouped data. Measures of dispersion: Concept of dispersion, Mean deviation and its coefficient, Range, Variance and its coefficient, Standard deviation.	8
IV	Correlation: Concept and types of correlation, Methods of finding correlation: Scatter diagram, Karl Pearson's coefficients of correlation, Rank correlation. Linear regression: Principle of least square, Fitting of straight line, Two lines of regression, Regression coefficients. Solution of differential equations of first order and degree one with variable separable.	8
Practical		
	The examiner will set 4 questions at the time of practical examination by taking course learning outcomes (CLOs) into consideration. The examinee will be required to solve 2 questions. The evaluation will be done on the basis of practical record, viva-voce and written examination. **Problem Solving**- Questions related to the practical applications based on following problems will be worked out and record of those will be maintained in the Practical	30

	Note Book: 1. Problems involving operations on set using Venn diagram. 2. Problem based on De-Morgan's law. 3. Real life problems leading to quadratic equations. 4. Problem involving solution of simple cubic equations. 5. Formulation and solution of realistic problems to solve system of linear equations. 6. Problem to find nth term of A.P. and G.P. Series. 7. Problems to find first and second derivatives of functions. 8. Problems related to application of maxima and minima in real world problems. 9. Demonstrate skills of finding integration of simple functions. 10. Representation of data using Bar and pie diagrams. 11. Representation of data using Histogram, Frequency polygon, Frequency curves and Ogives. 12. Problems to compute measures of central tendency. 13. Problems to calculate measures of dispersion. 14. Problem to calculate Karl Pearson's coefficient of correlation. 15. Problem to fit the straight line for the given data. 16. Problem to find lines of regression. 17. Practical problems involving solution of simple first order differential equations.	
Suggested Evaluation Methods		
Internal Assessment: ➢ **Theory 15** • Class Participation: 4 • Seminar/presentation/assignment/quiz/class test etc.: 4 • Mid-Term Exam: 7 ➢ **Practicum 5** • Class Participation: • Seminar/Demonstration/Viva-voce/Lab records etc.: 5 • Mid-Term Exam:		**End Term Examination:** ➢ **Theory 35** Written Examination ➢ **Practicum 20** Lab record, viva-voce, written examination.
Part C-Learning Resources		

Recommended Books:

1. S.C. Gupta and V.K. Kapoor (2014). *Fundamentals of Mathematical Statistics*, S. Chand & Sons, Delhi.
2. R.V. Hogg, J. W. McKean and A. T. Craig (2013). *Introduction to Mathematical Statistics (*7th edition*)*, Pearson Education.
3. J. V. Dyke, J. Rogers and H. Adams (2011). *Fundamentals of Mathematics*, Cengage Learning.
4. A.S. Tussy, R. D. Gustafson and D. Koenig (2010). *Basic Mathematics for College Students.* Brooks Cole.
5. G. Klambauer (1986). *Aspects of calculus*. Springer-Verlag.

CC-4/MCC-6

Session: 2023-24	
Part A – Introduction	
Subject	Mathematics
Semester	IV
Name of the Course	Analytical Geometry & Vector Calculus
Course Code	B23-MAT-401
Course Type: (CC/MCC/MDC/CC-M/DSEC/VOC/DSE/PC/AEC/VAC)	CC
Level of the course	200-299
Pre-requisite for the course (if any)	Mathematics as a subject at level 4.0 (Class XII)
Course Learning Outcomes(CLOs):	After completing this course, the learner will be able to: 1. Gain knowledge of the concept of different conic sections, their classification and properties. Understand various terms related to conic sections and gain skills to use them in problem solving. 2. Have knowledge of general form of equation of a sphere and attain procedural knowledge required for solving problems related to intersection of spheres, tangent plane and line, orthogonality, length of tangent and co-axial system of spheres. Learn about equations of cones and apply knowledge for problem solving. 3. Have deeper knowledge and understanding of

CLO 5 is related to the practical component of the course.	cylinder, enveloping cylinder, concepts of conicoids, tangent plane, director sphere, normal, envelope and to make further use thereof. 4. Understand and solve problems related to scalar and vector product of vectors, vector differentiation, directional derivatives, gradient, divergence and curl operators. Have deeper understanding of line, surface and volume integrals, their evaluation, proof of Gauss Divergence, Green's and Stoke's theorems and gain theoretical and technical knowledge in computing different surface flux integrals, volume integrals and line integrals used in other disciplines also. 5. Attain cognitive and technical skills required for solving practical problems related to assessing nature of conicoid, their characteristics. Learn skills to formulate and solve real life practical problems on sphere, cone and cylinder; to generate solutions of practical problems involving complex line, surface and volume integral using Gauss Divergence theorem, Stoke's theorem, Green's theorem in a very easy manner.

Credits	Theory	Practical	Total
	3	1	4
Contact Hours	3	2	5
Internal Assessment Marks	20	10	30
End term Examination Marks	50	20	70

Examination Time	3 Hours	3 Hours	

Max. Marks:100

Part B- Contents of the Course

Instructions for Paper- Setter

The examiner will set 9 questions asking two questions from each unit and one compulsory question by taking course learning outcomes (CLOs) into consideration. The compulsory question (Question No. 1) will contain 5 parts covering entire syllabus. The examinee will be required to attempt 5 questions, selecting one question from each unit and the compulsory question.

Unit	Topics	Contact Hours
I	General equation of second degree: Classification of conic sections; centre, asymptotes, axes, eccentricity, foci and directrices of conics. Tangent at any point to a conic, chord of contact, pole of line to a conic, director circle of a conic. Polar equation of a conic, tangent and normal to a conic, confocal conics.	12
II	Sphere: General form, Plane section of a sphere. Sphere through a given circle. Intersection of two spheres, tangent plane and line, polar plane and line, orthogonal spheres, radical plane of two spheres and co-axal system of spheres. Cone: Equation of a cone, right circular cone, quadric cone, enveloping cone. Tangent plane and condition of tangency.	12
III	Cylinder: Right circular cylinder and enveloping cylinder. Central Conicoids: Equation of tangent plane. Director sphere. Normal to the conicoids. Polar plane of a point. Enveloping cone of a conicoid, Enveloping cylinder of a conicoid, confocal conicoid, reduction of second degree equations.	12

IV	Scalar and Vector product of three vectors, four vectors, reciprocal vectors, vector differentiation and derivative along a curve, directional derivatives; Gradient of a scalar point function, divergence and curl of vector point functions, their geometrical meanings and vector identities. Vector integration: line integral, surface integral and volume integral. Theorem of Gauss, Green, Stoke and problems based on these.	12
	Practical	
	The examiner will set 4 questions at the time of practical examination asking two questions by taking course learning outcomes (CLOs) into consideration. The examinee will be required to solve two problems. The evaluation will be done on the basis of practical record, viva-voce, write up and execution of the program. **Problem Solving: Questions related to the following problems will be worked out and record of those will be maintained in the Practical Notebook:** 1. Practical problems to find nature of the curve, center and the equation of the conic referred to center as the origin. 2. Practical problems to demonstrate the length of axes, eccentricity and the equations of the conic. 3. Practical problems related to reduction of a general equation to the standard form and to discuss nature of conicoid, when all the characteristics roots of discriminant cubic are different from zero. 4. Practical problems related to reduction of a general equation to the standard form and to discuss nature of conicoid, when	30

	one root of characteristics roots of discriminant cubic is zero. 5. Formulation and solution of real life situations which uses mathematical knowledge and characteristics of sphere (at least two). 6. Formulation and solution of real life situations which uses mathematical knowledge and characteristics of cone (at least two). 7. Formulation and solution of real life situations which uses mathematical knowledge and characteristics of cylinder (at least two). 8. Practical problems to understand geometrical meanings of gradient, divergence and curl. 9. Practical problems to demonstrate use of vector identities based on gradient, divergence and curl. 10. Practical problems to study applications of Gauss Divergence theorem. 11. Practical problems to study applications of Stoke's theorem. 12. Practical problems to study applications of Green's theorem.	
Suggested Evaluation Methods		
Internal Assessment: ➢ **Theory 20** • Class Participation: 5 • Seminar/presentation/assignment/quiz/class test etc.: 5 • Mid-Term Exam: 10 ➢ **Practicum 10** • Class Participation: • Seminar/Demonstration/Viva-voce/Lab records etc.: 10 • Mid-Term Exam:		**End Term Examination:** ➢ **Theory 50** Written Examination ➢ **Practicum 20** Lab record, viva-voce, write up and execution of the program
Part C-Learning Resources		

Recommended Books:

1. Robert J. T. Bell (2022). *An Elementary Treatise on Coordinate Geometry of Three Dimensions*. Legare Street Press.
2. George B. Thomas Jr., Joel Hass, Christopher Heil & Maurice D. Weir (2018). *Thomas' Calculus* (14th edition). Pearson Education.
3. Howard Anton, I. Bivens & Stephen Davis (2016). *Calculus* (11th edition). Wiley India.
4. James Stewart (2012). *Multivariable Calculus* (7th edition). Brooks/Cole Cengage Learning.
5. D. Chatterjee (2009). *Analytical Geometry: Two and Three Dimensions*. Narosa Publishing House.
6. Murray Spiegel and Seymour Lipschutz (2009). *Vector Analysis* (2nd edition). Schaum Outline Series.
7. Shanti Narayan and P.K. Mittal (2007). *Analytical Solid Geometry*. S. Chand and Company.
8. Shanti Narayan and P.K. Mittal (2003). *A Text Book of Vector Calculus*. S. Chand.
9. Monty J. Strauss, Gerald L. Bradley & Karl J. Smith (2002). *Calculus* (3rd edition). Pearson Education.
10. Gordon Fuller and Dalton Tarwater (1992). *Analytic Geometry* (7th edition). Pearson.
11. J.H. Kindle (1990). *Analytic Geometry*. McGraw-Hill
12. Gabriel Klambauer (1986). *Aspects of Calculus*. Springer-Verlag.

MCC-7

Session: 2023-24	
Part A - Introduction	
Subject	Mathematics
Semester	IV
Name of the Course	Linear Algebra
Course Code	B23-MAT-402
Course Type: (CC/MCC/MDC/CC-M/DSEC/VOC/DSE/PC/AEC/VAC)	MCC
Level of the course	200-299
Pre-requisite for the course (if any)	100-199
Course Learning Outcomes(CLOs):	**After completing this course, the learner will be able to:** 1. Have comprehensive knowledge and understanding of the concepts of vector space, subspace, linear span, linearly independence, basis, dimension and quotient space. 2. Gain the procedural knowledge required to find the null space, range space, rank, nullity of linear transformation. Understand the proof of rank-nullity theorem and change of basis concept. 3. Have deeper knowledge of the concept of algebra of linear transformations, dual spaces and bi-dual spaces. Find the eigen values, eigen vectors and minimal polynomials of linear transformations. 4. Gain the theoretical knowledge and understanding of inner product space, Gram Schmidt orthogonalization process and

CLO 5 is related to the practical component.	Bessel's inequality. Attain the cognitive skills to apply the learnt concepts to solve mathematical problems. _____ 5. Attain cognitive and technical skills required for performing and accomplishing complex tasks related to problems of linear algebra. Have technical and practical skills required to solve problems related to linear algebra using built in functions of MAXIMA and other FOSS software.

	Theory	Practical	Total
Credits	3	1	4
Contact Hours	3	2	5
Internal Assessment Marks	20	10	30
End Term Examination Marks	50	20	70
Examination Time	3 Hours	3 Hours	

Max. Marks:100

Part B- Contents of the Course

Instructions for Paper- Setter

Note: The examiner will set 9 questions asking two questions from each unit and one compulsory question by taking course learning outcomes (CLOs) into consideration. The compulsory question (Question No. 1) will contain 5 parts covering entire syllabus. The examinee will be required to attempt 5 questions, selecting one question from each unit and the compulsory question.

Unit	Topics	Contact Hours
I	Vector spaces: Vector spaces, Subspaces, Linear sum and direct sum of subspaces, Linear span, Linearly independent and dependent subsets of a vector space, Finitely generated vector spaces, Existence theorem for basis of a finitely generated vector space, Invariance of	12

	the number of elements in basis of a finitely generated vector space, Dimension, Quotient space and its dimension.	
II	Homomorphisms : Linear transformations and linear functionals on vector spaces, Matrix of a linear transformation, Null space and range space of a linear transformation, Rank and nullity theorem, Singular and non-singular linear transformation, Change of basis.	12
III	Algebra of linear transformations, Dual spaces, Bi-dual spaces, Annihilator of subspaces of finite dimensional vector space. Eigen values, Eigen vectors, Minimal polynomial and diagonalization of a linear transformation.	12
IV	Inner product spaces: Inner product spaces, Cauchy-Schwarz inequality, Orthogonal sets and basis, Bessel's inequality for finite dimensional vector spaces, Gram-Schmidt orthogonalization process. Adjoint of a linear transformation and its properties, Unitary linear transformations.	12
Practical		
	The practical component of the course has two parts, Problem Solving and Practical's using MAXIMA/Scilab/SageMath software. The examiner will set 4 questions at the time of practical examination asking two questions from the part (A) and two questions from the part (B) by taking course learning outcomes (CLOs) into consideration. The examinee will be required to solve one problem from the part (A) and to execute one problem successfully from the part (B). Equal weightage will be given to both the parts. The evaluation will be done on the basis of practical record, viva-voce, write up and execution of the program. **(A) Problem Solving**- Questions related to the following problems	30

	will be solved and record of those will be maintained in the Practical Notebook: 1. Problems based on Extension theorem. 2. Problems based on Existence theorem. 3. Problems to verify rank and nullity theorem. 4. Problems to find coordinates of a vector relative to an ordered basis. 5. Problems to determine basis and dimension of quotient space of a given finite dimensional vector space. 6. Problems related to change of basis. 7. Problems related to bi-dual spaces. 8. Problems related to the diagonalization of a linear transformation. **(B)The following practicals will be done using MAXIMA/Scilab/SageMath software and record of those will be maintained in the practical note book:** 1. Practical problems to determine rank of a matrix associated with linear transformation. 2. Practical problems to determine Nullity of a matrix associated with linear transformation. 3. Practical problems to verify rank-nullity theorem. 4. Practical problems to find null space of matrix associated with linear transformation. 5. To determine eigen values of a matrix associated with linear transformation. 6. To determine normalized eigen vector of a matrix associated with linear transformation. 7. Practical problems related to inner product of vectors or functions. 8. Problems related to Gram-Schmidt orthogonalization process.	
➢ **Suggested Evaluation Methods**		
Internal Assessment: ➢ **Theory 20** • Class Participation: 5 • Seminar/presentation/assignment/quiz/class test etc.: 5 • Mid-Term Exam: 10 ➢ **Practicum 10** • Class Participation: • Seminar/Demonstration/Viva-voce/Lab records etc.: 10		**End Term Examination:** **Theory: 50** Written Examination **Practicum: 20** Lab record, viva-voce, write up and execution of the program

• Mid-Term Exam:	

Part C-Learning Resources

Recommended Books:

1. K. Hoffman and R. Kunze (2015). *Linear Algebra* (2nd edition). Prentice-Hall.
2. I. S. Luther and I. B. S. Passi (2012). *Algebra Vol. –II*. Narosa Publishing House.P. B.
3. V. Sahai and V. Bist (2013). *Linear Algebra* (2nd Edition). Narosa Publishing House.
4. S. Lang (2005). *Introduction to Linear Algebra* (2nd edition). Springer India.
5. P.B. Bhattacharya, S. K. Jain and S. R. Nagpaul (1997). *Basic Abstract Algebra* (Indian Edition). Cambridge University Press.
6. I. N. Herstein (1975). *Topics in Algebra*. Wiley Eastern Ltd. New Delhi.

MCC-8

Session: 2023-24	
Part A - Introduction	
Subject	Mathematics
Semester	IV
Name of the Course	Differential Equations-II
Course Code	B23-MAT-403
Course Type: (CC/MCC/MDC /CC-M/DSEC/VOC/ DSE/PC / AEC/VAC)	MCC
Level of the course	200-299
Pre-requisite for the course (if any)	Differential Equations-I (B23-MAT-301)
Course Learning Outcomes(CLOs):	**After completing this course, the learner will be able to:** 1. Have the procedural knowledge and cognitive and technical skills of solving second and higher order linear partial differential equations (homogeneous and non-homogeneous). Develop the skills to find the solution of PDEs with variable coefficients. 2. Have deeper knowledge to classify the second order partial differential equations and reduce them in canonical forms, to find characteristic equations and curves. Learn cognitive skill for solving non-linear partial differential equations and their application to solve problems of science and society. 3. Gain theoretical and practical knowledge to solve the Laplace, heat and wave equations. Have technical and cognitive skills to generate solutions for modelling and

CLO 5 is related to the practical component.	solving real world problems. 4. Gain knowledge and attain skills of solving ordinary and partial differential equations with the help of Laplace transforms and Fourier transforms. 5. Acquire cognitive and technical skills to accomplish complex tasks of solving second order PDEs by analyzing different methods and using available softwares.

	Theory	Practical	Total
Credits	3	1	4
Contact Hours	3	2	5
Internal Assessment Marks	20	10	30
End Term Exam Marks	50	20	70
Examination time	3 Hours	3 Hours	

Maximum Marks = 100

Part B- Contents of the Course

Instructions for Paper- Setter

Note: The examiner will set 9 questions asking two questions from each unit and one compulsory question by taking course learning outcomes (CLOs) into consideration. The compulsory question (Question No. 1) will contain 5 parts covering entire syllabus. The examinee will be required to attempt 5 questions, selecting one question from each unit and the compulsory question.

Unit	Topics	Contact Hours
I	Integral surfaces passing through a given curve, surfaces orthogonal to a given system of surfaces. Solutions of second and higher order linear partial differential equations (homogeneous and non-homogeneous) with constant coefficients. Solution of PDEs with variable coefficients.	12
II	Classification of linear partial differential equations of second order,	12

	Hyperbolic, parabolic and elliptic types. Reduction of second order linear partial differential equations to Canonical (Normal) forms and their solutions. Characteristic equations and characteristic curves of second order partial differential equation. Monge's method for solving second order partial differential equations. Solution of linear hyperbolic equation.	
III	Method of separation of variables. Laplace's equation: occurrence, elementary solution, families of equipotential surfaces, boundary value problems, separation of variables. Wave equation: occurrence, elementary solution, separation of variables. Diffusion (Heat) equation: occurrence, elementary solution, separation of variables.	12
IV	Basics of Laplace transform and inverse Laplace transform. Solutions of ordinary and partial differential equations using Laplace transforms. Basics of Fourier transform and inverse Fourier transform. Solutions of partial differential equations using Fourier transform.	12
Practical		
	The practical component of the course has two parts, Problem Solving and Practical's with free and open source software (FOSS) Scilab/MAXIMA/SageMath The examiner will set 4 questions at the time of practical examination asking two questions from the part (A) and two questions from the part (B) by taking course outcomes (CLOs) into consideration. The examinee will be required to solve one problem from the part (A) and to execute one problem successfully from the part (B). Equal weightage will be given to both the parts. The evaluation will be done on the basis of	30

	practical record, viva-voce, write up and execution of the program. **(A) Problem Solving**-Questions related to the following problems will be solved and record of those will be maintained in the Practical Notebook: 1. Problems of solving homogenous linear partial differential equations of second and higher order. 2. Problems of solving non homogenous linear partial differential equations with constant coefficients. 3. Problems of solving partial differential equations with variable coefficients reducible to equations with constant coefficients. 4. Problems of reducing the second order partial differential equations to canonical form and solve it. 5. Problems of solving second order partial differential equations by Monge's method. 6. Solving problems of Wave, Heat and Laplace equations. 7. Solving ordinary and partial differential equations with the help of Laplace transform. 8. Solving partial differential equations with the help of Fourier transform. **(B)The following practical's will be done using free and open source software (FOSS) Scilab/MAXIMA/SageMath record of those will be maintained in the practical note book:** 1. To find the Solutions of second and higher order homogeneous linear partial differential equations. 2. To find the Solutions of second and higher order non-homogeneous linear partial differential equations.	

	3. To find characteristic equations of second order partial differential equation. 4. To find the solution of one dimensional Wave equations. 5. To find the solution of two dimensional Wave equations. 6. To find the solution of one dimensional Heat equations. 7. To find the solution of two dimensional Heat equations. 8. To find the solution of Laplace equations. 9. To find the solutions of ordinary and partial differential equations with the help of Laplace transform. 10. Solving partial differential equations with the help of Fourier transform.	

Suggested Evaluation Methods

Internal Assessment: ➢ **Theory 20** • Class Participation: 5 • Seminar/presentation/assignment/quiz/class test etc.: 5 • Mid-Term Exam: 10 ➢ **Practicum 10** • Class Participation: • Seminar/Demonstration/Viva-voce/Lab records etc.: 10 • Mid-Term Exam:	**End Term Examination:** ➢ **Theory 50** Written Examination ➢ **Practicum 20** Lab record, viva-voce, write up and execution of the program

Part C-Learning Resources

Recommended Books:

1. Erwin Kreyszig (2011). *Advanced Engineering Mathematics* (10th edition). J. Wiley & Sons.
2. TynMyint-U & Lokenath Debnath (2013). *Linear Partial Differential Equation for Scientists and Engineers* (4th edition). Springer India.
3. H. T. H. Piaggio (2004). *An Elementary Treatise on Differential Equations and Their Applications*. CBS Publishers.
4. S. B. Rao & H. R. Anuradha (1996). *Differential Equations with Applications.* University Press.

5. Ian N. Sneddon (2006). *Elements of Partial Differential Equations.* Dover Publications.
6. Murray R. Spiegel (2005). *Laplace transforms.* Schaum's outline series.
7. Ian N. Sneddon (1974). *The use of Integral transforms*. McGraw Hill.
8. Lokenath Debnath, Dambaru Bhatta (2014). *Integral Transforms and Their Applications* (Third Edition). CRC Press, Boca Raton.

DSE-1

Session: 2023-24	
Part A – Introduction	
Subject	Mathematics
Semester	IV
Name of the Course	Probability Theory & Statistics
Course Code	B23-MAT-404
Course Type: (CC/MCC/MDC/CC-M/DSEC/VOC/DSE/PC/AEC/VAC)	DSE
Level of the course	200-299
Pre-requisite for the course (if any)	Mathematics as a subject at level 4.0 (Class XII)
Course Learning Outcomes(CLOs):	**After completing this course, the learner will be able to:** 1. Gain the deeper knowledge and understanding of theory of probability, distribution function, probability density functions and joint probability distribution function and learn to use those for problem solving. Attain the cognitive skills to use Baye's theorem to solve realistic models. 2. Have the knowledge of the concepts of mathematical expectation, moments, moment generating function uniform, binomial, geometric and Poisson distributions and attain the skills required for choosing statistical tool to solve real life problem. 3. Gain the knowledge of the concepts of uniform, normal, beta,

CLO 5 is related to the practical component.	gamma, Cauchy, lognormal, Laplace distributions and their applications in real life statistical models. 4. Gain the procedural knowledge to find correlation coefficient, covariance, linear regression and to solve problems by method of least squares. Acquire the skills required to apply studied statistical methods in investigation and solution of real based statistical models. 5. Attain cognitive and technical skills required for performing and accomplishing complex tasks relating to realistic statistical models. To attain technical skills to demonstrate measures of central tendency and dispersion, rank correlation, fitting of different distributions using built in functions of SPSS/ Excel software.

	Theory	Practical	Total
Credits	3	1	4
Contact Hours	3	2	5
Internal Assessment Marks	20	10	30
End Term Examination Marks	50	20	70
Examination Time	3Hours	3Hours	

Max. Marks: 100

Part B- Contents of the Course

Instructions for Paper- Setter

Note: The examiner will set 9 questions asking two questions from each unit and one compulsory question by taking course learning outcomes (CLOs) into consideration. The compulsory question (Question No. 1) will contain 5 parts covering entire syllabus. The examinee will be required to attempt 5 questions, selecting one question from each unit and the compulsory question.

Unit	Topics	Contact Hours

I	Basic notions of probability, Conditional probability and independence, Baye's theorem. Random variables: Discrete and continuous, Cumulative distribution function (c.d.f.), Probability mass function (p.m.f.), Probability density functions (p.d.f.), Illustrations and properties of random variables, univariate transformations with illustrations. Two dimensional random variables: Discrete and continuous, Joint, Marginal and conditional c.d.f., p.d.f., p.m.f, independence of variables, bivariate transformations with illustrations	12
II	Mathematical expectation, Moments, Moment generating function, Joint moment generating function, Characteristic function. Discrete probability distributions: Uniform, Binomial, Negative binomial, Geometric and Poisson.	12
III	Continuous probability distributions: Uniform, Normal, Beta, Gamma, Cauchy, Exponential, lognormal and Laplace distribution, properties and limiting/approximation cases.	12
IV	The Correlation coefficient, Covariance, Calculation of covariance from joint moment generating function, Linear regression, The method of least squares, Fitting of curves, Exponential curves.	12
Practical		
	The practical component of the course has two parts, Problem Solving and Practical's using SPSS/Excel software. The examiner will set 4 questions at the time of practical examination asking two questions from the part (A) and two questions from the part (B) by taking course learning outcomes	30

	(CLOs) into consideration. The examinee will be required to solve one problem from the part (A) and to execute one problem successfully from the part (B). Equal weightage will be given to both the parts. The evaluation will be done on the basis of practical record, viva-voce, write up and execution of the program. **Problem Solving**-Questions related to the practical applications based on following problems will be worked out and record of those will be maintained in the Practical Note Book: 1. Problems based on conditional probability. 2. Problems based on Bayes' Theorem. 3. Problems based on probability density function. 4. Problems based on joint probability distribution function of random variables. 5. Problems to find marginal probability distribution and conditional probability distribution function of random variables. 6. Problems to compute Karl Pearson's coefficient of correlation for given bivariate frequency distribution. 7. Problems to find Spearman's rank correlation coefficient for given data. 8. Problems related to realistic models involving binomial distribution. 9. Application based problems involving Poisson distribution. 10. Problems involving normal distribution to solve real life models. 11. Problem solving related to expectation and moment of random variables.	

	(B)The following practicals will be done using SPSS/ Excel software and record of those will be maintained in the practical note book: 1. Problems related to measures of central tendency. 2. Problems related to measures of dispersion. 3. Fitting of binomial distribution. 4. Fitting of Poisson distribution. 5. Fitting of normal distribution. 6. Fitting of lines of regression. 7. Fitting of curves by least square method. 8. Regression analysis. 9. Practical problems related to correlation coefficients and rank correlation.	

Suggested Evaluation Methods

Internal Assessment: ➢ **Theory 20** • Class Participation: 5 • Seminar/presentation/assignment/quiz/class test etc.: 5 • Mid-Term Exam: 10 ➢ **Practicum 10** • Class Participation: • Seminar/Demonstration/Viva-voce/Lab records etc.: 10 • Mid-Term Exam:	**End Term Examination:** ➢ **Theory 50** Written Examination ➢ **Practicum 20** Lab record, viva-voce, written examination.

Part C-Learning Resources

Recommended Books:

1. S.C. Gupta and V.K. Kapoor (2020). *Fundamentals of Mathematical Statistics*. Sultan Chand & Sons.
2. S.P. Gupta (2019). *Statistical Methods*. Sultan Chand & Sons.
3. N.G. Das (2017). *Statistical Methods*. McGraw Hill Education.
4. I. Miller and M. Miller (2014). *John E. Freund's Mathematical Statistics with Applications* (8th edition). Pearson. Dorling Kindersley Pvt. Ltd. India.
5. S. M. Ross (2014). *Introduction to Probability Models* (11th edition). Elsevier.
6. R. V. Hogg, J. W. McKean and A. T. Craig (2013). *Introduction to Mathematical Statistics* (7th

Edition). Pearson Education.
7. S. David (2003). *Elementary Probability* (2nd Edition). Cambridge University Press.
8. Jim Pitman (1993). *Probability*, Springer-Verlag.

DSE-1

Session: 2023-24	
Part A – Introduction	
Subject	Mathematics
Semester	IV
Name of the Course	Special Functions
Course Code	B23-MAT-405
Course Type: (CC/MCC/MDC/CC-M/DSEC/VOC/DSE/PC/AEC/VAC)	DSE
Level of the course	200-299
Pre-requisite for the course (if any)	Calculus and Differential Equations of level 100-199
Course Learning Outcomes (CLOs):	**After completing this course, the learner will be able to:** 1. Gain the knowledge and understanding of singular points of differential equations and learn to solve the equations, having singular points, by Power series method. Have deeper knowledge about Hypergeometric differential equation, Hypergeometric function and its properties and the procedure of solving Hypergeometric differential equation. 2. Have the knowledge about the concepts of Bessel's differential equation and learn procedure to find its solutions of different kind. Acquire deeper knowledge of recurrence relations, generating function, orthogonality and integral of Bessel's functions. Attain skills to make use of

CLO 5 is related to the practical component.	Bessel functions in scientific problem solving. 3. Gain the deeper knowledge of Legendre's differential equation and learn procedure to find its solution in the form of Legendre functions. Understand the concepts of recurrence relations, generating function, orthogonality of Legendre's function and Rodrigues' formula. Acquire the skills to solve mathematical and scientific problems involving Legendre's equation. 4. Have the knowledge of theoretical concepts of Hermite's differential equation and procedural knowledge to find its solution in the form of Hermite functions. Understand facts and theory about recurrence relations, generating function and othogonality of Hermite function, Rodrigues' formula. Acquire the skills to use Hermite function for solving mathematical and scientific problems. _____ 5. Attain the cognitive and technical skills required for performing and accomplishing complex tasks related to series solution of differential equations, Hypergeometric, Bessel's, Legendre's and Hermite's differential equations. Acquire analytical and numerical skills to solve mathematical and scientific problems involving these differential equations and the special functions.

	Theory	Practical	Total
Credits	3	1	4
Contact Hours	3	2	5
Internal Assessment Marks	20	10	30

End Term Exam Marks	50	20	70
Examination Time	3Hrs	3Hrs	
Max. Marks: 100			

Part B-Contents of the Course

Instructions for Paper- Setter

Note: The examiner will set 9 questions asking two questions from each unit and one compulsory question by taking course learning outcomes (CLOs) into consideration. The compulsory question (Question No. 1) will contain 5 parts covering entire syllabus. The examinee will be required to attempt 5 questions, selecting one question from each unit and the compulsory question.

Unit	Topics	Contact Hours
I	Series solution of differential equations: Power series method, Hypergeometric Series, Hypergeometric function and its integral representation, Hypergeometric differential equation and solutions, Contiguous function relations, Simple transformations.	12
II	Bessel equation and its solution, Bessel functions and their properties, Convergence, Recurrence relations and generating functions, Bessel's integral, Orthogonality of Bessel functions.	12
III	Legendre differential equation and its solution, Legendre functions and their properties, Recurrence relations and generating functions, Orthogonality of Legendre polynomials, Rodrigues' formula for Legendre polynomials, Laplace integral representation of Legendre polynomial.	12
IV	Hermite differential equation and its solutions, Hermite function and its properties, Recurrence relations and generating functions, Orthogonality of Hermite polynomials, Rodrigues' formula for Hermite Polynomial.	12

Practical		
	The practical component of the course has two parts, Problem Solving and Practicals using MAXIMA/Scilab/MATLAB software. The examiner will set 4 questions at the time of practical examination asking two questions from the part (A) and two questions from the part (B) by taking course learning outcomes (CLOs) into consideration. The examinee will be required to solve one problem from the part (A) and to execute one problem successfully from the part (B). Equal weightage will be given to both the parts. The evaluation will be done on the basis of practical record, viva-voce, write up and execution of the program. **(A) Problem Solving**- Questions related to the following problems will be solved and record of those will be maintained in the Practical Notebook: 1. Problems solving for ordinary differential equations using Frobenius method. 2. Problems based on Hypergeometric differential equation. 3. Problems involving Bessel's differential equation. 4. Problems related to Legendre differential equation. 5. Problems to find solution of Hermite differential equation. 6. Problems based on recurrence relations and generating functions of Bessel's function. 7. Problems based on recurrence relations and generating functions of Legendre's polynomial. 8. Problems based on recurrence relations and generating functions of Legendre's polynomial. **(B)The following practicals will be done using MATLAB/ SCILAB/MAXIMA software and record of those will be maintained in the practical note book:** 1. Practical problems for plotting of the Bessel's functions of first kind of order 0 to 3	30

	2. Practical problems to find zeros of Bessel's function of first and second kind. 3. Practical problems to find zeros of first derivative of Bessel function of first kind and Legendre's polynomial. 4. Practical problems for plotting of Legendre polynomial for n=1 to 5 in the interval [0,1] and verifying graphically that all roots of Legendre polynomial lies in the interval [0,1]. 5. Practical problems related to coefficients of Legendre polynomial. 6. Practical problems based on plotting of Hermite polynomial. 7. Practical problems related to realistic models involving Bessel differential equation and their solutions. 8. Practical problems related to realistic models involving Legendre's differential equations and their solutions.	

Suggested Evaluation Methods

Internal Assessment: ➢ **Theory 20** • Class Participation: 5 • Seminar/presentation/assignment/quiz/class test etc.: 5 • Mid-Term Exam: 10 ➢ **Practicum 10** • Class Participation: • Seminar/Demonstration/Viva-voce/Lab records etc.: 10 • Mid-Term Exam:	**End Term Examination:** ➢ **Theory 50** Written Examination ➢ **Practicum 20** Lab record, viva-voce, write up and execution of the program

Part C-Learning Resources

Recommended Books:

1. E. Kreyszig (2011). *Advanced Engineering Mathematics* (10th Edition). Wiley.
2. S. L. Ross (2007). *Differential Equations* (3rd Edition). Wiley India.
3. W.W. Bell (2004). *Special Functions for Scientists and Engineers.* Dover Books on Mathematics.
4. L.C. Andrews (1992). *Special Functions of Mathematics for Engineers.* Oxford University Press and SPIE Press.

5. E. D. Ranville (1960). *Special Functions*. Macmillan.
6. George E. Andrews, Richard Askey, Ranjan Roy (1999). *Special Functions*. Cambridge University Press.

VAC-3

Session: 2023-24	
Part A- Introduction	
Subject	Mathematics
Semester	III
Name of the Course	Mathematics in India: From Vedic Period to Modern Times
Course Code	B23-VAC-308
Course Type: (CC/MCC/MDC/CC-M/DSEC/VOC/DSE/PC/AEC/VAC)	VAC
Level of the course	100-199
Pre-requisite for the course (if any)	NA
Course Learning Outcomes (CLOs):	**After completing this course, the learner will be able to**: 1. Have knowledge about the development of mathematical ideas and techniques in Indian mathematics during Vedic and Ancient period. Attain sufficient level of the historical background and contributions of notable Indian mathematicians to explore Indian knowledge system further. 2. Have deeper knowledge about development of mathematics during the Medieval period. Theoretical knowledge used in various branches of mathematics like techniques of calculus and spherical trigonometry found in the Kerala school of astronomy and mathematics will be gained. Learn about the biography and contributions of eminent Indian mathematicians during this period and Indian knowledge system as such. 3. Gain knowledge about development of mathematics in modern period. Have knowledge of notable work of Srinivasa Ramanujan and other mathematicians with other aspects of the old and strong traditions of mathematics in India. Familiarize with biographies of Mathematicians in modern period.

	4. Have Knowledge about the prestigious Fields Medal, Abel Prize in the subject of mathematics and their significance. Gain theoretical knowledge about illustrious contributions of contemporary Indian mathematicians.		
	Theory	Practical	Total
Credits	02	-	02
Contact Hours	02	-	02
Internal Assessment Marks	15	-	15
End Term Examination Marks	35	-	35
Examination Time	3 Hours	-	
Max. Marks: 50			

Part B- Contents of the Course

Instructions for Paper- Setter

Note: The examiner will set 9 questions asking two questions from each unit and one compulsory question by taking course learning outcomes (CLOs) into consideration. The compulsory question (Question No. 1) will contain 7 parts covering entire syllabus. The examinee will be required to attempt 5 questions, selecting one question from each unit and the compulsory question.

Unit	Topics	Contact Hours
I	**Ancient Period**: Development of Indian mathematics during Vedic and Ancient period. Overview of the Vedic period, Mathematical ideas in the Vedas and manuscripts in Indian mathematics. Life, background, notable works, mathematical contribution of Baudhayana, Pingala, Aryabhata, Brahmagupta, Bhaskaracharya, Mahaviracharya and Lilavati.	8
II	**Medieval Period**: Kerala School of Mathematics, Madhava of Sangamagrama, Nilakantha Somayaji, Jyesthadeva: Overview of historical backgrounds and their contribution.	8
III	**Modern Period:** Srinivasa Ramanujan, Satyendra Nath Bose, Radhanath Sikdar, P.C. Mahalanobis, D.R. Kaprekar: Early life, Education, Challenges, Achievements and their contribution.	8

IV	**Medals and Prizes in Mathematics and Contemporary Mathematicians:** Introduction to the prestigious Fields Medal, Abel Prize and their significance. Biography and contributions of illustrious mathematicians from India: Subrahmanyan Chandrasekhar, C.R. Rao, S.R. Srinivasa Varadhan, Manjul Bhargava, Akshay Venkatesh, Harish-Chandra and Shakuntala Devi.	8

Suggested Evaluation Methods

Internal Assessment: ➢ **Theory 15** Class Participation: 4 Seminar/presentation/assignment/quiz/class test etc.: 4 Mid-Term Exam: 7	**End Term Examination:** ➢ **Theory 35** Written examination

Part C-Learning Resources

Recommended Books:

1. C. N. Srinivasiengar (1967). *History of Mathematics in India.* The World Press Pvt. Ltd., Calcutta.
2. A.K. Bag (1979). *A Cultural History of Mathematics in Ancient India.* Chaukhamba Orientalia, Varanasi.
3. George Gheverghese Joseph (2016). *Indian Mathematics: Engaging with the World from Ancient to Modern Times*. World Scientific.
4. T.A. Sarasvati Amma (2007). *Geometry in Ancient and Medieval India*. Motilal Banarsidass Publishers Limited
5. S. Balachandra Rao (1998). *Indian Mathematics and Astronomy: Some Landmarks*. Jnana Deep Publications
6. John Stillwell (2010). *Mathematics and its History*. Springer (Includes a section on Indian mathematics)
7. Ramakalyani V. Sita Sunder Ram (2021). *History and development of Mathematics in India*. National mission for Mathematics and DK Printworld (P) Ltd, New Delhi.
8. Gerard G. Emch (2005). *Contribution to the history of Indian Mathematics.* Hindustan Book Agency.
9. R. B. Singh (2008). *Origin and development of Mathematics*. Vista International Publishing House, New Delhi.

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VAC-4

Session: 2023-24	
Part A – Introduction	
Subject	MATHEMATICS
Semester	IV
Name of the Course	MATHEMATICS IN EVERYDAY LIFE
Course Code	B23-VAC-418
Course Type: (CC/MCC/MDC/CC-M/DSEC/VOC/DSE/PC/AEC/VAC)	VAC
Level of the course	100-199
Pre-requisite for the course (if any)	NA
Course Learning Outcomes(CLOs):	**After completing this course, the learner will be able to**: 1. Gain knowledge of facts, concepts and rules to calculate simple and compound interests. Understand the technical terms related to income tax and Equated monthly installment (EMI) and then to apply their enhanced technical and analytical skills to calculate income tax for different level of income tax payee and aware about how much they have to pay each month on a loan**.** They will be able to compare the results and discuss the impact of compounding on long term savings. 2. Have deeper knowledge of profit, loss, work, time and distance, coding and decoding inculcate technical and cognitive skill in solving problems related to these. Attain procedural skill to solve real life problems related to ratios

	and proportions. Gain procedural and technical knowledge to solve the practical problems of height and distances using concepts of trigonometry. 3. Attain technical and cognitive skills to analyze and solve numerical based on the concept of sequence and series, Arithmetic Progression, Geometric Progression, permutation and combination. 4. Develop cognitive skill to analyze the results of a sample using measures of central tendency and graphical representation (pie charts, frequency polygons, ogive). To design and conduct a survey on a relevant topic of their choice (e.g., favorite leisure activities, dietary habits, etc.). Have procedural knowledge to solve linear programming problems used in everyday life.		
Credits	Theory	Practical	Total
	2	-	2
Contact Hours	2	-	2
Internal Assessment Marks	15	-	15
End Term Exam Marks	35	-	35
Examination time	3 Hours		3 Hours

Part B- Contents of the Course

Instructions for Paper- Setter

Note: The examiner will set 9 questions asking two questions from each unit and one compulsory question by taking course learning outcomes (CLOs) into consideration. The compulsory question (Question No. 1) will contain 7 parts covering entire syllabus. The examinee will be required to attempt 5 questions, selecting one question from each unitand the compulsory question.

Unit	Topics	Contact Hours
I	Simple interest, Compound interest, Equated monthly installment (EMI), Direct tax calculation.	8
II	Profit and loss, Work, time and distance, Coding and Decoding, Ratio and proportion, Trigonometry and its applications, Mensuration for practical purposes.	8
III	Sequence and series, Arithmetic progression, Geometric progression, Permutation and combinations (simple problems).	8
IV	Mean, Mode, Median, Standard deviation, Variance. Bar graphs, Pie charts, Frequency polygons, Ogive. Linear equation in two variables. Linear programming problems (LPP): Graphical solution.	8

Suggested Evaluation Methods

Internal Assessment: ➢ **Theory 15** • Class Participation: 4 • Seminar/presentation/assignment/quiz/class test etc.: 4 • Mid-Term Exam: 7	**End Term Examination:** **Theory 35** Written examination

Part C-Learning Resources

Recommended Books:

1. R. S. Aggarwal (2022). *Quantitative Aptitude.* S Chand & Company Limited, New Delhi.
2. Jaikishan & Premkishan (2022). *How to Crack Test of Reasoning in All Competitive Exams.* Arihant Publications.
3. A. Guha (2020). *Quantitative Aptitude* (7th Edition). Mc Graw Hill Publications.
4. R. V. Praveen (2016). *Quantitative Aptitude and Reasoning* (3rd Edition). PHI publications.
5. R.S. Aggarwal (2018). *A Modern Approach to Logical Reasoning* . S. Chand.
6. Richa Agarwal (2019). *How to Crack Test of Arithmetic.* Arihant Publications.

SEC-2

Session: 2023-24			
Part A - Introduction			
Subject	Mathematics		
Semester	II		
Name of the Course	Calculation Skills with Vedic Mathematics-I		
Course Code	B23-SEC-203		
Course Type: (CC/MCC/MDC/CC-M/DSEC/VOC/DSE/PC/AEC/VAC)	SEC		
Level of the course	100-199		
Pre-requisite for the course (if any)	NA		
Course Learning Outcomes (CLOs): CLO 5 is related to the practical components of the course.	**After completing this course, the learner will be able to:** 1. Gain the knowledge of *Sutras* and *Upsutras* from Vedic Mathematics. Perform simple arithmetic calculations with speed and accuracy. 2. Have the procedural knowledge of multiplication of complicated numbers quickly with the aid of Vedic *sutras* and generate tables of any number. 3. Make use of Vedic *sutras* to quickly divide, and find LCM and HCF of many digit numbers. 4. Acquire the cognitive skills to calculate square and cube roots of numbers speedily with accuracy. 5. Attain skills to perform calculations in competitive examinations with speed and accuracy.		
	Theory	Practical	Total
Credits	2	1	3
Contact Hours	2	2	4

Internal Assessment Marks	15	5	20
End Term Examination Marks	35	20	55
Examination Time	3Hrs	3Hrs	

Max. Marks:75

Part B-Contents of the Course

Instructions for Paper- Setter

Note: The examiner will set 9 questions asking two questions from each unit and one compulsory question by taking course learning outcomes (CLOs) into consideration. The compulsory question (Question No. 1) will contain 7 parts covering entire syllabus. The examinee will be required to attempt 5 questions, selecting one question from each unitand the compulsory question.

Unit	Topics	Contact Hours
I	History of Vedic Mathematics and introduction to its *Sutras* and *Upsutras*. Addition in Vedic Mathematics: Without Carrying, Dot Meth method subtraction in Vedic Mathematics: *Nikhilam Navatashcaramam Dashatah* (All from 9 last 10). Fraction: Addition and Subtraction.	8
II	Multiplication of two numbers of two digits (*Ekadhikena Purvena* method), Multiplication of two numbers of three digits, (*Ekanyunena Purvena* method, *Urdhva Tiryagbhyam* method, *Nikhilam Navatashcaramam Dashatah* method), Combined Operations, Generating Tables (*Nikhilam*).	**8**
III	Division: *Nikhilam Navatashcaramam Dashatah* (two digits divisor), *ParavartyaYojyet* Method (three digits divisor). Divisibility: *Ekadhikena Purvena* Method (two digits divisor), *Eknunen Purvena* Method (two digits divisor) LCM, HCF.	8
IV	Squares of any two digits numbers: Base method, Squares of numbers ending in 5: *Ekadhikena Purvena* Method.	8

	Square Roots: *Dwandwa Yoga* (Duplex) Method, Square root (four digit number). Cubing: *Yavadunam* Method, Cube root (six digit numbers)	
Practical		
	The examiner will set 4 questions at the time of practical examination by taking course learning outcomes (CLOs) into consideration. The examinee will be required to solve 2 questions. The evaluation will be done on the basis of practical record, viva-voce and written examination. **Problem Solving**-Questions related to the following problems will be solved and record of those will be maintained in the Practical Note Book: 1. Addition of two 5-digit numbers by without carrying and dot method. 2. Subtraction of 5-digit numbers by base method. 3. Multiplication of 2-digit numbers by base method. 4. Multiplication of 3-digit numbers by numbers consisting of all 9s. 5. Multiplication of 3-digit numbers by numbers consisting of all 1s. 6. Multiplication of 3-digit numbers by Vinculum method. 7. Division of 2-digit and 3-digit numbers. 8. Generating table of any number. 9. Square of any 2-digit number by base method. 10. Square of any number ending with 5. 11. Square root of 4-digit numbers. 12. Cube root of 6-digit numbers. 13. LCM and HCF of numbers. 14. Answer checking by digit-sum method.	30
Suggested Evaluation Methods		

InternalAssessment: ➢ **Theory 15** • Class Participation: 4 • Seminar/presentation/assignment/quiz/class test etc.: 4 • Mid-Term Exam: 7 ➢ **Practicum 5** • Class Participation: • Seminar/Demonstration/Viva-voce/Lab records etc.: 5 • Mid-Term Exam:	**End Term Examination:** ➢ **Theory 35** Written Examination ➢ **Practicum 20** Lab record, viva-voce, written examination.

Part C-Learning Resources

Recommended Books:

1. U. S. Patankar and S. M. Patankar (2018). *Elements of Vedic Mathematics.* TTU Press.
2. V.Singhal (2014).*Vedic Mathematics for all ages.* Motilal Banarsidas Publishers.
3. R.K.Thakur (2013).*The Essentials of Vedic Mathematics.* Rupa Publications. New Delhi.
4. P. Tiwari and V.K. Pandey (2012). *Vedic Mathematics - Modern Research Methods*. Campus Books International.
5. S. K. Kapoor (2006).*Vedic Geometry Course*. Lotus Press.
6. A. Gupta (2004). *Power of Vedic Mathematics with Trigonometry*. Jaico Publishing House.
7. S.B.K. Krishna Trithaji(1990). *Vedic Mathematics.* Motilal Banarsidas, New Delhi.

SEC-2

Session: 2023-24	
Part A - Introduction	
Subject	Mathematics
Semester	II
Name of the Course	Numerical Ability Enhancement Skills
Course Code	B23-SEC-225
Course Type: (CC/MCC/MDC/CC-M/DSEC/VOC/DSE/PC/AEC/VAC)	SEC
Level of the course	100-199
Pre-requisite for the course (if any)	NA
Course Learning Outcomes(CLOs): CLO 5 is related to the practical component.	**After completing this course, the learner will be able to**: 1. Understand real number system, fundamental arithmetical operations, use of BODMAS rule and solve typical expressions accurately and fast. 2. Acquire skill to identify types of given sequences/series and apply suitable method to find a particular term, sum of specific number of terms and practice this learning in real life mathematical problems. 3. To formulate equations for specific mathematical problem and making use of mathematical skills to solve that. 4. Have a deeper and comprehensive understanding of the basic concepts of Percentage, Profit & Loss, Alligation or mixture, Averages and acquire skill to use this knowledge in real life problems _____ 5. Attain cognitive and analytical skills to identify, analyze and generate solutions to realistic problems by exploring procedural knowledge associated with the problems. Have analytical skills to compare and recognize various geometrical figures available in

	surroundings with mathematical figures and determine areas and volumes of the same.		
Credits	Theory	Practical	Total
	2	1	3
Contact Hours	2	2	4
Internal Assessment Marks	15	5	20
End Term Examination Marks	35	20	55
Examination Time	3 Hours	3 Hours	
Max. Marks: 75			

Part B- Contents of the Course

Instructions for Paper- Setter

The examiner will set 9 questions asking two questions from each unit and one compulsory question by taking course learning outcomes (CLOs) into consideration. The compulsory question (Question No. 1) will contain 7 parts covering entire syllabus. The examinee will be required to attempt 5 questions, selecting one question from each unit and the compulsory question.

Unit	Topics	Contact Hours
I	Real number system, Operations on numbers, Tests for divisibility of natural numbers, Decimals, Fractions, Square roots, Cube roots, Surds and indices, Use of BODMAS.	8
II	HCF, LCM of integers, Ratio and Proportion, Progressions: Arithmetic Progression, Geometric Progression, Harmonic Progression with their simple and basic practical applications, Number series completion.	8
III	Percentage, Profit & Loss, Alligation or mixture, Average, Average speed problems, Calendar.	8
IV	Logarithms, Area of Quadrilaterals (Parallelogram, Square, Rectangle, Rhombus, Trapezium),Volume and surface area of Cube, Cuboid, Cylinder, Cone, Sphere and Hemisphere.	8

Practical		
	The examiner will set 4 questions at the time of practical examination by taking course learning outcomes (CLOs) into consideration. The examinee will be required to solve 2 questions. The evaluation will be done on the basis of practical record, viva-voce, written examination. **Problem Solving**- Questions related to the following problems will be solved and their record will be maintained in the Practical Notebook: 1. To solve problems related to the simplification of expression involving fractions having use of BODMAS. 2. Practical problems of salary increment, population increase etc. & apply formula for n^{th} term and sum of n terms based on A.P. and G.P. 3. Working out average speed during a trip from a destination to another destination assuming non uniform speed taking at least three variation in magnitude of speed. 4. Practical problems related to ratio and proportion. 5. Practical problems related to two digit numbers and reversal of digits at unit and ten's places. 6. Draw a chart for quadrilateral (Parallelogram, Square, Rectangle, Rhombus, Trapezium) mentioning their properties, surface area and perimeter. 7. Draw 3-D figures Cuboid, Cube, Cylinder, Cone, Sphere and Hemisphere and problems solving for the surface area and volume of these figures. 8. Derive a formula to determine average speed of a person	30

	travelling from a destination 'A' to another destination 'B' with a speed of x km/h and returning back with a speed of y km/h . 9. 'M' offers a discount of 25% on a book to 'A' and for the same book, he offers 'B' a discount of 10% and again an additional discount of 15%. Analyze, which has to pay more for the same book. 10. Problem of determining single discount in percent equivalent to successive discount of x %, y% and z %. 11. Problem of determining loss percent when a person sells two similar items, one at a gain of x % and the other at a loss of x %. 12. To solve problem related to the value of an item after 'n' years if it depreciates at the rate of 'r %' per annum , when its present value 'P' is given. 13. Problem of determining the value of an item 'n' years ago if its depreciation rate 'r %' per annum and present value 'P' is given. 14. Problem of percentage reduction in consumption of a commodity if its price increases 'r %' so as not to increase the expenditure. 15. Problem to find the ratio in which two or more ingredients at the given price must be mixed to produce a mixture of a desired price.	
Suggested Evaluation Methods		
Internal Assessment: ➢ **Theory 15** • Class Participation: 4 • Seminar/presentation/assignment/quiz/class test etc.: 4 • Mid-Term Exam: 7 ➢ **Practicum 5** • Class Participation: • Seminar/Demonstration/Viva-voce/Lab records etc.: 5 • Mid-Term Exam:		**End Term Examination:** ➢ **Theory 35** Written Examination ➢ **Practicum 20** Lab record, viva-voce, write up.
Part C-Learning Resources		

Recommended Books:

1. R. S. Aggarwal (2022). *Quantitative Aptitude*. S Chand & Company Limited, New Delhi.
2. A. Guha (2020). *Quantitative Aptitude* (7th Edition). Mc Graw Hill Publications.
3. V. Dyke, J. Rogers and H. Adams (2011). *Fundamentals of Mathematics*, Cengage Learning.
4. A.S. Tussy, R. D. Gustafson and D. Koenig (2010). *Basic Mathematics for College Students*. Brooks Cole.
5. C. C. Pinter (2014). *A Book of Set Theory*. Dover Publications.
6. G. Klambauer (1986). *Aspects of calculus*. Springer-Verlag.

SEC-3

Session: 2023-24			
Part A–Introduction			
Subject	Mathematics		
Semester	III		
Name of the Course	Calculation Skills with Vedic Mathematics-II		
Course Code	B23-SEC-303		
Course Type: (CC/MCC/MDC/CC-M/DSEC/VOC/DSE/PC/AEC/VAC)	SEC		
Level of the course	100-199		
Pre-requisite for the course (if any)	NA		
Course Learning Outcomes(CLOs): CLO 5 is related to the practical components of the course.	**After completing this course, the learner will be able to:** 1. Gain the knowledge to perform multiplication, division, HCF, LCM and factorization of polynomials using Vedic Sutras. 2. Have the procedural knowledge to apply Vedic sutras to solve linear equations, quadratic equations and simultaneous equations. 3. Gain the cognitive skills to evaluate determinant, inverse of a matrix, derivative and integration of functions with speed and accuracy using Vedic Mathematics. 4. Have the knowledge and understanding of the concepts of Vedic Geometry and Trigonometry. 5. Attains the cognitive and technical skills to use Vedic sutras and upsutras for solving Algebra, Calculus and Geometry problems with speed and accuracy.		
	Theory	Practical	Total
Credits	2	1	3

Contact Hours	2	2	4
Internal Assessment Marks	15	5	20
End Term Examination Marks	35	15	55
Examination Time	3Hrs	3Hrs	

Max. Marks:75

Part B-Contents of the Course

Instructions for Paper- Setter

Note: The examiner will set 9 questions asking two questions from each unit and one compulsory question by taking course learning outcomes (CLOs) into consideration. The compulsory question (Question No. 1) will contain 7 parts covering entire syllabus. The examinee will be required to attempt 5 questions, selecting one question from each unit and the compulsory question.

Unit	Topics	Contact Hours
I	Multiplication (Quadratic expressions of single variable), Urdhwatirygbhyaam Method, Combined Operations. Division and Factorization: Division (Divisor: Linear expression of single variable), Factorization (Quadratic and cubic polynomials of two variables) , Factorization of quadratic polynomial containing more than two variables. LCM and HCF of polynomials.	8
II	Solution of Simple Equation, solution of linear equation in one variable, solution of linear equations in two variables, solution of quadratic equations, Solution of simultaneous equations.	8
III	Determinant. Inverse of a Matrix. Derivative. Integration.	8
IV	Concept of Baudhayana Number (BN), BN of an angle, Multiplication of a constant in a BN, BN of complementary angles, BN of sum and difference ($\alpha \pm \beta$) of an angle, BN of half angle. Pythagorean triple, Trigonometric relation for half, twice and thrice of angle, sum, difference of angles using triples Vedic Geometry: Angle between two lines, perpendicular distance of line from a point.	8

Practical		
	The examiner will set 4 questions at the time of practical examination by taking course learning outcomes (CLOs) into consideration. The examinee will be required to solve 2 questions. The evaluation will be done on the basis of practical record, viva-voce and written examination. **Problem Solving**-Questions related to the following problems will be solved and record of those will be maintained in the Practical Note Book: 1. Multiplication of algebraic polynomials. 2. Division of two polynomials. 3. Factorization of quadratic and cubic polynomials in two or more than two variables. 4. LCM and HCF of algebraic expressions. 5. Solution of linear equations of one and two variables. 6. Solution of quadratic equations. 7. Solution of simultaneous equations. 8. Determinant of order 3 and 4. 9. Derivative of composite functions. 10. Integration of product of two functions without using traditional by-parts method. 11. Trigonometric relation for twice of angle. 12. Trigonometric relation for thrice of angle. 13. Sum and difference of angles using triples 14. Angle between two straight lines. 15. Perpendicular Distance of line from a point.	30
Suggested Evaluation Methods		

Internal Assessment: ➢ **Theory 15** • Class Participation: 4 • Seminar/presentation/assignment/quiz/class test etc.: 4 • Mid-Term Exam: 7 ➢ **Practicum 5** • Class Participation: • Seminar/Demonstration/Viva-voce/Lab records etc.: 5 • Mid-Term Exam:	**End Term Examination:** ➢ **Theory 35** Written Examination ➢ **Practicum 15** Lab record, viva-voce, written examination.

Part C-Learning Resources

Recommended Books:

1. U. S. Patankar and S. M. Patankar (2018). *Elements of Vedic Mathematics.* TTU Press.
2. V.Singhal (2014).*Vedic Mathematics for all ages.* Motilal Banarsidas Publishers.
3. R.K.Thakur (2013).*The Essentials of Vedic Mathematics.* Rupa Publications. New Delhi.
4. P. Tiwari and V.K. Pandey (2012). *Vedic Mathematics - Modern Research Methods*. Campus Books International.
5. S. K. Kapoor (2006).*Vedic Geometry Course*. Lotus Press.
6. A. Gupta (2004). *Power of Vedic Mathematics with Trigonometry*. Jaico Publishing House.
7. S.B.K. Krishna Trithaji(1990). *Vedic Mathematics.* Motilal Banarsidas, New Delhi.

SEC-3

Session: 2023-24	
Part A – Introduction	
Subject	Mathematics
Semester	III
Name of the Course	Learning MATLAB Skills
Course Code	B23-SEC-324
CourseType: (CC/MCC/MDC/CC-M/DSEC/VOC/DSE/PC/AEC/VAC)	SEC
Level of the course	200-299
Pre-requisite for the course (if any)	NA
Course Learning Outcomes(CLOs):	After completing this course, the learner will be able to: 1. Gain theoretical knowledge about memory and file management, basic flow controls, MATLAB program development environment that will help to develop programming skills and techniques to solve problems. 2. Have procedural and technical knowledge required for matrix generation, implementation of built-in functions, MATLAB graphic features and its applications. Deeper knowledge and understanding of these tools for interactive computation and able to generate plots and their export for use in reports and presentations. 3. Gain procedural knowledge of MATLAB in

	providing skill for solving polynomial, algebraic and transcendental equations, system of linear equations, ordinary differential equations used in interdisciplinary fields. 4. Have knowledge of tools in MATLAB used for curve fitting, interpolation, numerical differentiation, numerical integration, data statistics and to learn cognitive and technical skills required for application of these in analysis of various economical, commercial, and statistical problems. _____ 5. Develop cognitive and technical skills to use MATLAB tools in solving various data handling problems related with multidisciplinary subjects and bridge the skill gap. Learn tools and built in functions of MATLAB/Scilab in solving stated problems. Learn technical skills and understand how to analyze all the results graphically in a very easy manner.
CLO 5 is related to the practical component of the course.	

Credits	Theory	Practical	Total
	2	1	3
Contact Hours	2	2	4
Internal Assessment Marks	15	5	20
End term Examination Marks	35	20	55
Examination Time	3 Hours	3 Hours	

Max. Marks:75

Part B - Contents of the Course

Instructions for Paper-Setter

Note: The examiner will set 9 questions asking two questions from each unit and one compulsory question by taking course learning outcomes (CLOs) into consideration. The compulsory question (Question No. 1) will contain 7 parts covering entire syllabus. The examinee will be required to attempt 5 questions, selecting one question from each unit and the compulsory question.

Unit	Topics	Contact Hours
I	Introduction, starting and quitting a MATLAB session, Desktop tools and development environment: command window, command history window, work space current directory, edit window, figure window, help feature. Types of files, Platform dependence, Search path. Control flow and operators, Hierarchy of operations, built in functions, Round off functions, controlling command window input and output.	8
II	Matrix generation, Array operations: Matrix arithmetic operations, Array arithmetic operations, transposing a matrix, reshaping matrices, concatenating a matrix, special matrices viz. eye, zeros, ones, rand, randn, diag, diag etc., vector generation using linspace, logspace Use of matrix built-in functions: det, diag, eig, inv, norm, rank, sqrtm, expm, logm, rank, lu etc. Basic plotting: creating simple plots, adding title, axis label, and annotations, multiple data in one plot, specifying line style and colors, figure tools, plot editing mode, using function to edit graphs, modify the graph to enhance the presentation, multiple plots in one figure, visualizing functions of two variables: mesh and surface plots. Use of built-in functions plot, subplot, fplot, xlabel, ylabel, title, legend, axis, hold, line, ezplot, ezpolar, ezplot3, ezcontour,	8

	ezcontourf, ezsurf, ezsurfc, ezmesh, ezmeshf, view, meshgrid, rotate3d etc. for plotting.	
III	Polynomials, entering a polynomial, polynomial evaluation, roots of polynomial, polynomial arithmetic, polynomial integration (using MATLAB command), polynomial differentiation (using MATLAB command), Evaluation of polynomials. Computation with MATLAB: Solutions of system of linear algebraic equations in many variables, Root finding by iterative simulations, solution of a transcendental equation. Basic symbolic calculus, solutions of first order linear differential equations, first order linear differential equations with initial conditions, second order linear differential equations Use of built-in functions syms, expand, solve, inline, collect, subs, simplify, roots, fzero, feval, fsolve, ode23, ode45 etc.	8
IV	Curve fitting: Linear, quadratic and cubic, Curve fitting with polynomial function, Interpolation, Numerical differentiation, Numerical integration Data Analysis and Statistics: plotting of statistical measures (mean, mode, median, standard deviation, sum, cumulative sum, largest value, smallest value, cumulative product, difference between the successive data points etc.), plot histogram, pie chart, bar graph etc. Use of built-in functions polyfit, polyval, interp1, interp2, interp3, spline, interpft, diff, trapz, quad, quad1, dblquad, mean, median, std, max, min, sum, cumsum, prod, cumprod, sort, pie, pie3, polar, hist, bar, bar3, diff etc.	8

Practical		
	The examiner will set 4 questions at the time of practical examination by taking course learning outcomes (CLOs) into consideration. The examinee will be required to solve two problems. The evaluation will be done on the basis of practical record, viva-voce, write up and execution of the program. **The following practicals will be done using MATLAB/ SCILAB software and record of those will be maintained in the practical note book:** 1. Practical to demonstrate components in MATLAB/SCILAB environment. 2. Practical to demonstrate tool boxes in MATLAB/SCILAB environment. 3. Practical to demonstrate windows in MATLAB/SCILAB. 4. Program to generate odd/even numbers. 5. Practical to demonstrate basic matrix operations (addition, subtraction, multiplication, transpose, determinant, concatenation etc.). 6. Practical to find inverse of a matrix using built-in function. 7. Practical to determine Eigen values and Eigen vectors of a square matrix using built-in functions. 8. Practical to find roots of an equation using built-in function. 9. Practical to demonstrate fsolve for solution of transcendental equations. 10. Practical to demonstrate built in plotting tools fplot, ezpolar, ezplot, ezcontour, ezsurf, ezcontourf etc. 11. Practical to add title, axis labels, line style, color, annotations etc. to a figure/graph. 12. Practical of solving system of linear equations. 13. Practical to determine a polynomial using method of Least Square Curve Fitting.	30

	14. Practical to determine polynomial fit, analyzing residuals, exponential fit and error bounds from the given data. 15. Practical to fit a straight line of the type y=ax+b. 16. Practical to demonstrate statistical toolbox (mean, median, standard deviation, sort etc.). 17. Practical to demonstrate integration and differentiations commands. 18. Practical problems for solving differential equations.	

Suggested Evaluation Methods

Internal Assessment: ➢ **Theory 15** • Class Participation: 4 • Seminar/presentation/assignment/quiz/class test etc.: 4 • Mid-Term Exam: 7 ➢ **Practicum 5** • Class Participation: • Seminar/Demonstration/Viva-voce/Lab records etc.: 5 • Mid-Term Exam:	**End Term Examination:** ➢ **Theory 35** Written Examination ➢ **Practicum 20** Lab record, viva-voce, write up and execution of the program

Part C-Learning Resources

Recommended Books:

1. Stephan J. Chapman (2020). *MATLAB Programming for Engineers* (6th edition). Cengage Learning.
2. William Palm Lii (2017). *A concise introduction to MATLAB* (2nd edition). Tata Mcgraw-Hill Education.
3. R.S.Gupta (2015). *Elements of Numerical Analysis* (2nd edition). Cambridge University Press.
4. Steven C. Chapra (2011). *Applied Numerical Methods W/ MATLAB* (3rd edition).Tata Mcgraw-Hill Education.
5. Rudra Pratap (2010). *Getting Started with MATLAB:A quick introduction for scientists and engineers.* Oxford University Press.
6. R. K. Bansal, A. K. Goel, M. K. Sharma (2009). *MATLAB and Its applications in Engineering*. Pearson Education India.
7. Dolores Etter (2008). *Introduction to MATLAB 7, 1e* (1st edition). Pearson Education India.
8. Marc E. Herniter (2000). *Programming in MATLAB* (1st edition). Cengage Learning.

SEC-3

Session: 2023-24	
Part A – Introduction	
Subject	Mathematics
Semester	III
Name of the Course	Quantitative Aptitude
Course Code	B23-SEC-326
Course Type: (CC/MCC/MDC/CC-M/DSEC/VOC/DSE/PC/AEC/VAC)	SEC
Level of the course	200-299
Pre-requisite for the course (if any)	NA
Course Learning Outcomes(CLOs): CLO 5 is related to the practical component.	**After completing this course, the learner will be able to**: 1. Comprehend the formulation of equations for specific mathematical problems and use mathematical skills to solve those. 2. Acquire the procedural knowledge to analyze and solve problems related to work & time , work and wages and apply those in real life situations. 3. To get deeper knowledge and understanding of concepts of Simple interest, Compound Interest, Partnership, Work and time and use this procedural knowledge to perform assigned tasks of solving such problems. 4. Familiarize and get acquainted with various measures of central tendency and using cognitive skills to choose better of these for the available data and draw the inferences/results. 5. Attain a range of cognitive and technical skills to analyze and comprehend various numerical concepts, e.g., Formulation of equations, S.I. & C.I., Work & time, Work & Wages, Set theory etc. and apply these learned skills and techniques to solve daily life mathematical problems

	accurately, logically and well in time.		
Credits	Theory	Practical	Total
	2	1	3
Contact Hours	2	2	4
Internal Assessment Marks	15	5	20
End Term Examination Marks	35	20	55
Examination Time	3 Hours	3 Hours	
Max. Marks: 75			

Part B- Contents of the Course

Instructions for Paper- Setter

Note: The examiner will set 9 questions asking two questions from each unit and one compulsory question by taking course learning outcomes (CLOs) into consideration. The compulsory question (Question No. 1) will contain 7 parts covering entire syllabus. The examinee will be required to attempt 5 questions, selecting one question from each unit and the compulsory question.

Unit	Topics	Contact Hours
I	Linear Equations, Quadratic equations, System of algebraic equations in two variables and their applications in simple problems: Problems on ages, Clocks.	8
II	Time and distance: Problems based on trains, Boats and Streams, Pipes and Cistern. Work and time: Problems on work and time, Work and wages.	8
III	Simple interest, Compound Interest, Partnership. Basic idea of set theory to solve practical problems. Trigonometric ratios and identities, Height and distance.	8
IV	Basic idea of Permutations and Combinations. Events and sample space, Probability. Data interpretation: Raw and grouped data, Bar Graph, Pie Chart, Mean, Median and Mode.	8

Practical		
	The examiner will set 4 questions at the time of practical examination by taking course learning outcomes (CLOs) into consideration. The examinee will be required to solve 2 questions. The evaluation will be done on the basis of practical record, viva-voce, written examination. **Problem Solving-** Questions related to the following problems will be solved and their record will be maintained in the Practical Notebook: 1. To solve problems related to clocks. 2. To write the date of birth of your family members and determine the day of their birth. 3. Compare the simple interest and compound interest for a given amount deposited for fixed time at a fixed rate. 4. Problems related to upstream and downstream of boat. 5. Write down the sample space for tossing three coins one by one and determine the probabilities of occurrence of all possibilities of heads. 6. Problems related to partnership. 7. Draw Venn Diagram for the following (i)Union of sets (ii) Intersection of sets (iii)Difference of sets (iv) Symmetric difference (iv) Complement of a set. 8. Draw a bar-graph for the percentage of expenditure occurred on miscellaneous heads (atleast 5 items) for your family income and write your observation in respect of bar-	30

	graph. 9. Draw a pie-chart by taking data of problem (8). 10. Taking the annual export data for three companies for last six years , draw a line- graph. 11. Write atleast two different practical problems related to set theory and solve them with the help of venn-diagram/formula. 12. Problem solving related to pipes and cisterns. 13. Problem solving related to determination of time taken by two trains of given lengths, to cross each other, when their speeds are given. 14. Problem solving related to permutation and combination. 15. Problems involving formulation and solution of quadratic equations in one variable. 16. Formulation and solution of realistic problems to solve system of linear equations. 17. Draw the following: (i) linear equation $x = a$ (ii)) linear equation $y = a$ (iii) linear equation $a x + b y = c$. 18. Draw a graph for system of equations $a x + by = c$; $d x + e y = f$ (a, b, c, d are real numbers) taking suitable values for a, b, c, d , e, f and depict the (i)Unique Solution (ii)No Solution (iii)Infinitely many solution. Also state the condition for general system $a x + by = c$; $d x + e y = f$ to have all three possibilities for solution (Unique Solution, No Solution &Infinitely many solution).	

Suggested Evaluation Methods	
Internal Assessment: ➢ **Theory 15** • Class Participation: 4 • Seminar/presentation/assignment/quiz/class test etc.: 4 • Mid-Term Exam: 7 ➢ **Practicum 5** • Class Participation: • Seminar/Demonstration/Viva-voce/Lab records etc. 5	**End Term Examination:** ➢ **Theory 35** Written Examination ➢ **Practicum 20** Lab record, viva-voce, write up.

Part C-Learning Resources

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Recommended Books:

1. R. S. Aggarwal (2022). *Quantitative Aptitude.* S Chand & Company Limited, New Delhi.
2. A. Guha (2020). *Quantitative Aptitude* (7th Edition). Mc Graw Hill Publications.
3. V. Dyke, J. Rogers and H. Adams (2011). *Fundamentals of Mathematics*, Cengage Learning.
4. A.S. Tussy, R. D. Gustafson and D. Koenig (2010). *Basic Mathematics for College Students.* Brooks Cole.
5. C. C. Pinter (2014). *A Book of Set Theory*. Dover Publications.
6. G. Klambauer (1986). *Aspects of calculus.* Springer-Verlag.

KURUKSHETRA UNIVERSITY
KURUKSHETRA

Scheme of Examination and Syllabus for
Under-Graduate Programme
Subject: Botany

Under Multiple Entry-Exit, Internship and CBCS-LOCF in accordance to NEP-2020 w.e.f. 2023-24 (in phased manner)

DEPARTMENT OF BOTANY, KURUKSHETRA UNIVERSITY, KURUKSHETRA
Scheme of Examination for Under-Graduate Programme
Under Multiple Entry-Exit, Internship and CBCS-LOCF in accordance to NEP-2020 w.e.f. 2023-24
(in phased manner)
Subject : Botany

SEMESTER-1									
Remarks	**Course**	**Paper(s)**	**Nomenclature of Paper**	**Credits**	**Hours/ Week**	**Internal marks**	**External Marks**	**Total Marks**	**Exam Duration**
Scheme A & C	**CC-1 MCC-1 4 credit**	**B23-BOT-101**	**Diversity of Microbes, Algae, Fungi and Archegoniates**	**3**	**3**	**20**	**50**	**70**	**3 hrs.**
			Practical	**1**	**2**	**10**	**20**	**30**	**4 hrs.**
Scheme C only	**MCC-2 4 credit**	**B23-BOT-102**	**Conservation Biology**	**3**	**3**	**20**	**50**	**70**	**3 hrs.**
			Practical	**1**	**2**	**10**	**20**	**30**	**4 hrs.**
Scheme A	**CC-M1 2 credit**	**B23-BOT-103**	**Plant Diversity**	**1**	**1**	**10**	**20**	**30**	**3 hrs.**
			Practical	**1**	**2**	**5**	**15**	**20**	**4 hrs.**
Scheme A & C	**MDC-1 3 credits**	**B23-BOT-104**	**Fundamentals of Botany**	**2**	**2**	**15**	**35**	**50**	**3 hrs.**
			Practical	**1**	**2**	**5**	**20**	**25**	**4 hrs.**
Scheme C only	**CC-M1 4 credit**	**From Available CC-M1 of 4 credits as per NEP**							
Scheme A & C	**AEC-1 2 credit**	**From Available AEC-1 of two credits as per NEP**							
	SEC-1 3 credit	**From Available SEC-1 of three credits as per NEP**							
	VAC-1 2 credit	**From Available VAC-1 of two credits as per NEP**							

SEMESTER-2									
Remarks	**Course**	**Paper(s)**	**Nomenclature of Paper**	**Credits**	**Hours/ Week**	**Internal marks**	**External Marks**	**Total Marks**	**Exam Duration**
Scheme A & C	**CC-2 MCC-3 4 credit**	**B23-BOT-201**	**Plant Taxonomy and Ecology**	**3**	**3**	**20**	**50**	**70**	**3 hrs.**
			Practical	**1**	**2**	**10**	**20**	**30**	**4 hrs.**
Scheme C only	**DSEC-2 4 credit**	**B23-BOT-202**	**Plant Propagation**	**3**	**3**	**20**	**50**	**70**	**3 hrs.**
			Practical	**1**	**2**	**10**	**20**	**30**	**4 hrs.**
Scheme A only	**CC-M2 2 credit**	**B23-BOT-203**	**Plants for Human Welfare**	**1**	**1**	**10**	**20**	**30**	**3 hrs.**
			Practical	**1**	**2**	**5**	**15**	**20**	**4 hrs.**
Scheme A & C	**MDC-2 3 credits**	**B23-BOT-204**	**Economic Botany**	**2**	**2**	**15**	**35**	**50**	**3 hrs.**
			Practical	**1**	**2**	**5**	**20**	**25**	**4 hrs.**
Scheme C only	**CC-M2 4 credit**	**From Available CC-M2 of 4 credits as per NEP**							
Scheme A & C	**AEC-2 2 credit**	**From Available AEC-2 of two credits as per NEP**							
	SEC-2 3 credit	**From Available SEC-2 of three credits as per NEP**							
	VAC-2 2 credit	**From Available VAC-2 of two credits as per NEP**							
Internship of 4 credits of 4-6 weeks duration after 2nd Semester									

SEMESTER-3									
Remarks	**Course**	**Paper(s)**	**Nomenclature of Paper**	**Credits**	**Hours/ Week**	**Internal marks**	**External Marks**	**Total Marks**	**Exam Duration**
Scheme A, B & C	**CC-3 MCC-4 4 credit**	**B23-BOT-301**	**Plant Physiology**	**3**	**3**	**20**	**50**	**70**	**3 hrs.**
			Practical	**1**	**2**	**10**	**20**	**30**	**4 hrs.**
Scheme B & C	**MCC-5 4 credit**	**B23-BOT-302**	**Plant Stress Physiology**	**3**	**3**	**20**	**50**	**70**	**3 hrs.**
			Practical	**1**	**2**	**10**	**20**	**30**	**4 hrs.**
Scheme A, B & C	**MDC-3 3 credits**	**B23-BOT-303**	**Ornamental Plants and Propagation**	**2**	**2**	**15**	**35**	**50**	**3 hrs.**
			Practical	**1**	**2**	**5**	**20**	**25**	**4 hrs.**
Scheme A & C	**CC-M3 4 credits**	**From Available CC-M3 of 4 credits as per NEP**							
Scheme B only	**CC-M3 (V) 4 credits**	**From Available CC-M3(V) of 4 credits as per NEP**							
Scheme A, B & C	**AEC-3 2 credit**	**From Available AEC-3 of two credits as per NEP**							
	SEC-3 3 credit	**From Available SEC-3 of three credits as per NEP**							
Scheme C only	**VAC-3 2 credits**	**From Available VAC-3 of two credits as per NEP**							
Scheme B only	**MCC-3**	**MCC-2 FROM SCHEME C OF FIRST SEMESTER**							

SEMESTER-4									
Remarks	**Course**	**Paper(s)**	**Nomenclature of Paper**	**Credits**	**Hours/ Week**	**Internal marks**	**External Marks**	**Total Marks**	**Exam Duration**
Scheme A, B & C	**CC-4 MCC-6 4 credit**	**B23-BOT-401**	**Cytology and Genetics**	**3**	**3**	**20**	**50**	**70**	**3 hrs.**
			Practical	**1**	**2**	**10**	**20**	**30**	**4 hrs.**
Scheme B & C	**MCC-7 4 credit**	**B23-BOT-402**	**Plant Molecular Biology**	**3**	**3**	**20**	**50**	**70**	**3 hrs.**
			Practical	**1**	**2**	**10**	**20**	**30**	**4 hrs.**
Scheme B & C	**MCC-8 4 credit**	**B23-BOT-403**	**Plant Breeding**	**3**	**3**	**20**	**50**	**70**	**3 hrs.**
			Practical	**1**	**2**	**10**	**20**	**30**	**4 hrs.**
Scheme B & C	**DSE-1 4 credit Select one option**	**B23-BOT-404**	**Plant Tissue Culture**	**3**	**3**	**20**	**50**	**70**	**3 hrs.**
			Practical	**1**	**2**	**10**	**20**	**30**	**4 hrs.**
		B23-BOT-405	**Bioethics, Biosafety and IPR**	**3**	**3**	**20**	**50**	**70**	**3 hrs.**
			Practical	**1**	**2**	**10**	**20**	**30**	**4 hrs.**
Scheme A, B & C	**CC-M4 (V) 4 credits**	**From Available CC-M4(V) of 4 credits as per NEP**							
	AEC-4 2 credit	**From Available AEC-3 of two credits as per NEP**							
Scheme C only	**VAC-4 2 credits**	**From Available VAC-4 of two credits as per NEP**							
Scheme A & B	**VAC-3 2 credits**	**From Available VAC-3 of two credits as per NEP**							
Internship of 4 credits of 4-6 weeks duration after 4th Semester (if not done after second semester)									

SEMESTER-5									
Remarks	**Course**	**Paper(s)**	**Nomenclature of Paper**	**Credits**	**Hours / Week**	**Internal marks**	**External Marks**	**Total Marks**	**Exam Duration**
Scheme A, B & C	**CC-5 MCC-9 4 credit**	**B23-BOT-501**	**Economic Botany and Plant Biotechnology**	**3**	**3**	**20**	**50**	**70**	**3 hrs.**
			Practical	**1**	**2**	**10**	**20**	**30**	**4 hrs.**
Scheme B & C	**MCC-10 4 credit**	**B23-BOT-502**	**Reproduction in Higher Plants**	**3**	**3**	**20**	**50**	**70**	**3 hrs.**
			Practical	**1**	**2**	**10**	**20**	**30**	**4 hrs.**
Scheme B & C	**DSE-2 4 credit Select one Option**	**B23-BOT-503**	**Plant Biochemistry and Metabolism**	**3**	**3**	**20**	**50**	**70**	**3 hrs.**
			Practical	**1**	**2**	**10**	**20**	**30**	**4 hrs.**
		B23-BOT-504	**Modern Plant Systematics**	**3**	**3**	**20**	**50**	**70**	**3 hrs.**
			Practical	**1**	**2**	**10**	**20**	**30**	**4 hrs.**
Scheme B & C	**DSE-3 4 credit Select one Option**	**B23-BOT-505**	**Natural Plant Products**	**3**	**3**	**20**	**50**	**70**	**3 hrs.**
			Practical	**1**	**2**	**10**	**20**	**30**	**4 hrs.**
		B23-BOT-506	**Plants and Medicines**	**3**	**3**	**20**	**50**	**70**	**3 hrs.**
			Practical	**1**	**2**	**10**	**20**	**30**	**4 hrs.**
Scheme A & C	**CC-M5 (V) 4 credits**	**From Available CC-M5(V) of 4 credits as per NEP**							
Scheme A, B & C	**Internship 4 credits**	**Internship#4 credit after 4th semester**							

SEMESTER-6									
Remarks	**Course**	**Paper(s)**	**Nomenclature of Paper**	**Credits**	**Hours / Week**	**Internal marks**	**External Marks**	**Total Marks**	**Exam Duration**
Scheme A, B & C	**CC-6 MCC-11 4 credit**	**B23-BOT-601**	**Plant Anatomy & Embryology**	**3**	**3**	**20**	**50**	**70**	**3 hrs.**
			Practical	**1**	**2**	**10**	**20**	**30**	**4 hrs.**
Scheme B & C	**MCC-12 4 credit**	**B23-BOT-602**	**Plant Pathology**	**3**	**3**	**20**	**50**	**70**	**3 hrs.**
			Practical	**1**	**2**	**10**	**20**	**30**	**4 hrs.**
Scheme B & C	**DSE-4 4 credit Select one Option**	**B23-BOT-603**	**Agroforestry**	**3**	**3**	**20**	**50**	**70**	**3 hrs.**
			Practical	**1**	**2**	**10**	**20**	**30**	**4 hrs.**
		B23-BOT-604	**Post-harvest Technology of Fruits & Vegetables**	**3**	**3**	**20**	**50**	**70**	**3 hrs.**
			Practical	**1**	**2**	**10**	**20**	**30**	**4 hrs.**
Scheme B & C	**DSE-5 4 credit Select one Option**	**B23-BOT-605**	**GIS and Remote Sensing**	**3**	**3**	**20**	**50**	**70**	**3 hrs.**
			Practical	**1**	**2**	**10**	**20**	**30**	**4 hrs.**
		B23-BOT-606	**Evolutionary and Behavioural Biology**	**3**	**3**	**20**	**50**	**70**	**3 hrs.**
			Practical	**1**	**2**	**10**	**20**	**30**	**4 hrs.**
Scheme A only	**CC-M6 4 credits**	**From Available CC-M6 of 4 credits as per NEP**							
Scheme A only	**CC-M7(V) 4 credits**	**From Available CC-M7(V) of 4 credits as per NEP**							
Scheme B only	**CC-M5(V) 4 credits**	**From Available CC-M5(V) of 4 credits as per NEP**							
Scheme C only	**CC-M6(V) 4 credits**	**From Available CC-M6(V) of 4 credits as per NEP**							
Scheme C only	**SEC-4 2 credit**	**From Available SEC-4 of two credits as per NEP**							

SEMESTER-7 (FOR HONOURS/HONOURS WITH RESEARCH IN BOTANY)									
Remarks	**Course**	**Paper(s)**	**Nomenclature of Paper**	**Credits**	**Hours/ Week**	**Internal marks**	**External Marks**	**Total Marks**	**Exam Duration**
for Honours in Botany/Honours with Research in Botany (For Scheme B & C)	**CC-H1 4 credit**	**B23-BOT-701**	**Algae & Fungi**	**4**	**4**	**30**	**70**	**100**	**3 hrs.**
	CC-H2 4 credit	**B23-BOT-702**	**Bryophytes & Pteridophytes**	**4**	**4**	**30**	**70**	**100**	**3 hrs.**
	CC-H3 4 credit	**B23-BOT-703**	**Cytogenetics & Plant Breeding**	**4**	**4**	**30**	**70**	**100**	**3 hrs.**
	DSE-H1 4 credit Select one Option	**B23-BOT-704**	**Microbiology and Biostatistics**	**4**	**4**	**30**	**70**	**100**	**3 hrs.**
		B23-BOT-705	**Basics of Genomics and Proteomics**	**4**	**4**	**30**	**70**	**100**	**3 hrs.**
		B23-BOT-706	**Computational Biology**	**4**	**4**	**30**	**70**	**100**	**3 hrs.**
	PC-H1 4 credit	**B23-BOT-707**	**Practical Based on B23-BOT-701 TO 704/705/707**	**4**	**8**	**30**	**70**	**100**	**6 hrs.**
	CC-HM1 4 credit	**From Available Minor of 4 credits as per NEP**							

SEMESTER-8 (FOR HONOURS IN BOTANY)									
Remarks	**Course**	**Paper (s)**	**Nomenclature of Paper**	**Credits**	**Hours/ Week**	**Internal marks**	**External Marks**	**Total Marks**	**Exam Duration**
Honours in Botany (For Scheme B & C)	**CC-H4 4 credit**	**B23-BOT-801**	**Microbiology and Biostatistics**	**4**	**4**	**30**	**70**	**100**	**3 hrs.**
	CC-H5 4 credit	**B23-BOT-802**	**Natural Resources & Biodiversity**	**4**	**4**	**30**	**70**	**100**	**3 hrs.**
	CC-H6 4 credit	**B23-BOT-803**	**Gymnosperm & Ethanobotany**	**4**	**4**	**30**	**70**	**100**	**3 hrs.**
	DSE-H2 4 credit Select one option	**B23-BOT-804**	**Molecular Genetics**	**4**	**4**	**30**	**70**	**100**	**3 hrs.**
		B23-BOT-805	**Plant Morphogenesis**	**4**	**4**	**30**	**70**	**100**	**3 hrs.**
	PC-H2 4 credit	**B23-BOT-806**	**Practical Based on B23-BOT-801 TO 804/805**	**4**	**8**	**30**	**70**	**100**	**6 hrs.**
	CC-HM2 4 credit	**From Available Minor of 4 credits as per NEP**							

OR SEMESTER-8 (FOR HONOURS WITH RESEARCH IN BOTANY)									
Remarks	**Course**	**Paper (s)**	**Nomenclature of Paper**	**Credits**	**Hours/ Week**	**Internal marks**	**External Marks**	**Total Marks**	**Exam Duration**
Honours with Research in Botany (For Scheme B & C)	**CC-H4 4 credit**	**B23-BOT-801**	**Microbiology and Biostatistics**	**4**	**4**	**30**	**70**	**100**	**3 hrs.**
	CC-H5 4 credit	**B23-BOT-802**	**Natural Resources & Biodiversity**	**4**	**4**	**30**	**70**	**100**	**3 hrs.**
	Project/Dissertation 12 credit	**B23-BOT-807**	**Project/Dissertation**	**8+4**	**-**	**-**	**-**	**-**	**-**
	CC-HM2 4 credit	**From Available Minor of 4 credits as per NEP**							

Syllabus
Subject : Botany

Session: 2023-24			
Part A - Introduction			
Subject	**BOTANY**		
Semester	**1st**		
Name of the Course	**Diversity of Microbes, Algae, Fungi and Archegoniates**		
Course Code	**B23-BOT-101**		
Course Type: (CC/MCC/MDC/CC-M/DSEC/VOC/DSE/PC/AEC/VAC)	**CC-1/MCC-1**		
Level of the course (As per Annexure-I	100-109		
Pre-requisite for the course (if any)			
Course Learning Outcomes(CLO):	After completing this course, the learner will be able to: 1. Students will be able to understand the general characteristics of bacteria, actinobacteria, viruses and fungi. 2: Students will develop a conceptual understanding of Phycology. 3: Students will gain knowledge on the concepts of Bryology. 4: Basic understanding of the biology of pteridophytes will be developed by the students. 5*. Students will gain the knowledge of practical aspects of microorganisms, algae, fungi, lichens, bryophytes, and pteridophytes.		
Credits	Theory	Practical	Total
	3	1	4
Contact Hours	3	2	5
THEORY			
Max. Marks: 70 **Internal Assessment Marks: 20** **End Term Exam Marks: 50**		**Time: 3 Hours**	

PRACTICAL	
Max. Marks: 30 **Internal Assessment Marks: 20** **End Term Exam Marks: 10**	**Time: 4 Hours**

Part B- Contents of the Course

Instructions for Paper- Setter

1. Nine questions will be set in all. All questions will carry equal marks.
2. Question No.1 will be short answer type covering the entire syllabus and will be compulsory. The remaining eight questions will be set unit wise selecting two questions from each unit . The candidate will be required to attempt question No. 1 and four more questions selecting one question from each unit.

Unit	Topics	Contact Hours
I	Bacteria: Structure, nutrition, reproduction and economic importance. Viruses: General account of Viruse including structure of TMV and Bacteriophages. Algae: General characters, Introductory classification; economic importance; and life cycle (excluding development) of *Nostoc* (Cyanophyceae).*Volvox*, (Chlorophyceae), *Vaucheria* (Xanthophyceae), *Ectocarpus* (Phaeophyceae) and *Polysiphonia* (Rhodophyceae). Fungi: General characters, Introductory classification; economic importance; and life-history of *Phytophthora* (Mastigomycotina), *Penicillium* (Ascomycotina), *Puccinia* (Basidiomycotina), *Colletotrichum* (Deuteromycotina).	11
II	General account of Lichens, types, ecological and economic importance. Bryophyta: Bryophytes: General characteristics, classification upto classes (Smith, 1935), alternation of generations, structure and reproduction (excluding development) of Marchantia (Hepaticopsida), Anthoceros (Anthocerotopsida), Funaria (Bryopsida), ecological and economic importance of bryophytes.	11
III	Pteridophyta: General characters, classification upto classes (A. R. Smith, 2006), structure and reproduction (excluding development) of Rhynia (Psilopsida): Structure and	11

	reproduction (excluding development) of Selaginella (Lycopsida), Equisetum (Sphenopsida) and Pteris (Pteropsida). heterospory and seed habit, stelar evolution; Ecological and economic importance.	
IV	**Gymnosperms:** General characteristics, classification up to classes (Smith 1955), morphology, anatomy and reproduction of *Cycas*, *Pinus, Ephedra* (developmental details not to be included); Distribution and economic importance; General account of paleobotany and Geological time scale.	12
V*	**Viruses**: EMs/Models of viruses: TMV, Line drawing/Photograph of Lytic and Lysogenic Cycles. **Bacteria**: Types of Bacteria from temporary/permanent slides/photographs; Binary Fission; Conjugation; Structure of root nodule. **Cynobacteria & Algae**: Study of vegetative and reproductive structures of *Nostoc*, *Volvox*, *Vaucheria*, *Ectocarpus* and *Polysiphonia* through temporary preparations and permanent slides. **Fungi**: Study of vegetative & reproductive structures of *Phytophthora, Mucor*, *Puccinia, Penicillium* & *Colletotrichum*: Asexual and sexual stages through temporary preparations and permanent slides. **Lichens**: Study of slides/photographs of lichens (crustose, foliose and fruticose). ***Marchantia***- Morphology of thallus, W.M. rhizoids and scales, V.S. thallus with gemma cup, W.M. gemmae, V.S. antheridiophore, archegoniophore, L.S. sporophyte (temporary/permanent slides). ***Anthoceros***- Morphology of thallus, W.M. rhizoids, V.S. thallus, VS Antheridia and Archegonia, L.S. sporophyte (temporary/permanent slides). ***Funaria***- Morphology, W.M. leaf, rhizoids, operculum, peristome, annulus, spores, slides showing antheridial and archegonial heads, L.S. capsule (temporary /permanent slides). ***Selaginella***- Morphology, W.M. leaf with ligule, T.S. stem, W.M. strobilus, W.M. microsporophyll and megasporophyll, L.S. strobilus (temporary/ permanent slide). ***Equisetum***- Morphology, T.S. internode, L.S. strobilus, T.S. strobilus, W.M. sporangiophore, W.M. spores (wet and dry) (temporary slides); T.S. rhizome (permanent slide). ***Pteris***- Morphology, T.S. rachis, V.S. sporophyll, W.M. sporangium, W.M. spores, T.S. rhizome, W.M. prothallus with sex organs and young sporophyte (temporary/permanent slide). ***Cycas***- Morphology (coralloid roots, bulbil, leaf, megasporophyll), T.S. coralloid root, T.S. rachis, V.S. leaflet,	30

	V.S. microsporophyll, W.M. microspores, L.S. ovule, T.S. root (temporary/ permanent slide). ***Pinus***- Morphology (long and dwarf shoots, W.M. dwarf shoot, male cones and female cones), W.M. dwarfshoot, T.S. needle, T.S. stem, L.S./T.S. male cone, W.M. microsporophyll, W.M. microspores (temporary slides), L.S. female cone (temporary/ permanent slide). ***Ephedra***- Morphology, T.S. internode, L.S./T.S. male and female strobili, W.M. spores (wet and dry),T.S. rhizome (temporary/permanent slide). **Excursion Report**: Report on excursion tours with photographs, collection and preservation specimens related to Algae, Fungi, Bryophytes, Pteridophytes and Gymnosperms.	

Suggested Evaluation Methods

Internal Assessment: ➢ **Theory** • Class Participation: • Seminar/presentation/assignment/quiz/class test etc.: • Mid-Term Exam: ➢ **Practicum** • Class Participation: • Seminar/Demonstration/Viva-voce/Lab records etc.: • Mid-Term Exam:	**End Term Examination:**

Part C-Learning Resources

Recommended Books/e-resources/LMS:

- Wiley, J.M., Sherwood, L.M. and Woolverton, C.J. (2019) Prescott's Microbiology. 11th Edition. McGraw Hill International.
- Lee, R.E. (2018) Phycology. 5th Edition. Cambridge University Press.
- Aluwalia, A.S. (2020). Phycology: Principles, Processes and Applications. Daya Publishing House, New Delhi.
- Dube, H.C. (2012). An Introduction to Fungi, Vikas Publishing House Pvt. Ltd., Delhi. 4th edition.
- Mehrotra, R.S. and Aggarwal, Ashok (2013) Fundamentals of Plant Pathology, Tata McGraw-Hill Publishing company Ltd, New Delhi
- Pelczar, M.J. (2001) Microbiology, 5th edition, Tata McGraw-Hill Co, New Delhi.
- Sethi, I.K. and Walia, S.K. (2011). Text book of Fungi & Their Allies, MacMillan Publishers Pvt. Ltd., Delhi.
- Raven, P.H., Johnson, G.B., Losos, J.B., Singer, S.R. (2005). Biology. Tata McGraw Hill, Delhi, India.
- Sharma, O.P. (2017). Text Book of Pteridophyta, McMillan India Ltd.
- Thakur, A.K. and Bassi, S.K. (2008). Diversity of Microbes and Cryptogams. S. Chand & Co., Delhi.
- Vanderpoorten, A. & Goffinet, B. (2009) Introduction to Bryophytes. Cambridge University Press.

- Vashishta, P.C., Sinha, A.K., Kumar, A., (2010). Pteridophyta, S. Chand. Delhi, India.
- Vashishta, P.C., Sinha, A.K., Kumar, A., (2010). Gymnosperms, S. Chand. Delhi, India.
- Pandey, B.P. (2001). A Textbook of Botany-Angiosperms, S. Chand. Delhi, India

Session: 2023-24			
Part A – Introduction			
Subject	**BOTANY**		
Semester	**1st**		
Name of the Course	**Conservation Biology**		
Course Code	**B23-BOT-102**		
Course Type: (CC/MCC/MDC/CC-M/DSEC/VOC/DSE/PC/AEC/VAC)	**MCC-2**		
Level of the course (As per Annexure-I	100-109		
Pre-requisite for the course (if any)			
Course Learning Outcomes(CLO):	After completing this course, the learner will be able to: 1: Students will comprehend the fundamental principles of biodiversity. 2: Students will acquire a conceptual understanding of the classifications used by the IUCN. 3: Students will acquire knowledge about the principles of conservation laws and international legislation. 4: Students will develop a foundational understanding of international legislation. 5*. Student will learn about the practical approaches to protect and restore the biological communities.		
Credits	Theory	Practical	Total
	3	1	4
Contact Hours	3	2	5
THEORY			
Max. Marks: 70 **Internal Assessment Marks: 20** **End Term Exam Marks: 50**		**Time: 3 Hours**	

PRACTICAL	
Max. Marks: 30 **Internal Assessment Marks: 20** **End Term Exam Marks: 10**	**Time: 4 Hours**

Part B- Contents of the Course

Instructions for Paper- Setter

1. Nine questions will be set in all. All questions will carry equal marks.
2. Question No.1 will be short answer type covering the entire syllabus and will be compulsory. The remaining eight questions will be set unit wise selecting two questions from each unit. The candidate will be required to attempt question No. 1 and four more questions selecting one question from each unit.

Unit	Topics	Contact Hours
I	Biodiversity: Types of Biodiversity; Level of Biodiversity: genetic, species and ecosystem; Patterns of biodiversity; Factors affecting biodiversity: over exploitation, habitat loss and degradation, invasive species, disease, natural calamities, global change. Concept of endemism in plants, endemic plants of Western Ghats.	11
II	IUCN categories: not evaluated; data deficient; least concern; near threatened, vulnerable, endangered, critically endangered, extinct in wild; extinct categories. Principles of conservation; in situ and ex situ conservation; Economics of conservation	11
III	Conservation laws and international legislation. Soil erosion and conservation methods. Conservation of Forests: Afforestation, Reforestation, Monoculture and their effects. Conservation of water: water scarcity, rain water harvesting, watershed management. World Biodiversity hotspots; Wetlands.	11
IV	Categories of Protected areas: IA Strict Nature reserves, IB Wilderness area; II National Park; III Natural monument or feature; IV Habitat or species management area; V Protected landscape/seascape; VI Protected area with sustainable use of natural resources, Sustainable development goals. Recent conservation approaches in India.	12

V*	• To determine the Calcium content of soil samples using titration method. • To estimate available N_2 in a given soil sample. • To determine the role of CO_2 evolution from the given soil sample. • To calculate their phosphorous content of the given soil sample. • To interpret the Annual Forest report with reference to Haryana. • To study the Biosphere reserves of India - National park, wildlife sanctuaries in Haryana.	30

Suggested Evaluation Methods	
Internal Assessment: ➢ **Theory** • Class Participation: • Seminar/presentation/assignment/quiz/class test etc.: • Mid-Term Exam: ➢ **Practicum** • Class Participation: • Seminar/Demonstration/Viva-voce/Lab records etc.: • Mid-Term Exam:	**End Term Examination:**

Part C-Learning Resources

Recommended Books/e-resources/LMS:

- Wetlands Through Time By Stephen F. Greb, William A. DiMichele Published by Geological Society of America, 2006
- Introduction to Conservation Genetics: Richard Frankham, Jonathan D. Ballou and David A. Briscoe By Richard Frankham, David Anthony Briscoe, Jonathan D. Ballou, Karina H. Cambridge University Press, 2012
- Plant Conservation Genetics By Robert J. Henry Published by Cambridge University Press, 2012.
- Wetlands By William J. Mitsch, James G. Gosselink Published by John Wiley and Sons, 2007.
- Hunter Jr., M. L. Fundamentals of Conservation Biology. Blackwell Science, Malden, Massachusetts, U.S.A 2021.
- Red Data Books Vols. 1 to 4. Botanical Survey of India, Dehradun
- Benson EE. Plant Conservation Biotechnology. Agrosciences, New Delhi, 2014.

- Gaston KJ. Biodiversity: An Introduction, 2/e. Agrosciences, New Delhi, 2004.
- Megadiversity Conservation: Flora, Fauna and Medicinal Plants of India's Hot Spots By AB Chaudhuri, D. D. Sarkar Published by Daya Books, 2004.
- 2000 IUCN Red List of Threatened Species By Craig Hilton-Taylor, Russell A. Mittermeier, International Union for Conservation of Nature and Natural Resources Species Survival Commission, BirdLife International, Conservation International Published by IUCN, 2000.
- Ex Situ Plant Conservation: Supporting Species Survival in the Wild By Edward O. Guerrant, Kayri Havens, Mike Maunder, Peter H. Raven Published by Island Press, 2004.

Session: 2023-24			
Part A - Introduction			
Subject	**BOTANY**		
Semester	**1st**		
Name of the Course	**Plant Diversity**		
Course Code	**B23-BOT-103**		
Course Type: (CC/MCC/MDC/CC-M/DSEC/VOC/DSE/PC/AEC/VAC)	**CC-M1**		
Level of the course (As per Annexure-I	100-109		
Pre-requisite for the course (if any)			
Course Learning Outcomes(CLO):	After completing this course, the learner will be able to: 1: The general characteristics of microorganisms, algae, fungi, and lichens will be understandable to students. 2: Students will acquire a conceptual grasp of bryophytes and pteridophytes. 3: Students will acquire knowledge about the fundamental features of gymnosperms. 4: Students will acquire a foundational understanding of angiosperm morphology. 5*. Student will gain the knowledge about the practical aspects related to identification, structure, economic values of microorganisms, algae, fungi, bryophytes, pteridophytes gymnosperms, and angiosperms.		
Credits	Theory	Practical	Total
	1	1	2

Contact Hours	1	2	3
THEORY			
Max. Marks: 50 **Internal Assessment Marks: 15** **End Term Exam Marks: 35**		**Time: 3 Hours**	
PRACTICAL			
Max. Marks: 20 **Internal Assessment Marks: 05** **End Term Exam Marks: 15**		**Time: 4 Hours**	
Part B- Contents of the Course			
Instructions for Paper- Setter 1. Nine questions will be set in all. All questions will carry equal marks. 2. Question No.1 will be short answer type covering the entire syllabus and will be compulsory. The remaining eight questions will be set unit wise selecting two questions from each unit . The candidate will be required to attempt question No. 1 and four more questions selecting one question from each unit.			

Unit	Topics	Contact Hours
I	General characteristics, morphology and economic importance of viruses, bacteria, algae, fungi and lichens.	4
II	General characteristics, morphology and economic importance of Bryophytes and Pteridophytes.	4
III	General characteristics, morphology and economic importance Gymnosperms.	4
IV	General characteristics, morphology and economic importance of Angiosperms.	3
V*	• Identification of some common algae and fungi. • Morphological study of some common Bryophytes. • Morphological study of some common Pteridophytes. • Morphological study of some common Gymnosperms. • Morphological study of some common Angiosperms.	30
Suggested Evaluation Methods		

Internal Assessment: ➢ **Theory** • Class Participation: • Seminar/presentation/assignment/quiz/class test etc.: • Mid-Term Exam: ➢ **Practicum** • Class Participation: • Seminar/Demonstration/Viva-voce/Lab records etc.: • Mid-Term Exam:	**End Term Examination:**

Part C-Learning Resources

Recommended Books/e-resources/LMS:

- Wiley, J.M., Sherwood, L.M. and Woolverton, C.J. (2019) Prescott's Microbiology. 11th Edition. McGraw Hill International.
- Lee, R.E. (2018) Phycology. 5th Edition. Cambridge University Press.
- Ahluwalia, A.S. (2020). Phycology: Principles, Processes and Applications. Daya Publishing House, New Delhi.
- Dube, H.C. (2012). An Introduction to Fungi, Vikas Publishing House Pvt. Ltd., Delhi. 4th edition.
- Mehrotra, R.S. and Aggarwal, Ashok (2013) Fundamentals of Plant Pathology, Tata McGraw-Hill Publishing company Ltd, New Delhi
- Pelczar, M.J. (2001) Microbiology, 5th edition, Tata McGraw-Hill Co, New Delhi.
- Sethi, I.K. and Walia, S.K. (2011). Text book of Fungi & Their Allies, MacMillan Publishers Pvt. Ltd., Delhi.
- Raven, P.H., Johnson, G.B., Losos, J.B., Singer, S.R. (2005). Biology. Tata McGraw Hill, Delhi, India.
- Sharma, O.P. (2017). Text Book of Pteridophyta, McMillan India Ltd.
- Thakur, A.K. and Bassi, S.K. (2008). Diversity of Microbes and Cryptogams. S. Chand & Co., Delhi.
- Vanderpoorten, A. & Goffinet, B. (2009) Introduction to Bryophytes. Cambridge University Press.
- Vashishta, P.C., Sinha, A.K., Kumar, A., (2010). Pteridophyta, S. Chand. Delhi, India
- Vashishta, P.C., Sinha, A.K., Kumar, A., (2010). Gymnosperms, S. Chand. Delhi, India
- Pandey, B.P. (2001). A Textbook of Botany-Angiosperms, S. Chand. Delhi, India

Session: 2023-24	
Part A – Introduction	
Subject	**BOTANY**
Semester	**1st**
Name of the Course	**Fundamentals of Botany**

Course Code	**B23-BOT-104**		
Course Type: (CC/MCC/MDC/CC-M/DSEC/VOC/DSE/PC/AEC/VAC)	**MDC-1**		
Level of the course (As per Annexure-I	100-109		
Pre-requisite for the course (if any)			
Course Learning Outcomes(CLO):	After completing this course, the learner will be able to: 1: Students will gain a foundational understanding of the biology of microorganisms, algae, fungi and lichens. 2: Students will develop a conceptual understanding of bryophytes and pteridophytes. 3: Students will acquire knowledge about the fundamental characteristics of gymnosperms and the challenges related to their propagation. 4: Students will acquire a basic understanding of angiosperm morphology. _____ 5*. Students will be able to learn the practical aspects of microorganisms, algae, fungi and students will be able to identify the major groups of plants and compare the characteristics of higher plants(angiosperms and gymnosperms)and lower plants (bryophytes and pteridophytes).		
Credits	Theory	Practical	Total
	2	1	3
Contact Hours	2	2	4

THEORY

Max. Marks: 50 **Internal Assessment Marks: 15** **End Term Exam Marks: 35**	**Time: 3 Hours**

PRACTICAL

Max. Marks: 25 **Internal Assessment Marks: 05** **End Term Exam Marks: 20**	**Time: 4 Hours**

Part B- Contents of the Course

Instructions for Paper- Setter

1. Nine questions will be set in all. All questions will carry equal marks.
2. Question No.1 will be short answer type covering the entire syllabus and will be compulsory. The remaining eight questions will be set unit wise selecting two questions from each unit. The candidate will be required to attempt question No. 1 and four more questions selecting one question from each unit.

Unit	Topics	Contact

		Hours
I	General characteristics, morphology and economic importance of viruses, bacteria algae, fungi and lichens.	7
II	General characteristics, morphology and economic importance of Bryophytes and Pteridophytes.	7
III	General characteristics, morphology and economic importance Gymnosperms.	8
IV	General characteristics, morphology and economic importance of Angiosperms.	8
V*	• Cynobacteria&Algae: Study of slides of *Nostoc* and *Volvox* through permanent slides. • *Penicillium*: Asexual stage and sexual structures through permanent slides. • *Agaricus*: Specimens of button stage and full grown mushroom. • *Marchantia* & *Funaria*- morphology of thallus through permanent slides. • *Selaginella* & *Equisetum*- morphology specimen study. • *Cycas* & *Pinus* - morphology specimen study. • Study of vegetative and floral characters of the one or two members of some important families • Excursion Report: Report on excursion tours with photographs, collection, preservation and preparation of herbarium sheets and specimens related to Archegoniates and Angiosperms. Mounting of a collected, properly dried and pressed specimen of minimum 20 wild plants with herbarium label.	30
Suggested Evaluation Methods		
Internal Assessment: ➢ **Theory** • Class Participation: • Seminar/presentation/assignment/quiz/class test etc.: • Mid-Term Exam: ➢ **Practicum** • Class Participation: • Seminar/Demonstration/Viva-voce/Lab records etc.: • Mid-Term Exam:		**End Term Examination:**
Part C-Learning Resources		

Recommended Books/e-resources/LMS:

- Wiley, J.M., Sherwood, L.M. and Woolverton, C.J. (2019) Prescott's Microbiology. 11th Edition. McGraw Hill International.
- Lee, R.E. (2018) Phycology. 5th Edition. Cambridge University Press.
- Ahluwalia, A.S. (2020). Phycology: Principles, Processes and Applications. Daya Publishing House, New Delhi.
- Dube, H.C. (2012). An Introduction to Fungi, Vikas Publishing House Pvt. Ltd., Delhi. 4th edition.
- Mehrotra,R.S. and Aggarwal, Ashok (2013) Fundamentals of Plant Pathology, Tata McGraw-Hill Publishing company Ltd, New Delhi
- Pelczar, M.J. (2001) Microbiology, 5th edition, Tata McGraw-Hill Co, New Delhi.
- Sethi, I.K. and Walia, S.K. (2011). Text book of Fungi & Their Allies, MacMillan Publishers Pvt. Ltd., Delhi.
- Raven, P.H., Johnson, G.B., Losos, J.B., Singer, S.R. (2005). Biology. Tata McGraw Hill, Delhi, India.
- Sharma, O.P. (2017). Text Book of Pteridophyta, McMillan India Ltd.
- Thakur, A.K. and Bassi, S.K. (2008). Diversity of Microbes and Cryptogams. S. Chand & Co., Delhi.
- Vanderpoorten, A. & Goffinet, B. (2009) Introduction to Bryophytes. Cambridge University Press.
- Vashishta, P.C., Sinha, A.K., Kumar, A., (2010). Pteridophyta, S. Chand. Delhi, India
- Vashishta, P.C., Sinha, A.K., Kumar, A., (2010). Gymnosperms, S. Chand. Delhi, India
- Pandey, B.P. (2001). A Textbook of Botany-Angiosperms, S. Chand. Delhi, India

Second Semester

Session: 2023-24	
Part A - Introduction	
Subject	**BOTANY**
Semester	**2nd**
Name of the Course	**Plant Taxonomy and Ecology**
Course Code	**B23-BOT-201**
Course Type: (CC/MCC/MDC/CC-M/DSEC/VOC/DSE/PC/AEC/VAC)	**CC-2/MCC-3**
Level of the course (As per Annexure-I	

Pre-requisite for the course (if any)			
Course Learning Outcomes(CLO):	After completing this course, the learner will be able to: 1. Students will gain knowledge about taxonomy, including the rules of nomenclature and other essential aspects. 2: Students will acquire a conceptual understanding of angiosperm classification systems and the diversity of families within them. 3. Students will gain knowledge about Ecology and Environmental interactions. 4: Students will acquire a conceptual understanding of ecosystem structure, environmental pollution and biodiversity conservation. _____ 5*. Students will gain the knowledge about the diagnostic features, morphology, internal structure, economic value of angiosperms and ecological concepts and biodiversity indices.		
Credits	Theory	Practical	Total
	3	1	4
Contact Hours	3	2	5
THEORY			
Max. Marks: 70 **Internal Assessment Marks: 20** **End Term Exam Marks: 50**	**Time: 3 Hours**		
PRACTICAL			
Max. Marks: 30 **Internal Assessment Marks: 10** **End Term Exam Marks: 20**	**Time: 4 Hours**		

Part B- Contents of the Course

Instructions for Paper- Setter

1. Nine questions will be set in all. All questions will carry equal marks.
2. Question No.1 will be short answer type covering the entire syllabus and will be compulsory. The remaining eight questions will be set unit wise selecting two questions from each unit . The candidate will be required to attempt question No. 1 and four more questions selecting one question from each unit.

Unit	Topics	Contact Hours
I	Botanical nomenclature and major rules of ICBN and ICN; Keys to identification of plants. General introduction and importance of herbaria and botanical gardens. Documentation of Floristic Diversity: Brief idea about floras, monographs and journals. Brief idea of taxonomic evidences.	11

	Types of inflorescence, flower and parts of flower.	
II	Artificial, natural and phylogenetic classifications. Bentham and Hooker system of classification (upto series), Angiosperm Phylogeny Group- general account. Diagnostic features and economic importance of the following families: Ranunculaceae, Brassicaceae, Malvaceae, Euphorbiaceae, Rutaceae, Leguminosae, Apocynaceae, Lamiaceae, Solanaceae, Asteraceae, Poaceae and Orchidaceae.	12
III	Ecology: Definition; scope and importance; levels of organization. Environmental factors- climatic factors, edaphic factors, topographic; and Biotic factors. Population Ecology: Basic concept; characteristics; biotic potential, growth curves; ecotypes and ecads. Community Ecology: Concepts; characteristics (qualitative and quantitative-analytical and synthetic); methods of analysis; ecological succession.	11
IV	Ecosystem: Structure and functions (trophic levels, food chains, food webs, ecological pyramids and energy flow). Phyto-geography: Phyto-geographical regions of India; vegetation types of India (forests). Environmental Pollution: Sources, types and control of air and water pollution. Global Change: Greenhouse effect and greenhouse gases; impacts of global warming; carbon trading. Biodiversity: levels, types, significance, threats and conservation.	11
V*	• Study of instruments used to measure microclimatic variables: Soil thermometer, maximum and minimum thermometer, anemometer, psychrometer/hygrometer, rain gaugeand lux meter. • Determination of pH, and analysis of two soil samples for carbonates, chlorides and sulphates by rapid field test. • Comparison of bulk density, porosity and rate of infiltration of water in soil of three habitats. • To determine inorganic carbon content of given soil samples. • To determine organic carbon content of given soil samples by acid dilution method. • (a) Study of morphological adaptations of hydrophytes and	30

	xerophytes (four each). (b)Study of biotic interactions of the following: Stem parasite (*Cuscuta*), Root parasite (*Orobanche*), Epiphytes (Orchid) and Predation (Insectivorous plants) using museum specimens/ live plants. • Determination of minimal quadrat size for the study of herbaceous vegetation in the college campus or nearby fields by species area curve method (species to be listed). • Quantitative analysis of herbaceous vegetation in the college campus or nearby fields for frequency and comparison with Raunkiaer's frequency distribution law. • Study of vegetative and floral characters of the one or two member of each family/sub-family mentioned in theory syllabus (Description, V.S. flower, section of ovary, floral diagram/s, floral formula/e and systematic position according to Bentham & Hooker's system of classification). • Excursion Report: Report on excursion tours with photographs, collection, preservation and preparation of herbarium sheets and specimens related to Angiosperms. Mounting of a collected, properly dried and pressed specimen of minimum 20 wild plants with herbarium label.	

Suggested Evaluation Methods

Internal Assessment: ➢ **Theory** • Class Participation: • Seminar/presentation/assignment/quiz/class test etc.: • Mid-Term Exam: ➢ **Practicum** • Class Participation: • Seminar/Demonstration/Viva-voce/Lab records etc.: • Mid-Term Exam:	**End Term Examination:**

Part C-Learning Resources

Recommended Books/e-resources/LMS:

- Singh, G. (2021). Plant Systematics: An Integrated Approach, CRC Press.
- Sharma, O.P. (2017). Plant Taxonomy, Mc Graw Hill Publication.
- Levetin, E. & McMahon, K. 2015. Plants and Society, McGraw-Hill Education. 7th edition.
- Smith, T.M. & Smith, R.L. 2014. Elements of Ecology. Pearson. 9th edition.
- Gangulee, Das and Datta (2011). College Botany Volume 1, New Central Book Agency
- Gangulee, Das and Datta (2011). College Botany Volume 2, New Central Book Agency
- Vashishta, P.C., Sinha, A.K., Kumar, A., (2010). Gymnosperms, S. Chand.
- Taylor, E.L., Taylor, T.N., Krings, M. (2009). Paleobotany: The Biology and Evolution of Fossil Plants, Academic Press.
- Pandey, B.P. (2001). A Textbook of Botany-Angiosperms, S. Chand.
- Pandey, B.P. (2001). A Textbook of Botany-Angiosperms, S. Chand.
- Chapman, J.L. & Reiss, M.J. 1999. Ecology: Principles and Applications. Cambridge

University Press.
- Odum E.P. (1971): Fundamentals of Ecology 3rd edition. Saunders College Publishing/Harcourt Brace.

Session: 2023-24			
Part A – Introduction			
Subject	**BOTANY**		
Semester	**2nd**		
Name of the Course	**Plant Propagation**		
Course Code	**B23-BOT-202**		
Course Type: (CC/MCC/MDC/CC-M/DSEC/VOC/DSE/PC/AEC/VAC)	**DSEC-1**		
Level of the course (As per Annexure-I			
Pre-requisite for the course (if any)			
Course Learning Outcomes(CLO):	After completing this course, the learner will be able to: 1. Students will acquire knowledge regarding the fundamental aspects of plant propagation. 2: Students will develop a conceptual understanding of seed propagation. 3: Students will gain knowledge about vegetative propagation methods. 4: Students will acquire a conceptual understanding of cell and tissue propagation techniques. 5*. Students will be able to demonstrate the basic principles and practical consideration of in vitro plant cell/tissue culture, plant propagation methods, sterilization methods, tools and techniques.		
Credits	Theory	Practical	Total
	3	1	4
Contact Hours	3	2	5
THEORY			
Max. Marks: 70 **Internal Assessment Marks: 20** **End Term Exam Marks: 50**		**Time: 3 Hours**	

PRACTICAL

Max. Marks: 30 **Internal Assessment Marks: 10** **End Term Exam Marks: 20**	**Time: 4 Hours**

Part B- Contents of the Course

Instructions for Paper- Setter

1. Nine questions will be set in all. All questions will carry equal marks.
2. Question No.1 will be short answer type covering the entire syllabus and will be compulsory. The remaining eight questions will be set unit wise selecting two questions from each unit . The candidate will be required to attemptquestion No. 1 and four more questions selecting one question from each unit.

Unit	Topics	Contact Hours
I	General aspects of plant propagation: Evolution of plant propagation techniques; Biology of plant propagation: impact of genes; Effect of environment on propagation: Greenhouse systems, environmental control	11
II	Seed propagation: Seed development, principles and practices of seed selection, techniques of seed production and handling, principles and techniques of seed propagation.	11
III	Vegetative propagation: Principles and Practices of Clonal Selection; Principles and techniques of propagation by cuttings; Principles and techniques of Grafting and Budding; Layering and Its Natural Modifications; Propagation by Specialized Stems and Roots	12
IV	Cell and Tissue propagation: Principles and Techniques of Micropropagation from Meristematic Tissue; Principles and Techniques of Plant Tissue Culture from Non-meristematic Tissue.	11
V*	• Study of tools used in plant propagation. • Cutting techniques of selected plants: hardwood cuttings, softwood cuttings, greenwood cuttings, semi-ripe cuttings, root cuttings and leaf cuttings. • Layering and air-layering in selected plants. • Grafting and division. • Micropropagation: Sterilization of explants, dissection of meristematic regions, media preparation and explant proliferation. • Preparation of compost/growing media. • Hardening and aftercare of propagated plants.	30

Suggested Evaluation Methods

Internal Assessment: ➢ **Theory** • Class Participation: • Seminar/presentation/assignment/quiz/class test etc.: • Mid-Term Exam: ➢ **Practicum** • Class Participation: • Seminar/Demonstration/Viva-voce/Lab records etc.: • Mid-Term Exam:	**End Term Examination:**

Part C-Learning Resources

Recommended Books/e-resources/LMS:

- Razdan,M.K. 2019.Introduction To Plant Tissue Culture. OXFORD &IBH Publishing. 3rd edition.
- Loyola-Vargas,V.M.& Ochoa-Alejo,N. 2018.Plant cell culture protocols. Humana Press. 4th edition.
- Beyl, C.A. & Trigiano, R.N. 2014. Plant Propagation Concepts and Laboratory Exercises. CRC Press, Boca Raton, FL. 2nd edition.
- MacDonald, P.T. 2014. The Manual of Plant Grafting: Practical Techniques for Ornamentals, Vegetables, and Fruit. Timber Press, Portland, OR.
- Kyte, L., J. Kleyn, H. Scoggins & M. Bridgen. 2013. Plants from Test Tubes: An Introduction to Micropropagation, Timber Press Inc., Portland, OR. 4th edition.
- Smith, R.H. 2013. Plant Tissue culture: techniques and experiments. Elsevier. 3rd edition.
- Bhojwani, S.S. & Razdan, M.K. 2009. Plant tissue culture: Theory and Practice. Elsevier India Pvt. Ltd.
- George, E.F., Hall, M.A., Klerk, G.J. 2008. Plant Propagation by Tissue Culture. Springer. 3rd edition.
- Dirr, M.A. & Heuser, Jr.C.W. 2006. The Reference Manual of Woody Plant Propagation From Seed to Tissue Culture. Timber Press, Inc. Portland, OR. 2nd edition.

Session: 2023-24	
Part A - Introduction	
Subject	**BOTANY**
Semester	**2nd**
Name of the Course	**Plants for Human Welfare**
Course Code	**B23-BOT-203**
Course Type: (CC/MCC/MDC/CC-M/DSEC/VOC/DSE/PC/AEC/VAC)	**CC-M2**

Level of the course (As per Annexure-I			
Pre-requisite for the course (if any)			
Course Learning Outcomes(CLO):	After completing this course, the learner will be able to: 1. Students will acquire a foundational understanding of plant diversity. 2: Students will develop a conceptual grasp of plants utilized for human welfare. 3: Students will gain knowledge about the origins of certain cultivated plants. 4: Students will acquire a conceptual understanding of the utilization of fruits, nuts, and other plant components for human welfare. 5*. Students will acquire the knowledge about the economic valuable plants and their products.		
Credits	Theory	Practical	Total
	1	1	2
Contact Hours	1	2	3
THEORY			
Max. Marks: 50 **Internal Assessment Marks: 15** **End Term Exam Marks: 35**		**Time: 3 Hours**	
PRACTICAL			
Max. Marks: 20 **Internal Assessment Marks: 05** **End Term Exam Marks: 15**		**Time: 4 Hours**	
Part B- Contents of the Course			

Instructions for Paper- Setter

1. Nine questions will be set in all. All questions will carry equal marks.
2. Question No.1 will be short answer type covering the entire syllabus and will be compulsory. The remaining eight questions will be set unit wise selecting two questions from each unit . The candidate will be required to attempt question No. 1 and four more questions selecting one question from each unit.

Unit	Topics	Contact Hours
I	Level of plant diversity, agrodiversity. Values and uses of Biodiversity.	3
II	Role of plants in relation to Human Welfare; Economic and ecological Importance of agro and social forestry. Ornamental plants of India.	4

III	Origin of Cultivated Plants Morphology and economic importance of : Food plants - Cereals (Rice, Wheat and Maize). Pulses - Gram, Arhar and Pea.	4
IV	Fruits and nuts: Important fruit crops and their commercial importance. Spices and condiments. Wood and its uses.	4
V*	• Identification and study of some important medicinal plants. • Identification and study of some common ornamental plants. • Identification and study of some important cereals. • Identification and study of some important pulses. • Identification and study of some important spice yielding plants. • Study of different types of woods. • Study of different fruit types.	30
Suggested Evaluation Methods		
Internal Assessment: ➢ **Theory** • Class Participation: • Seminar/presentation/assignment/quiz/class test etc.: • Mid-Term Exam: ➢ **Practicum** • Class Participation: • Seminar/Demonstration/Viva-voce/Lab records etc.: • Mid-Term Exam:		**End Term Examination:**
Part C-Learning Resources		
Recommended Books/e-resources/LMS: • Singh, V., Pande, P.C., Jain, D.K. 2018. Economic Botany, Rastogi Publications. • Kocchar, S.L. 2016. Economic Botany: A Comprehensive Study, 5 Ed, Cambridge India. • Wickens, G.E. 2001. Economic Botany: Principles and Practices, Springer. • Singh, V., Pande, P.C., Jain, D.K. 2018. Economic Botany, Rastogi Publications. • Daubenmire, R.F. Plants & Environment (2nd Edn.,) John Wiley & Sons., New York 22 • Odum E.P. 2005. Fundamentals of Ecology (5nd Edn.,) Saunders & Co., Philadelphia • S. Sundar Rajan-2007. College Botany Vol-V, Part 1: Taxonomy and Economic Botany Himalaya Publishing House. • Susil Kumar Mukharjee-2004. College Botany Vol-III. New Central Book agency, London		

Session: 2023-24			
Part A - Introduction			
Subject	**BOTANY**		
Semester	**2nd**		
Name of the Course	**Economic Botany**		
Course Code	**B23-BOT-204**		
Course Type: (CC/MCC/MDC/CC-M/DSEC/VOC/DSE/PC/AEC/VAC)	**MDC-2**		
Level of the course (As per Annexure-I			
Pre-requisite for the course (if any)			
Course Learning Outcomes(CLO):	After completing this course, the learner will be able to: 1. Students will gain a foundational understanding of the origins of significant cultivated plants. 2: Students will develop a conceptual understanding of important plants that yield vegetables, fiber, and oil. 3: Students will acquire knowledge about the cultivation techniques of essential plants. 4: Students will gain a conceptual understanding of the processing methods applied to economically significant plants. 5*. Students will be able to gain the knowledge of economic values of cereals, legumes, spices, oil & fibre yielding plants.		
Credits	Theory	Practical	Total
	2	1	3
Contact Hours	2	2	4
THEORY			
Max. Marks: 50 **Internal Assessment Marks: 15** **End Term Exam Marks: 35**	**Time: 3 Hours**		
PRACTICAL			
Max. Marks: 25 **Internal Assessment Marks: 05** **End Term Exam Marks: 20**	**Time: 4 Hours**		
Part B- Contents of the Course			
Instructions for Paper- Setter			

1. Nine questions will be set in all. All questions will carry equal marks.
2. Question No.1 will be short answer type covering the entire syllabus and will be compulsory. The remaining eight questions will be set unit wise selecting two questions from each unit . The candidate will be required to attempt question No. 1 and four more questions selecting one question from each unit.

Unit	Topics	Contact Hours
I	Origin of Cultivated Plants Morphology and economic importance of : Food plants - Cereals (Rice, Wheat and Maize). Pulses - Gram, Arhar and Pea.	7
II	Vegetables: Potato, Tomato and Onion. Fibers: Cotton Oils: Mustard and Coconut.	7
III	Morphology and economic importance of the following: Spices: Black pepper, Coriander, Ginger, Cloves, saffron. Medicinal Plants: *Cinchona*, *Atropa*, Opium, *Cannabis*, Neem.	8
IV	Botanical description and processing of: Beverages: Tea and Coffee. Types of wood.	8
V*	• Study of economically important plants : Wheat, Rice, Maize, Gram, Pea, Arhar, Black pepper, Ginger, Clove, Tea, Coffee, Cotton, Coconut, Mustard and different types of wood. • Collection and preparation of reports on various crops and economically important plants being cultivated/wildly available in your area.	30

Suggested Evaluation Methods

Internal Assessment: ➢ **Theory** • Class Participation: • Seminar/presentation/assignment/quiz/class test etc.: • Mid-Term Exam: ➢ **Practicum** • Class Participation: • Seminar/Demonstration/Viva-voce/Lab records etc.: • Mid-Term Exam:	**End Term Examination:**

Part C-Learning Resources

Recommended Books/e-resources/LMS:

- Singh, V., Pande, P.C., Jain, D.K. 2018. Economic Botany, Rastogi Publications.
- Kocchar, S.L. 2016. Economic Botany: A Comprehensive Study, 5 Ed, Cambridge India.
- Wickens, G.E. 2001. Economic Botany: Principles and Practices, Springer.
- Singh, V., Pande, P.C., Jain, D.K. 2018. Economic Botany, Rastogi Publications.
- Daubenmire, R.F. Plants & Environment (2nd Edn.,) John Wiley & Sons., New York 22
- S. Sundar Rajan-2007. College Botany Vol-V, Part 1: Taxonomy and Economic Botany Himalaya Publishing House.
- Susil Kumar Mukharjee-2004. College Botany Vol-III. New Central Book agency, London

Third Semester

Session: 2023-24			
Part A - Introduction			
Subject	**BOTANY**		
Semester	**3rd**		
Name of the Course	**Plant Physiology**		
Course Code	**B23-BOT-301**		
Course Type: (CC/MCC/MDC/CC-M/DSEC/VOC/DSE/PC/AEC/VAC)	**CC-3/MCC-4**		
Level of the course (As per Annexure-I			
Pre-requisite for the course (if any)			
Course Learning Outcomes(CLO):	After completing this course, the learner will be able to: 1. Students will acquire an understanding of various physiological process in plants. 2: Students will develop a comprehensive knowledge of plant hormones. 3: Students will learn about photomorphogenesis and its significance. 4: Students will gain a conceptual understanding of plant growth and senescence, including the natural aging process of plants. 5*. Students will be able to demonstrate practical aspects and learn the basic concepts of various physiological and biochemical process of plant		
Credits	Theory	Practical	Total
	3	1	4

Contact Hours	3	2	5

THEORY	
Max. Marks: 70 **Internal Assessment Marks: 20** **End Term Exam Marks: 50**	**Time: 3 Hours**

PRACTICAL	
Max. Marks: 30 **Internal Assessment Marks: 10** **End Term Exam Marks: 20**	**Time: 4 Hours**

Part B- Contents of the Course

Instructions for Paper- Setter

1. Nine questions will be set in all. All questions will carry equal marks.
2. Question No.1 will be short answer type covering the entire syllabus and will be compulsory. The remaining eight questions will be set unit wise selecting two questions from each unit . The candidate will be required to attempt question No. 1 and four more questions selecting one question from each unit.

Unit	Topics	Contact Hours
I	Plant water relations: absorption, water potential and transpiration; role of micro and macro nutrients. Photosynthesis, Respiration.	11
II	Biosynthesis, mechanism of action and uses of auxin, gibberellin, cytokinin, abscisic acid, ethylene, Lipid metabolism and Nitrogen metabolism	11
III	Structure, function and mechanisms of action of phytochromes; stomatal movement; photoperiodism and biological clocks; mechanism of flowering.	12
IV	Concepts of plant growth; factors affecting germination and dormancy of seeds; physiological and biochemical changes associated with senescence and abscission.	11
V*	• Demonstration of imbibition by plaster of Paris method. • Demonstration of Osmosis by potato osmoscope method. • To study the Osmotic pressure of onion scale/ Rhoeo leaf peel by plasmolytic method. • To separate photosynthetic pigments by thin layer/paper chromatography. • To study the phenomenon of seed germination (effect of light). • To study the induction of amylase activity in germinating	30

	barley grains. • To demonstrate suction due to transpiration. • Determination of glucose by Benedict's solution. • To study the process of etiolation in the laboratory. • To study the action of Ethylene hormone on fruit ripening.	

Suggested Evaluation Methods	
Internal Assessment: ➢ **Theory** • Class Participation: • Seminar/presentation/assignment/quiz/class test etc.: • Mid-Term Exam: ➢ **Practicum** • Class Participation: • Seminar/Demonstration/Viva-voce/Lab records etc.: • Mid-Term Exam:	**End Term Examination:**

Part C-Learning Resources

Recommended Books/e-resources/LMS:

- Pandey, S.N & Sinha BK. 2018. Plant Physiology .Vikas Publishing House Pvt. Ltd. 4th edition
- Jain, V. K. 2017. Fundamentals of Plant Physiology. S. Chand publishing. 20th edition
- Gupta, N.K. Bala, MKSM. Gupta, M. 2016. Practical in Plant Physiology and Biochemistry. Scientific Publishers, India
- Taiz, L., Zeiger, E., Moller, I.M. and Murphy, A. 2015. Plant Physiology and Development. Sinauer Associates Inc. USA. 6th edition.
- Verma, V. 2015. Plant Physiology 2nd Ed. Athena Academic.
- James, P.G. 2013. A textbook of Plant Physiology. Hardpress Publishing.
- Illahi, I. 2009. *Plant Physiology. Biochemical Processes in Plants.* UGC Press.
- Hopkins, W.G. and Huner, A. 2008. Introduction to Plant Physiology. John Wiley and Sons.U.S.A. 4th edition.
- Salisbury, F.B. and Ross, C.W. 2002. Plant Physiology. Wordsworth Publishing Co. Belmont CA. 7th edition.

Session: 2023-24	
Part A - Introduction	
Subject	**BOTANY**
Semester	**3rd**

Name of the Course	**Plant Stress Physiology**		
Course Code	**B23-BOT-302**		
Course Type: (CC/MCC/MDC/CC-M/DSEC/VOC/DSE/PC/AEC/VAC)	**MCC-5**		
Level of the course (As per Annexure-I			
Pre-requisite for the course (if any)			
Course Learning Outcomes(CLO):	After completing this course, the learner will be able to: 1. Students will acquire an understanding of how plants respond physiologically to biotic stress. 2: Students will develop a comprehensive knowledge of the genetic mechanisms plants employ to defend against biotic stress. 3: Students will learn about the effects of environmental factors on plants. 4: Students will gain a conceptual understanding of how plants sense and respond to abiotic stress. _____ 5*. Students will be able to demonstrate the practical approach of plant responses under biotic and abiotic stress, and the biochemical test for secondary metabolites.		
Credits	Theory	Practical	Total
	3	1	4
Contact Hours	3	2	5
THEORY			
Max. Marks: 70 **Internal Assessment Marks: 20** **End Term Exam Marks: 50**	**Time: 3 Hours**		
PRACTICAL			
Max. Marks: 30 **Internal Assessment Marks: 10** **End Term Exam Marks: 20**	**Time: 4 Hours**		
Part B- Contents of the Course			
Instructions for Paper- Setter 1. Nine questions will be set in all. All questions will carry equal marks. 2. Question No.1 will be short answer type covering the entire syllabus and will be compulsory. The remaining eight questions will be set unit wise selecting two questions from each unit . The candidate will be required to attempt question No. 1 and four more questions selecting one question from each unit.			
Unit	**Topics**		**Contact Hours**

I	Physiological responses of plants to biotic stress; mechanisms of defense in plants (mechanical and biochemical) against pathogens, insects, herbivores and wounding; role of plant toxins, and secondary metabolites in defense.	11
II	Genetic mechanisms of defense during biotic stress; plant-pathogen interaction; role of hormones in regulating biotic stress responses; allelopathy; local acquired resistance, induced systemic resistance and systemic acquired resistance.	11
III	Impact of environmental factors on plants; physiological and biochemical responses of plants in response to water deficit, salinity, flooding, soil compaction, high and low temperatures, high light intensity, heavy metals and nutrient deficiency.	12
IV	Abiotic stress sensing mechanisms in plants; Antioxidants and ROS scavenging pathways; molecular chaperones in abiotic stress; role of phytohormones and calcium signaling.	11
V*	• Study of osmotic potential of plants grown under water-deficit and salinity stress. • Study of transpiration in plants grown under ambient and high light intensities. • Effect of different NaCl concentrations on the photosynthetic rate of plants (*Hydrilla*). • Estimation of catalase activity in stressed plants (salinity and water-deficit). • Estimation of sugar (glucose) content in normal and diseased plants (Black stem rust, Bacterial blight and Leaf curl disease). • Study of the effect of soil compaction on the growth of seedlings of different plants. • Study of allelopathic effect of *Parthenium hysterophorus* crude extracts on the seed germination.	30
Suggested Evaluation Methods		
Internal Assessment: ➢ **Theory** • Class Participation: • Seminar/presentation/assignment/quiz/class test etc.: • Mid-Term Exam: ➢ **Practicum** • Class Participation: • Seminar/Demonstration/Viva-voce/Lab records etc.: • Mid-Term Exam:		**End Term Examination:**
Part C-Learning Resources		

Recommended Books/e-resources/LMS:

- Gupta, D.K. & Palma, J.M. 2021. Plant growth and stress physiology. Springer Cham.
- Pandey, S.N & Sinha BK. 2018. Plant Physiology .Vikas Publishing House Pvt Ltd. 4th edition
- Jain, V. K. 2017. Fundamentals of Plant Physiology. S. Chand publishing. 20th edition
- Taiz, L., Zeiger, E., Moller, I.M. and Murphy, A. 2015. Plant Physiology and Development. Sinauer Associates Inc. USA. 6th edition.
- Hota,Dharamvir. 2007. Synthetic plant growth regulators.
- Mukherji, S. & Ghosh, A. K. 2005. Plant Physiology. New Central Book Agency, Kolkata.
- Basra. A.S., 2004. Plant Growth regulators in Agriculture and Horticulture, International Book Distributing Co.
- Dwivedi & Dwivedi 2005. Physiology of abiotic stress in plants. Agro bios. India
- Panda S.K. 2002. Advances in Stress Physiology of Plants. Scientific Publishers, Jodhpur.

Session: 2023-24			
Part A - Introduction			
Subject	**BOTANY**		
Semester	**3rd**		
Name of the Course	**Ornamental Plants and Propagation**		
Course Code	**B23-BOT-303**		
Course Type: (CC/MCC/MDC/CC-M/DSEC/VOC/DSE/PC/AEC/VAC)	**MDC-3**		
Level of the course (As per Annexure-I			
Pre-requisite for the course (if any)			
Course Learning Outcomes(CLO):	After completing this course, the learner will be able to: 1. Students will acquire an understanding of the history of gardens in India and other countries. 2: Students will develop comprehensive knowledge about different groups of plants used as ornamentals. 3: Students will learn about flower and seed production. 4: Students will gain a deep understanding of vegetative propagation methods for ornamental plants. 5*. Students will be able to learn various types of gardens & their significance, management, and methods of propagation of valuable plants.		
Credits	Theory	Practical	Total
	2	1	3

Contact Hours	2	2	4

THEORY

Max. Marks: 50 **Internal Assessment Marks: 15** **End Term Exam Marks: 35**	**Time: 3 Hours**

PRACTICAL

Max. Marks: 25 **Internal Assessment Marks: 05** **End Term Exam Marks: 20**	**Time: 4 Hours**

Part B- Contents of the Course

Instructions for Paper- Setter

1. Nine questions will be set in all. All questions will carry equal marks.
2. Question No.1 will be short answer type covering the entire syllabus and will be compulsory. The remaining eight questions will be set unit wise selecting two questions from each unit . The candidate will be required to attempt question No. 1 and four more questions selecting one question from each unit.

Unit	Topics	Contact Hours
I	History of gardens in India; terrace gardening; popular gardens of India; Types of gardens: Formal and Informal gardens; Styles of gardens: Mughal gardens, Persian gardens, Italian gardens, French gardens, English gardens, Japanese gardens.	7
II	Significance of Shrubs, trees, palms, ferns, cycads, cacti and succulents, climbers, creepers, indoor plants, water plants, bonsai plants asornamentals.	7
III	Flower and seed production; protected cultivation of ornamentals; present position and scope of floriculture in India.	8
IV	Vegetative propagation-principles and practices of clone selection; techniques of cutting, budding, grafting and layering; propagation by specialized stems and roots.	8
V*	• Preparation of nursery beds – flat, raised and sunken beds • Identification and description of various plants grown in ornamental gardens. • Tools, implements and containers used in ornamental gardening. • Planning, designing and establishment of garden features viz. lawn, hedge and edge, rockery etc. • To study propagation by separation and division technique. • Preparation of land for lawn and planting. • To study propagation by cuttings, layering, grafting and budding • Flower arrangement practices. • Preparation of bouquets, garland.	30

Suggested Evaluation Methods

Internal Assessment: ➢ **Theory** • Class Participation: • Seminar/presentation/assignment/quiz/class test etc.: • Mid-Term Exam: ➢ **Practicum** • Class Participation: • Seminar/Demonstration/Viva-voce/Lab records etc.: • Mid-Term Exam:	**End Term Examination:**

Part C-Learning Resources

Recommended Books/e-resources/LMS:

- Singh, A.K. & Kumar A. 2023. Plant Propagation and Nursery management. S.K. Kataria and sons.
- Arora, J.S. 2016. Introductory Ornamental Horticulture. Kalyani Publishers. 8th edition.
- Sachdeva, P. & Tongbram, V. 2014. A Naturalist's guide to the trees & Shrubs of India. Prakash Books.
- Jain, S.M. & Ochatt, S.J. 2009. Protocols for in vitro propagation of ornamental plants: 598 (Methods in Molecular Biology). Humana Press.
- Sabina, GT and Peter KV. 2008. Ornamental Plants for Gardens. New India Publ. Agency.
- Reddy S, Janakiram B, Balaji T, Kulkarni S & Misra RL. 2007. Hightech Floriculture. Indian Society of Ornamental Horticulture, New Delhi.
- Bhattacharjee SK. 2006. Advances in Ornamental Horticulture. Vols. I-VI. Pointer Publ.
- Krishnamurthy, K.V. 2004. An Advanced Text Book of Biodiversity - Principles and Practices. Oxford and IBH Publications Co. Pvt. Ltd. New Delhi
- Prasad S & Kumar U. 2003. Commercial Floriculture. Agrobios
- Lauria A & Victor HR. 2001. Floriculture – Fundamentals and Practices Agrobios.

Forth Semester

Session: 2023-24			
Part A - Introduction			
Subject	**BOTANY**		
Semester	**4th**		
Name of the Course	**Cytology and Genetics**		
Course Code	**B23-BOT-401**		
Course Type: (CC/MCC/MDC/CC-M/DSEC/VOC/DSE/PC/AEC/VAC)	**CC-4/MCC-6**		
Level of the course (As per Annexure-I			
Pre-requisite for the course (if any)			
Course Learning Outcomes(CLO):	After completing this course, the learner will be able to: 1. Students will understand the fundamental characteristics of cells. 2: Students will acquire comprehensive knowledge about cell division and the central dogma of molecular biology. 3: Students will learn about the principles of inheritance in biology. 4: Students will develop a thorough understanding of mutations, chromosomal aberrations, and the concept of linkage. 5*. Students will be able to understand the basic principles of laws of inheritance, stains & staining techniques, cell division processes, chromosome mapping, and chromosomal aberration.		
Credits	Theory	Practical	Total
	3	1	4
Contact Hours	3	2	5
THEORY			
Max. Marks: 70 **Internal Assessment Marks: 20** **End Term Exam Marks: 50**		**Time: 3 Hours**	
PRACTICAL			
Max. Marks: 30 **Internal Assessment Marks: 10** **End Term Exam Marks: 20**		**Time: 4 Hours**	

Part B- Contents of the Course		
Instructions for Paper- Setter 1. Nine questions will be set in all. All questions will carry equal marks. 2. Question No.1 will be short answer type covering the entire syllabus and will be compulsory. The remaining eight questions will be set unit wise selecting two questions from each unit . The candidate will be required to attempt question No. 1 and four more questions selecting one question from each unit.		
Unit	**Topics**	**Contact Hours**
I	Cell as a unit of Life; The Cell Theory; Prokaryotic and eukaryotic cells; Eukaryotic Cell components Structure and functions of Cell Wall, Plasma Membrane, nucleus, Nuclear Envelope- structure of nuclear pore complex, Golgi Apparatus, Ribosome, Endoplasmic Reticulum, Chloroplast, Mitochondria, Lysosomes, Peroxisomes and Vacuoles.	11
II	Cell Division: Mitosis and Meiosis. Chromosome: structural organization, ultrastructure of Centromere and Telomere, lampbrush and polytene chromosomes. DNA: structure, types and replication. RNA: structure and types. Genetic code.	11
III	Mendel's laws of Inheritance. Lethal Genes; Codominance, incomplete dominance; Gene interaction (inter- and intra-allelic); Multiple allelism; Pleiotropism. Chi Square test; Pedigree Analysis. **Cytoplasmic Inheritance:** Kappa particles in Paramecium, leaf variegation in *Mirabilis jalapa,* Shell coiling	12
IV	Complete &incomplete linkage, recombination frequency, crossing over. Chromosomal aberrations- deletions, duplications, translocations, inversions; Variations in chromosome number- aneuploidy, polyploidy; sex chromosomes and sex determination. Types of mutations, effects of physical & chemical mutagens.	11
V*	• To study the structure and functioning of a compound microscope. • To study strains and fixatives used in cytogenetics. • To study the karyotype using a given metaphase chromosome picture (A*llium cepa*). • To work out the genetics of a cross from the given F_2 harvest. • To study different mitotic stages in root tips of *Allium cepa*. • Meiosis through temporary squash preparation.	30

	• Mendel's laws through seed ratios. Laboratory exercises in probability and chi-square analysis. • Chromosome mapping using test cross data. • Pedigree analysis for dominant and recessive autosomal and sex linked traits. • Incomplete dominance and gene interaction through seed ratios (9:7, 9:6:1, 13:3, 15:1, 12:3:1, 9:3:4). • Chromosome anomaly : Translocation Ring, Laggards and Inversion Bridge, break etc through slides.	
Suggested Evaluation Methods		
Internal Assessment: ➢ **Theory** • Class Participation: • Seminar/presentation/assignment/quiz/class test etc.: • Mid-Term Exam: ➢ **Practicum** • Class Participation: • Seminar/Demonstration/Viva-voce/Lab records etc.: • Mid-Term Exam:		**End Term Examination:**
Part C-Learning Resources		
Recommended Books/e-resources/LMS: • Lodish, H., Berk, A., Zipursky, S.L., Matsudaria, P., Baltimoe, D. and Darnell, J. 2021. Molecular Cell Biology, W.H. Freeman and Co., New York., USA. 9th edition. • Singh, BD. 2020. Genetics. Kalyani Publishers Delhi. • Pierce BA 2020. Genetics: A Conceptual Approach. Palgrave Macmillan U.K. 7th edition. • Cummings MR, Klug WS, Spencer, CA, Palladino, MA, Killian D. 2019. Concepts of Genetics, Pearson. 12th edition. • Karp, G. Iwasa, J. Marshall W. 2019. Cell and Molecular Biology. Concepts and Experiments. John Wiley and Sons. New York. 9th edition. • Gardner EJ, Simmons MJ, Snustad DP 2012. Principles of Genetics. Wiley India. 8th edition. • Griffiths, A.J.F., Wessler, S.R., Carroll, S.B., Doebley, J. 2010. Introduction to Genetic Analysis.W. H. Freeman and Co., U.S.A. 10th edition. • Sen, S. Kar, D.K. Johri, B.M. 2005. Cytology and Genetics. Alpha Science International Ltd. • Dyonsager, V. R. 2000. Cytology and Genetics. TATA and McGraw Hill Publication Co. Ltd, New Delhi. 3rd edition.		

Session: 2023-24			
Part A - Introduction			
Subject	**BOTANY**		
Semester	**4th**		
Name of the Course	**Plant Molecular Biology**		
Course Code	**B23-BOT-402**		
Course Type: (CC/MCC/MDC/CC-M/DSEC/VOC/DSE/PC/AEC/VAC)	**MCC-7**		
Level of the course (As per Annexure-I			
Pre-requisite for the course (if any)			
Course Learning Outcomes(CLO):	After completing this course, the learner will be able to: 1. Students will gain an understanding of the essential characteristics of DNA. 2: Students will acquire comprehensive knowledge about RNA and its functions. 3: Students will acquire knowledge about proteins, including their structure and functions. 4: Students will develop a comprehensive understanding of the mechanisms and regulation of gene expression. 5*. Students will acquire the knowledge of experimentation performed for the identification of DNA/RNA as genetic material, estimation of DNA/RNA, and bacterial growth medium.		
Credits	Theory	Practical	Total
	3	1	4
Contact Hours	3	2	5
THEORY			
Max. Marks: 70 **Internal Assessment Marks: 20** **End Term Exam Marks: 50**	**Time: 3 Hours**		
PRACTICAL			
Max. Marks: 30 **Internal Assessment Marks: 10** **End Term Exam Marks: 20**	**Time: 4 Hours**		

Part B- Contents of the Course		
Instructions for Paper- Setter 1. Nine questions will be set in all. All questions will carry equal marks. 2. Question No.1 will be short answer type covering the entire syllabus and will be compulsory. The remaining eight questions will be set unit wise selecting two questions from each unit . The candidate will be required to attempt question No. 1 and four more questions selecting one question from each unit.		
Unit	**Topics**	**Contact Hours**
I	Nucleic acids: Carriers of genetic information: Historical perspective; DNA as the carrier of genetic information (Griffith's, Hershey &Chase, Avery, McLeod & McCarty), Types of genetic material, denaturation and renaturation, Nucleosome. DNA replication, repair and recombination (Unit of replication, enzymes involved, replication origin and replication fork, fidelity of replication, extrachromosomal replicons	11
II	RNA synthesis and processing (transcription factors and machinery, formation of initiation complex, transcription activator and repressor, RNA polymerases, capping, elongation, and termination, RNA processing, RNA editing, splicing, and polyadenylation, structure and function of different types of RNA, RNA transport).	11
III	Protein synthesis and processing (Ribosome, formation of initiation complex, initiation factors and their regulation, elongation and elongation factors, termination, genetic code, aminoacylation of tRNA, tRNA-identity, aminoacyl tRNA synthetase, and translational proof-reading, translational inhibitors, Post- translational modification of proteins).	12
IV	Control of gene expression at transcription and translation level (regulating the expression of prokaryotic and eukaryotic genes, role of chromatin in gene expression and gene silencing).	11
V*	• Preparation of LB medium and raising E. coli. • Isolation of genomic DNA from E. coli./onion roots • RNA estimation by orcinol method. • DNA estimation by diphenylamine reagent/UV Spectrophotometry. • Photographs establishing nucleic acid as genetic material (Messelson and Stahl's, • Avery et al, Griffith's, Hershey & Chase's and Fraenkel & Conrat's experiments) • Study of Barr body from buccal smear preparation.	30
Suggested Evaluation Methods		

Internal Assessment: ➢ **Theory** • Class Participation: • Seminar/presentation/assignment/quiz/class test etc.: • Mid-Term Exam: ➢ **Practicum** • Class Participation: • Seminar/Demonstration/Viva-voce/Lab records etc.: • Mid-Term Exam:	**End Term Examination:**

Part C-Learning Resources

Recommended Books/e-resources/LMS:

- Lodish, H., Berk, A., Zipursky, S.L., Matsudaria, P., Baltimoe, D. and Darnell, J. 2021. Molecular Cell Biology, W.H. Freeman and Co., New York., USA. 9th edition.
- Karp, G. Iwasa, J. Marshall W. 2019. Cell and Molecular Biology. Concepts and Experiments. John Wiley and Sons. New York. 9th edition.
- Krebs, J.E. Goldstein E.S. Kilpatrick S.T. 2017. Lewin's Genes XII. Jones and Bartlett Publishers, Inc. 12th edition.
- Watson, J.D. 2017. Molecular Biology of the gene. Pearson Education India. 7th edition.
- Cooper, G.M. and Hausman, R.E. 2013. The Cell: A Molecular Approach. Sinauer Associates, Sunderland, Massachusetts U.S.A. 6th edition.
- Becker, W.M., Kleinsmith, L.J., Hardin. J. and Bertoni, G. P. 2008. The World of the Cell. Pearson Benjamin Cummings Publishing, San Francisco. 7th edition.
- Alberts, B. Johnson A. Lewis, J. Raff, M. Roberts K. & Walter P. 2007. Molecular Biology of Cell. W.W. Norton & Company. 5th edition.
- De Robertis, E.D.P. and De Robertis, E.M.F. 2006. Cell and Molecular Biology. Lippincott Williams and Wilkins, New York. 8th edition.
- Sen, S. Kar, D.K. Johri, B.M. 2005. Cytology and Genetics. Alpha Science International Ltd.

Session: 2023-24	
Part A - Introduction	
Subject	**BOTANY**
Semester	**4th**
Name of the Course	**Plant Breeding**
Course Code	**B23-BOT-403**
Course Type: (CC/MCC/MDC/CC-M/DSEC/VOC/DSE/PC/AEC/VAC)	**MCC-8**
Level of the course (As per Annexure-I	

Pre-requisite for the course (if any)			
Course Learning Outcomes(CLO):	After completing this course, the learner will be able to: 1. Students will develop a foundational understanding of plant breeding principles. 2: Students will acquire comprehensive knowledge about the geographical centers of origin and the process of domestication of crop plants. 3: Students will gain knowledge about the cytogenetic basis underlying plant breeding techniques. 4: Students will develop a comprehensive understanding of the development of mapping populations, QTL analysis, GWAS, and other relevant methodologies used in plant breeding research. 5*. Students will develop the practical knowledge about the tools and techniques used in plant breeding.		
Credits	Theory	Practical	Total
	3	1	4
Contact Hours	3	2	5
THEORY			
Max. Marks: 50 **Internal Assessment Marks: 15** **End Term Exam Marks: 35**	**Time: 3 Hours**		
PRACTICAL			
Max. Marks: 30 **Internal Assessment Marks: 10** **End Term Exam Marks: 20**	**Time: 4 Hours**		

Part B- Contents of the Course

Instructions for Paper- Setter

1. Nine questions will be set in all. All questions will carry equal marks.
2. Question No.1 will be short answer type covering the entire syllabus and will be compulsory. The remaining eight questions will be set unit wise selecting two questions from each unit . The candidate will be required to attempt question No. 1 and four more questions selecting one question from each unit.

Unit	Topics	Contact Hours
I	Objectives of plant breeding; modes of reproduction in crop plants; important achievements and undesirable consequences of plant breeding; floral biology in self- and cross-pollinated species; male sterility in plant breeding.	11
II	Centers of origin and domestication of crop plants; plant genetic resources; acclimatization; selection methods for self-pollinated, cross-pollinated and vegetatively propagated plants; hybridization for self, cross and vegetatively propagated plants-procedure, advantages and limitations.	11

III	Cytogenetic basis of plant breeding-variation in chromosome number, mutation, fertility regulation mechanism, gene recombination in plant breeding; role of mutations, distant hybridization and biotechnology in crop improvement.	12
IV	Development of mapping population-RIL/NIL/double haploid including CSSL/ BIL lines;QTL mapping bylinkage analysis andby association analysis (GWAS); history, applications andgenetic basis of inbreeding depression andheterosis.	11
V*	• To study different tools and techniques used in plant breeding. • To study grafting methods and its advantages. • To study different methods of vegetative propagation. • To estimate plant height and tiller number in a rice/wheat variety statistically.	30

Suggested Evaluation Methods

Internal Assessment: ➢ **Theory** • Class Participation: • Seminar/presentation/assignment/quiz/class test etc.: • Mid-Term Exam: ➢ **Practicum** • Class Participation: • Seminar/Demonstration/Viva-voce/Lab records etc.: • Mid-Term Exam:	**End Term Examination:**

Part C-Learning Resources

Recommended Books/e-resources/LMS:

- Singh, B.D. 2022. Plant Breeding: Principles and Methods. Medtech Science Press. 12th edition.
- Singh, BD. 2020. Genetics. Kalyani Publishers Delhi.
- Cummings MR, Klug WS, Spencer, CA, Palladino, MA, Killian D. 2019. Concepts of Genetics, Pearson. 12th edition.
- Chopra, V.L. 2018. Plant Breeding: Theory and Practices New India Publishing Agency-NIPA, New Delhi. 2nd edition.
- Simmonds, N.W. & Smart J. 2013. Principles of crop improvement. Wiley India Pvt. Ltd. 2nd edition.
- Acquaah, G. 2012. Principles of Plant Genetics & Breeding. Willey-Blackwell Publishing. 2nd edition.
- Gardner E.J., Simmons M.J., Snustad D.P. 2012. Principles of Genetics. Wiley India. 8th edition.
- Griffiths, A.J.F., Wessler, S.R., Carroll, S.B., Doebley, J. 2010. Introduction to Genetic Analysis. W. H. Freeman and Co., U.S.A. 10th edition.
- Brown, J. Caligari, P. & Campos H. 2008. Plant Breeding. Willey-Blackwell Publishing. 2nd edition.

Session: 2023-24			
Part A - Introduction			
Subject	**BOTANY**		
Semester	**4th**		
Name of the Course	**Plant Tissue Culture**		
Course Code	**B23-BOT-404**		
Course Type: (CC/MCC/MDC/CC-M/DSEC/VOC/DSE/PC/AEC/VAC)	**DSE-1**		
Level of the course (As per Annexure-I			
Pre-requisite for the course (if any)			
Course Learning Outcomes(CLO):	After completing this course, the learner will be able to: 1. Students will acquire a fundamental understanding of plant tissue culture. 2: Students will develop comprehensive knowledge about various culture methods used in plant tissue culture. 3: Students will gain knowledge about the basic principles of recombinant DNA technology. 4: Students will develop a comprehensive understanding of transgenic plants, including methods of gene transfer and selection. 5*. Students will gain the knowledge about the tools and techniques used for in vitro plant cell/tissue culture, growth medium, culturing of explants, gene transfer methods genetically modified plants/crops.		
Credits	Theory	Practical	Total
	3	1	4
Contact Hours	3	2	5
THEORY			
Max. Marks: 70 **Internal Assessment Marks: 20** **End Term Exam Marks: 50**	**Time: 3 Hours**		
PRACTICAL			
Max. Marks: 30 **Internal Assessment Marks: 10** **End Term Exam Marks: 20**	**Time: 4 Hours**		
Part B- Contents of the Course			

Instructions for Paper- Setter

1. Nine questions will be set in all. All questions will carry equal marks.
2. Question No.1 will be short answer type covering the entire syllabus and will be compulsory. The remaining eight questions will be set unit wise selecting two questions from each unit . The candidate will be required to attempt question No. 1 and four more questions selecting one question from each unit.

Unit	Topics	Contact Hours
I	Plant Tissue Culture: Historical perspective; Aseptic tissue culture techniques, Totipotency; Differentiation and dedifferentiation. Methodology: Sterilization (physical and chemical methods), Composition of media; Nutrient and hormone requirements (role of vitamins and hormones), medium for micropropagation/clonal propagation of ornamental and medicinal plants. Tissue culture applications (micropropagation, androgenesis, virus elimination, secondary metabolite production, haploids, triploids and hybrids; Cryopreservation; Germplasm Conservation).	11
II	Callus subculture maintenance, growth measurements, morphogenesis in callus cultures : Organogenesis; Embryogenesis (somatic and zygotic); Protoplast isolation, culture and fusion; Anther culture, Embryo culture, Endosperm culture, Embryo rescue technique. Artificial seed production. Hardening and Acclimatization.	11
III	Recombinant DNA technology-I: Restriction Endonucleases (role and application); Restriction Mapping (Linear and Circular); Cloning Vectors: Prokaryotic and Eukaryotic. Gene Cloning (Recombinant DNA, Bacterial Transformation and selection of recombinant clones, PCR-mediated gene cloning). Recombinant DNA technology-II: Gene Construct; construction of genomic and cDNA libraries, screening DNA libraries to obtain genes of interest by genetic selection; complementation, colony hybridization.	12
IV	Methods of gene transfer- Agrobacterium-mediated, Direct gene transfer by Electroporation, Microinjection, Microprojectile bombardment; Selection of transgenics–selectable marker and reporter genes (Luciferase, GUS, GFP). Transgenic plants: Pest resistant (Bt-cotton); herbicide resistant plants (Roundup Ready soybean); Transgenic crops with improved quality traits (FlavrSavr tomato, Golden rice); Improved horticultural varieties (Moondust carnations); Role of transgenics in bioremediation (Superbug); edible vaccines; Industrial enzymes (Aspergillase, Protease, Lipase); Genetically Engineered Products–Human Growth Hormone; Humulin; Biosafety concerns.	11
V*	• Preparation of MS medium. • To prepare the slants and petri plates for plant tissue culture. • Demonstration of *in vitro* sterilization and inoculation methods	30

	using leaf and nodal explants of tobacco, Datura, *Brassica* etc. • Study of anther, embryo and endosperm culture, micropropagation, somatic embryogenesis & artificial seeds. • Study of methods of gene transfer through photographs: Agrobacterium-mediated, direct gene transfer by electroporation, microinjection, microprojectile bombardment. • Study of steps of genetic engineering for production of Bt cotton, Golden rice, FlavrSavr tomato through photographs. • Isolation and quantification of genomic DNA from bacteria (*E. coli*) or Plants • Study of Blotting techniques: Southern, Northern and Western, DNA fingerprinting, DNA sequencing, PCR through photographs. • Production of wine from the fruit juice of grapes by fermentation process using yeast.	

Suggested Evaluation Methods

Internal Assessment: ➢ **Theory** • Class Participation: • Seminar/presentation/assignment/quiz/class test etc.: • Mid-Term Exam: ➢ **Practicum** • Class Participation: • Seminar/Demonstration/Viva-voce/Lab records etc.: • Mid-Term Exam:	**End Term Examination:**

Part C-Learning Resources

Recommended Books/e-resources/LMS:

- Stewart C.N. 2016. Plant Biotechnology & Genetics: Principles, Techniques and Applications. John Wiley & Sons Inc. U.S.A. 2nd edition.
- Singh. B.D. 2016. Biotechnology. Kalyani Publishers. 5th edition.
- Beyl, C.A. & Trigiano, R.N. 2014. Plant Propagation Concepts and Laboratory Exercises. CRC Press, Boca Raton, FL. 2nd edition.
- MacDonald, P.T. 2014. The Manual of Plant Grafting: Practical Techniques for Ornamentals, Vegetables, and Fruit. Timber Press, Portland, OR.
- Kyte, L., J. Kleyn, H. Scoggins & M. Bridgen. 2013. Plants from Test Tubes: An Introduction to Micropropagation, Timber Press Inc., Portland, OR. 4th edition.
- Smith, R.H. 2013. Plant Tissue culture: techniques and experiments. Elsevier. 3rd edition.
- Glick, B.R., Pasternak, J.J. & Patten C.L. 2010. Molecular Biotechnology- Principles and Applications of recombinant DNA. ASM Press, Washington. 4th edition.
- Bhojwani, S.S. & Razdan, M.K. 2009. Plant tissue culture: Theory and Practice. Elsevier India Pvt. Ltd.

- George, E.F., Hall, M.A., Klerk, G.J. 2008. Plant Propagation by Tissue Culture. Springer. 3rd edition.

Session: 2023-24			
Part A – Introduction			
Subject	**BOTANY**		
Semester	**4th**		
Name of the Course	**Bioethics, Biosafety and IPR**		
Course Code	**B23-BOT-405**		
Course Type: (CC/MCC/MDC/CC-M/DSEC/VOC/DSE/PC/AEC/VAC)	**DSE-1**		
Level of the course (As per Annexure-I			
Pre-requisite for the course (if any)			
Course Learning Outcomes(CLO):	After completing this course, the learner will be able to: 1. Students will acquire a fundamental understanding of the basics of bioethics and biosafety. 2: Students will develop comprehensive knowledge about the ethical issues concerning biotechnology. 3: Students will gain knowledge about the safety of modified crops. 4: Students will develop a comprehensive understanding of the different forms of IPR. _____ 5*. Students will gain the basic knowledge about the various tools and software used for the searching & formatting of scientific articles, plagiarism detection, plant breeders & farmers rights.		
Credits	Theory	Practical	Total
	3	1	4
Contact Hours	3	2	5

THEORY	
Max. Marks: 70 **Internal Assessment Marks: 20** **End Term Exam Marks: 50**	**Time: 3 Hours**
PRACTICAL	
Max. Marks: 30 **Internal Assessment Marks: 10** **End Term Exam Marks: 20**	**Time: 4 Hours**

Part B- Contents of the Course

Instructions for Paper- Setter

1. Nine questions will be set in all. All questions will carry equal marks.
2. Question No.1 will be short answer type covering the entire syllabus and will be compulsory. The remaining eight questions will be set unit wise selecting two questions from each unit . The candidate will be required to attempt question No. 1 and four more questions selecting one question from each unit.

Unit	Topics	Contact Hours
I	Ethical conflicts in biological sciences; bioethics in health care; artificial reproductive technologies; ethics in transplantation and stem cell research; biopiracy; biosafety levels.	11
II	Ethical issues concerning biotechnology; primary containment for biohazards; recommended biosafety levels for specific microorganisms; biosafety guidelines for industrial operations with GMOs and field trial of GM crops.	11
III	Environmental risk assessment and food and feed safety assessment; balance of genetically altered and natural population in an ecosystem; safety of modified crops; social and economic effects.	12
IV	Different forms of IPR; patents, copyrights, designs, trademarks, geographical indication, trade secrets, semiconductor integrated circuit layout designs, plant breeders and farmers rights; general concept of patenting;	11
V*	• Plagiarism detection tools in scientific literature. • Case studies related to scientific article retraction. • Scientific article search tools; PubMed and Google scholar. • Formatting scientific literature; APA, AMA, MLA and NLM. • Case study: Protection of Plant Varieties and Farmers' Rights Act, 2001. • Case studies related to IPR.	30

Suggested Evaluation Methods	
Internal Assessment: ➢ **Theory** • Class Participation: • Seminar/presentation/assignment/quiz/class test etc.: • Mid-Term Exam: ➢ **Practicum** • Class Participation: • Seminar/Demonstration/Viva-voce/Lab records etc.: • Mid-Term Exam:	**End Term Examination:**

Part C-Learning Resources

Recommended Books/e-resources/LMS:

- Sateesh, M.K. 2020. Bioethics and Biosafety. Wiley India.
- Fleming, D.O. & Hunt, D. L. 2014. Biological Safety: Principles and Practices. ASM Press. 4th Edition.
- Rathore, N.S. Mathur, S.M. Mathur, P. & Rathi, A. 2013. Intellectual Property Rights: Drafting, Interpretation of Patents Specification and claims. New India Publishing Agency-NIPA.
- Parashar, S. & Goel, D. 2013. IPR, Biosafety and Bioethics. Pearson Education, India.
- Poltorak, A.I. & Lerner, P.J. Wiley. 2011. Essentials of Intellectual Property: Law, Economics, and Strategy. John Wiley & Sons Inc. 2nd edition.
- Rallapalli, R. & Bali, G. 2011. Bioethics & Biosafety. APH Publication Corporation.
- Mepham, B. 2008. Bioethics: An introduction for the Biosciences. Oxford University Press. 2nd edition.
- Thomas J.A., Fuch R.L. 2002. Biotechnology and Safety Assessment. Academic Press. 3rd Edition.
- Cutter, S.I. 2003. Environmental Risks and Hazards. Publishers Prentice Hall.
- Donnellan, C. 2002. Cloning. Independent Educational Publication.

Session: 2023-24	
Part A - Introduction	
Subject	**BOTANY**
Semester	**3rd**
Name of the Course	**Organic Farming**
Course Code	**B23-BOT-109**
Course Type: (CC/MCC/MDC/CC-M/DSEC/VOC/DSE/PC/AEC/VAC)	**VOC-1**

Level of the course (As per Annexure-I			
Pre-requisite for the course (if any)			
Course Learning Outcomes(CLO):	After completing this course, the learner will be able to: 1: Students will be able to understand the need and concept of organic and integrated farming system. 2: Students will develop a conceptual understanding of plant nutrients, utilization of biofertilizers. 3: Students will gain knowledge about the disease and pest management 4: Students will learn about the use of plant products in organic farming, quality control and certification procedures of organic products. --- 5*. Students will gain the knowledge of practical aspects of organic and integrated farming system, role of nutrient in plant growth, utilization of plant and animal waste in organic farming, and also learn about the standardization procedures.		
Credits	Theory	Practical	Total
	3	1	4
Contact Hours	3	2	5

THEORY

Max. Marks: 70 **Internal Assessment Marks: 20** **End Term Exam Marks: 50**	**Time: 3 Hours**

PRACTICAL

Max. Marks: 30 **Internal Assessment Marks: 10** **End Term Exam Marks: 20**	**Time: 4 Hours**

Part B- Contents of the Course

Instructions for Paper- Setter

1. Nine questions will be set in all. All questions will carry equal marks.
2. Question No.1 will be short answer type covering the entire syllabus and will be compulsory. The remaining eight questions will be set unit wise selecting two questions from each unit . The candidate will be required to attempt question No. 1 and four more questions selecting one question from each unit.

Unit	Topics	Contact Hours
I	Basics of organic farming – Concept and components of organic farming, aims and objectives; Need of organic farming; Historical development of organic farming in India; Status of organic farming in India; Advantages and disadvantages of organic farming. Organic farming process- Concept of farming	11

	system, Developing organic farms, Important steps & methods; Pure organic farming and integrated farming system (combination of organic and inorganic).	
II	Plant nutrients: Essential plant nutrients, their role in plant growth and development, Nutrient uptake and utilization by plant. Nutrient management in organic farming: Balanced nutrients supply for organic farming system using nutrients from organic sources. Preparation, nutrient content and methods of use of following- FYM/Rural compost, mulching, city compost, oil cakes, animal wastes, vermicomposts, vermiwash, jeevamrit, beejamrit, green manures, biofertilizers.	11
III	Bio fertilizers and their method of use – Nitrogenous, Phosphatic, Potassic, availability of nutrients from above sources. Recycling of organic matter in organic agriculture-Transformation of organic substances in soil. Disease and pest management in organic farming-Integrated pest & disease managements; Organic pesticides, bio-pesticides; Inorganic pesticides, disadvantages of their use;Seed, seedling and soil treatment measures; Feasibility of complete dependence on organic sources.Weed management inorganic farming	12
IV	Use of Neem and other plant products in organic farming; Organic agri-horticulture in urban & semi urban areas. Certification, Standardization, Marketing - Quality control and certification procedures of organic products. Organic standards In India. Govt. schemes related to organic farming in India. Potential demand and Marketing of organic products. Organic farming and food security in India.	11
V*	• Preparation of compost by open air composting. • Preparation of vermicompost. • Comparative analysis of plants grown in compost prepared in 1 and 2. • Determining the effectiveness of neem extract in pest control. • Comparative analysis of plants grown in the presence of organic and inorganic fertilizers. • Comparative analysis of nitrogen content in organic and inorganic fertilizers. • Comparative analysis of phosphorous content in organic and inorganic fertilizers.	30
Suggested Evaluation Methods		
Internal Assessment: ➢ **Theory** • Class Participation: • Seminar/presentation/assignment/quiz/class test etc.: • Mid-Term Exam: ➢ **Practicum** • Class Participation: • Seminar/Demonstration/Viva-voce/Lab records etc.: • Mid-Term Exam:		**End Term Examination:**

Part C-Learning Resources
Recommended Books/e-resources/LMS: • Chandran, S., Unni M.R., Thomas, S. Meena, D.K. 2023. Organic Farming: Global Perspectives and Methods. Elsevier. • Somasundaram, E. Udhaya Nandhini, D., Meyyappan, M. 2021. Principles of Organic Farming. CRC Press. • Chandran, S., Thomas, S., Unni M.R. 2019. Organic Farming: New Advances Towards Sustainable Agricultural Systems. Springer. • Giri b, Prasad, R. Qiang-Sheng, W. & Varma A. 2019. Biofertilizers for sustainable agriculture and environment (Soil Biology Book 55). Springer. • Chandran, S., Unni M.R., Thomas, S. 2018. Organic Farming: Global Perspectives and Methods. Elsevier. • Subbarao, N.S. 2017. Bio-fertilizers in Agriculture and Forestry. MedTech Publishers. 4th edition. • Hermary, H. 2007. Working with nature. Gaia College Inc.

Session: 2023-24	
Part A – Introduction	
Subject	**BOTANY**
Semester	**4th**
Name of the Course	**Floriculture**
Course Code	**B23-BOT-209**
Course Type: (CC/MCC/MDC/CC-M/DSEC/VOC/DSE/PC/AEC/VAC)	**VOC-2**
Level of the course (As per Annexure-I	
Pre-requisite for the course (if any)	
Course Learning Outcomes(CLO):	After completing this course, the learner will be able to: 1. Students will be able to understand the importance and scope of floriculture, management of nursery and gardens, methods of plant propagation. 2: Students will develop a conceptual understanding of different types of ornamental plants. 3: Students will gain knowledge about the various types of gardens and importance of landscaping. 4: Students will learn about commercial floriculture and cultivation of important cut flowers.

	5*. Students will gain the knowledge of practical aspects of floriculutre, management of nursery, maintinance of gardens, vase life of cut flowers,various methods used for the propagation of ornamental plants,hydroponics, and disease management.		
Credits	Theory	Practical	Total
	3	1	4
Contact Hours	3	2	5

THEORY

Max. Marks: 70 **Internal Assessment Marks: 20** **End Term Exam Marks: 50**	**Time: 3 Hours**

PRACTICAL

Max. Marks: 30 **Internal Assessment Marks: 10** **End Term Exam Marks: 20**	**Time: 4 Hours**

Part B- Contents of the Course

Instructions for Paper- Setter

1. Nine questions will be set in all. All questions will carry equal marks.
2. Question No.1 will be short answer type covering the entire syllabus and will be compulsory. The remaining eight questions will be set unit wise selecting two questions from each unit . The candidate will be required to attempt question No. 1 and four more questions selecting one question from each unit.

Unit	Topics	Contact Hours
I	Introduction:History, importance andscope of floriculture and landscape gardening. Nursery management and routine garden operations: Sexual and vegetative methods of propagation; Soil sterilization; Seed sowing; Pricking; Planting and transplanting; Shading; Stopping or pinching; Defoliation; Wintering; Mulching; Topiary; Role of plant growth regulators	11
II	Ornamental Plants: Flowering annuals; Herbaceous perennials; Divine vines; Shade and ornamental trees; Ornamental bulbous and foliage plants; Cacti and succulents; Palms and Cycads; Ferns and Selaginellas; Cultivation of plants in pots; Indoor gardening; Bonsai.	11
III	Principles of Garden Designs: English, Italian, French, Persian, Mughal and Japanese gardens; Features of a garden (garden wall, fencing, steps, hedge, edging, lawn, flower beds, shrubbery, borders, water garden. Some famous gardens of India.	12

	Landscaping of places of public importance: Landscaping highways and educational institutions.	
IV	Commercial floriculture: Factors affecting flower production; Production and packaging of cut flowers; Flower arrangements; Methods to prolong vase life. Cultivation of Important cut flowers- Carnation, Aster, Chrysanthemum, Dahlia, Gerbera, Gladiolous, Marigold, Rose, Lilium). Diseases and Pests of Ornamental Plants.	11
V*	• Plant propagation by cutting. • Plant propagation by grafting. • Plant propagation by air-layering. • Investigating the effect of different flower preservatives on the vase life of common ornamental flowers. • Setting up a laboratory scale hydroponics setup. • Preparation of different types of floral arrangements. • Morpho-anatomical study of different types of flowers. • Study of different diseases in ornamental plants.	30
Suggested Evaluation Methods		
Internal Assessment: ➢ **Theory** • Class Participation: • Seminar/presentation/assignment/quiz/class test etc.: • Mid-Term Exam: ➢ **Practicum** • Class Participation: • Seminar/Demonstration/Viva-voce/Lab records etc.: • Mid-Term Exam:		**End Term Examination:**
Part C-Learning Resources		
Recommended Books/e-resources/LMS: • Singh, A.K. & Kumar A. 2023. Plant Propagation and Nursery management. S.K. Kataria and sons. • Arora, J.S. 2016. Introductory Ornamental Horticulture. Kalyani Publishers. 8th edition. • Jain, S.M. & Ochatt, S.J. 2009. Protocols for in vitro propagation of ornamental plants: 598 (Methods in Molecular Biology). Humana Press. • Prasad S & Kumar U. 2003. Commercial Floriculture. Agrobios • Lauria A & Victor HR. 2001. Floriculture – Fundamentals and Practices Agrobios.		

Session: 2023-24	
Part A - Introduction	
Subject	**BOTANY**

Semester	**5th**		
Name of the Course	**Nursery and Gardening**		
Course Code	**B23-VOC-217**		
Course Type: (CC/MCC/MDC/CC-M/DSEC/VOC/DSE/PC/AEC/VAC)	**VOC-3**		
Level of the course (As per Annexure-I			
Pre-requisite for the course (if any)			
Course Learning Outcomes(CLO):	After completing this course, the learner will be able to: 1. Students will be able to understand the infrastructure of nursery,seed production technology 2: Students will develop a conceptual understanding the gardening procedure and ,management of pest and diseases. 3: Students will gain knowledge about the vegetative propagation methods. 4: Students will learn about cultivation of different vegetables and flowers. _____ 5*. Students will gain the knowledge of practical aspects of management of nursery,gardens, vegetative propagation methods,and cultivation of different vegetables and flowers.		
Credits	Theory	Practical	Total
	3	1	4
Contact Hours	3	2	5
THEORY			
Max. Marks: 70 **Internal Assessment Marks: 20** **End Term Exam Marks: 50**		**Time: 3 Hours**	
PRACTICAL			
Max. Marks: 30 **Internal Assessment Marks: 10** **End Term Exam Marks: 20**		**Time: 4 Hours**	
Part B- Contents of the Course			

Instructions for Paper- Setter

1. Nine questions will be set in all. All questions will carry equal marks.
2. Question No.1 will be short answer type covering the entire syllabus and will be compulsory. The remaining eight questions will be set unit wise selecting two questions from each unit . The candidate will be required to attempt question No. 1 and four more questions selecting one question from each unit.

Unit	Topics	Contact Hours
I	Nursery: Definition, objectives and scope and building up of infrastructure for nursery, planning and seasonal activities – planting, direct seeding and transplants. Seed: Structure and types -Seed dormancy; causes and methods of breaking dormancy Seed storage: Seed banks, factors affecting seed viability, genetic erosion. Seed production technology: Seed testing and certification.	11
II	Gardening: definition, objectives and scope - different types of gardening - landscape and home gardening - parks and its components - plant materials and design. Gardening operations: Soil laying, manuring, watering, management of pests and diseases and harvesting, sowing/raising of seeds and seedlings, transplanting of seedlings. Computer applications in landscaping.	11
III	Vegetative propagation: air-layering, cutting, selection of cutting, collecting season, treatment of cutting, rooting medium and planting of cuttings. Hardening of plants - greenhouse - mist chamber, shed root, shade house and glass house.	12
IV	Cultivation of different vegetables: Cabbage, Brinjal, Lady's finger, Onion, Tomatoes and carrots Cultivation of different flowers: Marigold, Lilium, Rose, Gerbera, Gladiolus, Chrysanthemum and Carnation. Storage and marketing procedures.	11
V*	• Study of seed dormancy breakage by scarification and stratification. • Investigating the effect of different environmental conditions on seed germination. • Study of different tools used in gardening. • Bed preparation for growth of seedlings. • Raising of seedlings and transplantation. • Comparing the effects of different pruning methods, such as topping, thinning, or pinching, on plant growth, branching	30

	patterns, and flower production. • Study of different methods of vegetative propagation.	

Suggested Evaluation Methods

Internal Assessment: ➢ **Theory** • Class Participation: • Seminar/presentation/assignment/quiz/class test etc.: • Mid-Term Exam: ➢ **Practicum** • Class Participation: • Seminar/Demonstration/Viva-voce/Lab records etc.: • Mid-Term Exam:	**End Term Examination:**

Part C-Learning Resources

Recommended Books/e-resources/LMS:

- Singh, A.K. & Kumar A. 2023. Plant Propagation and Nursery management. S.K. Kataria and sons.
- Ray, P.K. 2021. Essentials of Plant nursery management. Scientific publishers, India. 2nd edition.
- Taiz, L., Zeiger, E., Moller, I.M. and Murphy, A. 2015. Plant Physiology and Development. Sinauer Associates Inc. USA. 6th edition.
- Ray, P.K. 2012. Plant nursery management: how to start and operate a plant nursery. Scientific publishers, India.
- Sinha, N.K., Hui, Y.H. 2011. Handbook of vegetables & vegetable processing. Wiley-Blac, A John Wiley & SOns, Ltd.
- Jain, S.M. & Ochatt, S.J. 2009. Protocols for in vitro propagation of ornamental plants: 598 (Methods in Molecular Biology). Humana Press.
- Hopkins, W.G. and Huner, A. 2008. Introduction to Plant Physiology. John Wiley and Sons.U.S.A. 4th edition.
- Mason, J. 2004. Nursery management. Landlinks Press.

Session: 2023-24	
Part A - Introduction	
Subject	**BOTANY**
Semester	**6th**
Name of the Course	**Mushroom Cultivation**

Course Code	**B23-VOC-309**		
Course Type: (CC/MCC/MDC/CC-M/DSEC/VOC/DSE/PC/AEC/VAC)	**VOC-4**		
Level of the course (As per Annexure-I			
Pre-requisite for the course (if any)			
Course Learning Outcomes(CLO):	After completing this course, the learner will be able to: 1. Students will be able to understand the nutritional and medicinal value of edible mushrooms. 2: Students will develop a conceptual understanding of various procedure and techniques used for mushroom cultivation. 3: Students will gain knowledge about the storage procedure of different types of edible mushrooms. 4: Students will learn about different types of food prepared from mushrooms and their medicinal value. 5*. Students will gain the knowledge of practical aspects of mushroom cultivation		
Credits	Theory	Practical	Total
	3	1	4
Contact Hours	3	2	5
THEORY			
Max. Marks: 70 **Internal Assessment Marks: 20** **End Term Exam Marks: 50**		**Time: 3 Hours**	
PRACTICAL			
Max. Marks: 30 **Internal Assessment Marks: 10** **End Term Exam Marks: 20**		**Time: 4 Hours**	
Part B- Contents of the Course			
Instructions for Paper- Setter 1. Nine questions will be set in all. All questions will carry equal marks. 2. Question No.1 will be short answer type covering the entire syllabus and will be compulsory. The remaining eight questions will be set unit wise selecting two questions from each unit . The candidate			

will be required to attempt question No. 1 and four more questions selecting one question from each unit.		
Unit	**Topics**	**Contact Hours**
I	Introduction, nutritional and medicinal value of edible mushrooms; poisonous mushrooms, types of edible mushrooms available in India- *Volvariella volvacea*, *Pleurotus citrinopileatus*, *Agaricus bisporus*. Required infrastructure: substrates (locally available), polythene bags, vessels, inoculation hook, inoculation loop, low cost stoves, sieves, culture racks, mushroom unit (thatched house), water sprayer, tray, etc.	11
II	Pure culture: medium, sterilization, preparation of spawn, multiplication. Mushroom bed preparation- paddy straw, sugarcane trash, maize straw, banana leaves, Factors affecting the mushroom bed preparation- low cost technology, composting technology in mushroom production	11
III	Storage: short term storage, long term storage (canning, pickels, papads), drying, storage in salt solutions. Nutritional value of some common commercially available mushrooms: proteins, amino acids, mineral elements nutrition, carbohydrates, crude fibre content and vitamins.	12
IV	Food preparation: type of foods prepared from mushrooms. Medicinal value of edible mushrooms. Research centres: National level and regional level. Cost benefit ratio: marketing in India and abroad. Export value.	11
V*	1. Sterilization of media for spawn preparation. 2. Preparation of spawn and multiplication. 3. Preparation of mushroom bed with different substrates. 4. Cultivation of *Pleurotus* sp. 5. Cultivation of *Agaricus* sp. 6. Evaluation of total soluble sugar content of commonly available mushrooms. 7. Evaluation of total protein content of commonly available mushrooms. 8. Preparation of dried mushroom powder for long term storage and its nutrient evaluation.	30
Suggested Evaluation Methods		

Internal Assessment: ➢ **Theory** • Class Participation: • Seminar/presentation/assignment/quiz/class test etc.: • Mid-Term Exam: ➢ **Practicum** • Class Participation: • Seminar/Demonstration/Viva-voce/Lab records etc.: • Mid-Term Exam:	**End Term Examination:**

Part C-Learning Resources

Recommended Books/e-resources/LMS:

- Bray, R. 2019. Mushroom cultivation: 12 ways to become the MacGyver of Mushrooms. Urban Homesteading.
- Kumaresan, V. 2018. Mushroom cultivation. Saras Publication.
- Russell, S. 2014. The essential guide to cultivating mushrooms: Simple and advanced techniques for growing Shiitake, Oyster, Lion's mane and Maitake mushrooms at home. Storey publishing LLC.
- Gour, P.Y. 2010. Mushroom Production and Processing Technology. Agrobios India.
- Powell, M. 2010. Medicinal mushrooms: A clinical guide. Mycology Press.
- Cheung, P.C. 2008. Mushrooms as Functional foods. Willey-Interscience.
- Tripathi, D.P. 2005. Mushroom Cultivation. Oxford & IBH Publishing Co. PVT.LTD, New Delhi.
- Paul Stamets, J.S. & Chilton, J.S. 2004. Mushroom cultivation: A practical guide to growing mushrooms at home, Agarikon Press.
- Chang, S.F. Miles, P.G. & Chang, S.T. 2004. Mushrooms Cultivation, nutritional value, medicinal effect and environmental impact. CRC press. 2nd edition.
- Bahl, N. 2000. Handbook on Mushrooms. Oxford & IBH Publishing Co. Pvt. Ltd.

KURUKSHETRA UNIVERSITY KURUKSHETRA

Scheme of Examination and Syllabus for

Under-Graduate Programme

(Subject: Genetics with Scheme 'A' only)

Under Multiple Entry-Exit, Internship and CBCS-LOCF in accordance to NEP-2020 w.e.f. 2023-24 (in phased manner)

DEPARTMENT OF BOTANY, KURUKSHETRA UNIVERSITY, KURUKSHETRA

Scheme of Examination for Under-Graduate Programme
Under Multiple Entry-Exit, Internship and CBCS-LOCF in accordance to NEP-2020 w.e.f. 2023-24
(in phased manner)
Subject : Genetics

SEMESTER-1									
Remarks	**Course**	**Paper(s)**	**Nomenclature of Paper**	**Credits**	**Hours/ Week**	**Internal marks**	**External MarksB 23-GEN-101**	**Total Marks**	**Exam Duration**
Scheme A	**CC-1 MCC-1 4 credits**	B23-GEN-101	INTRODUCTION TO GENETICS	3	3	20	50	70	3 hrs.
			PRACTICAL	1	2	10	20	30	4 hrs.
	CC-M1 2 credits	B23-GEN-102	GENETICS TO MANKIND	1	1	10	20	30	3 hrs.
			PRACTICAL	1	2	5	15	20	4 hrs.
	MDC-1 3 credits	B23-GEN-103	CYTOGENETICS	2	2	15	35	50	3 hrs.
			PRACTICAL	1	2	5	20	25	4 hrs.
	CC-M1 4 credit	From Available CC-M1 of 4 credits as per NEP							
	AEC-1 2 credit	From Available AEC-1 of two credits as per NEP							
	SEC-1 3 credit	From Available SEC-1 of three credits as per NEP							
	VAC-1 2 credit	From Available VAC-1 of two credits as per NEP							

SEMESTER-2									
Remarks	**Course**	**Paper(s)**	**Nomenclature of Paper**	**Credits**	**Hours/ Week**	**Internal marks**	**External Marks**	**Total Marks**	**Exam Duration**
Scheme A	**CC-2 MCC-3 4 credits**	B23-GEN-201	MOLECULAR CYTOGENETICS	3	3	20	50	70	3 hrs.
			PRACTICAL	1	2	10	20	30	4 hrs.
	CC-M2 2 credits	B23-GEN-202	BASIC HUMAN GENETICS	1	1	10	20	30	3 hrs.
			PRACTICAL	1	2	5	15	20	4 hrs.
	MDC-2 3 credits	B23-GEN-203	PLANT BREEDING	2	2	15	35	50	3 hrs.
			PRACTICAL	1	2	5	20	25	4 hrs.
	CC-M2 4 credits	From Available CC-M2 of 4 credits as per NEP							
	AEC-2 2 credits	From Available AEC-2 of two credits as per NEP							
	SEC-2 3 credits	From Available SEC-2 of three credits as per NEP							
	VAC-2 2 credits	From Available VAC-2 of two credits as per NEP							
Internship of 4 credits of 4-6 weeks duration after 2nd Semester									

SEMESTER-3									
Remarks	**Course**	**Paper(s)**	**Nomenclature of Paper**	**Credits**	**Hours/ Week**	**Internal marks**	**External Marks**	**Total Marks**	**Exam Duration**
Scheme A	**CC-3 MCC-4 4 credits**	B23-GEN-301	MICROBIAL GENETICS	3	3	20	50	70	3 hrs.
			PRACTICAL	1	2	10	20	30	4 hrs.
	MDC-3 3 credits	B23-GEN-302	TRANSGENICS IN BIOLOGY	2	2	15	35	50	3 hrs.
			PRACTICAL	1	2	5	20	25	4 hrs.
	CC-M3 4 credits	From Available CC-M3 of 4 credits as per NEP							
	CC-M3 (V) 4 credits	From Available CC-M3(V) of 4 credits as per NEP							
	AEC-3 2 credit	From Available AEC-3 of two credits as per NEP							
	SEC-3 3 credit	From Available SEC-3 of three credits as per NEP							
SEMESTER-4									
Remarks	**Course**	**Paper(s)**	**Nomenclature of Paper**	**Credits**	**Hours/ Week**	**Internal marks**	**External Marks**	**Total Marks**	**Exam Duration**
Scheme A	**CC-4 MCC-6 4 credits**	B23-GEN-401	MOLECULAR GENETICS	3	3	20	50	70	3 hrs.
			PRACTICAL	1	2	10	20	30	4 hrs.
	CC-M4 (V) 4 credits	From Available CC-M4(V) of 4 credits as per NEP							
	AEC-4 2 credits	From Available AEC-3 of two credits as per NEP							
	VAC-3 2 credits	From Available VAC-3 of two credits as per NEP							
Internship of 4 credits of 4-6 weeks duration after 4th Semester (if not done after second semester)									

SEMESTER-5									
Remarks	**Course**	**Paper(s)**	**Nomenclature of Paper**	**Credits**	**Hours/ Week**	**Internal marks**	**External Marks**	**Total Marks**	**Exam Duration**
Scheme A	**CC-5 MCC-9 4 credits**	B23-GEN-501	POPULATION AND EVOLUTIONARY GENETICS	3	3	20	50	70	3 hrs.
			PRACTICAL	1	2	10	20	30	4 hrs.
	CC-M5 (V) 4 credits	From Available CC-M5(V) of 4 credits as per NEP							
	Internship 4 credits	Internship#4 credit after 4th semester							
SEMESTER-6									
Remarks	**Course**	**Paper(s)**	**Nomenclature of Paper**	**Credits**	**Hours/ Week**	**Internal marks**	**External Marks**	**Total Marks**	**Exam Duration**
Scheme A	**CC-6 MCC-11 4 credit**	B23-GEN-601	AGRICULTURAL GENETICS	3	3	20	50	70	3 hrs.
			PRACTICAL	1	2	10	20	30	4 hrs.
	CC-M6 4 credits	From Available CC-M6 of 4 credits as per NEP							
	CC-M7(V) 4 credits	From Available CC-M7(V) of 4 credits as per NEP							

Session: 2023-24			
Part A - Introduction			
Subject	**GENETICS**		
Semester	**SEMESTER-I**		
Name of the Course	**INTRODUCTION TO GENETICS**		
Course Code	**B23-GEN-101**		
Course Type: (CC/MCC/MDC/CC-M/DSEC/VOC/DSE/PC/AEC/VAC)	**CC-1/MCC-1**		
Level of the course (As per Annexure-I)	**100-109**		
Pre-requisite for the course (if any)	**Nil**		
Credits	Theory	Practical	Total
	3	1	4
Contact Hours	3	2	5
Theory Max. Marks: 70 Internal Assessment Marks: 20 End Term Exam Marks: 50	Duration of Exam: 3 hours		
Practical Max. Marks: 30 Internal Assessment Marks: 10 End Term Exam Marks: 20	Duration of Exam: 4 hours		

Part B- Contents of the Course

Instructions for Paper- Setter

1. Nine questions will be set in all. All questions will carry equal marks.
2. Question No.1 will be short answer type covering the entire syllabus and will be compulsory. The remaining eight questions will be set unit wise selecting two questions from each unit . The candidate will be required to attempt question No. 1 and four more questions selecting one question from each unit.

Unit	Topics	Contact Hours
I	**Background and Scope:** Introduction, historical background, epigenesis, preformation and germplasm theories of heredity, applications for human	11

	welfare. **Mendel's Laws of Inheritance:** Principles of segregation and independent assortment, expressivity and penetrance; numerical problems based on Mendelism **Interaction of Genes:** Incomplete inheritance and co-dominance, pleiotropism, modification of F2 ratios: epistasis, complementary genes, supplementary genes, inhibitory genes, duplicate genes, lethality and collaborators genes.	
II	**Linkage:** History, coupling and repulsion hypothesis, chromosomal theory of linkage, complete and incomplete linkage, linkage groups and significance of linkage. **Crossing Over:** Introduction, mechanism of meiotic crossing over, types of crossing over, interference and coincidence, theories regarding mechanism, factors affecting it and its significance.	11
III	**Sex Determination:** Sex determination in animals, humans and plants: hormonal and environmental control of sex; gene dosage compensation**.** **Sex Linkage:** Sex-linked characters and their inheritance in *Drosophila*, humans and plants. Sex limited and sex influenced traits. **Extranuclear Inheritance:** Basis of extranuclear inheritance in eukaryotes, A brief account of plastid and mitochondrial DNA; plastid inheritance, mitochondrial inheritance, shell coiling in snails, kappa particles in Paramecium.	12
IV	**Multiple Allelism:** Introduction, characteristics, examples in *Drosophila*, rabbit and humans. **Blood Group Inheritance in Human:** Blood antigens, antigen-antibody reaction, inheritance of A, B, AB, & O blood types. Rh factor and its inheritance, M-N blood group type and its inheritance. **Quantitative Inheritance:** Characteristics of polygenes, examples: skin colour in humans, kernel colour in wheat, cob length in maize and grain yield; effect of environment on quantitative inheritance.	11
V*	**PRACTICAL** 1. To study the structure and functioning of a compound microscope. 2. Numerical problems on Mendelism and on modified F2 ratios: Complementary inhibitory, epistatic, duplicate, supplementary and lethal gene interactions and multiple alleles. 3. Study of polytene chromosomes and lampbrush chromosomes from permanent slides. 4. Detection of sex chromatin bodies: Barr bodies and drumsticks of human beings 5. Study of ABO groups & Rh factor. 6. Meiosis through temporary squash preparation. 7. To study the karyotype using a given metaphase chromosome picture	30

	(*Allium cepa*).	

Suggested Evaluation Methods

Internal Assessment: ➢ **Theory** ·Class Participation: ·Seminar/presentation/assignment/quiz/class test etc.: ·Mid-Term Exam: ➢ **Practicum** ·Class Participation: ·Seminar/Demonstration/Viva-voce/Lab records etc.: ·Mid-Term Exam:	**End Term Examination:**

Part C-Learning Resources

Recommended Books/e-resources/LMS:

- Becker, W.M., Kleinsmith, L.J., Hardin. J. and Bertoni, G. P. 2009. The World of the Cell. 7th edition. Pearson Benjamin Cummings Publishing, San Francisco.
- Cooper, G.M. and Hausman, R.E. 2009. The Cell: A Molecular Approach. 5th Ed. Sinauer Associates, Inc. • Publishers Sunderland, Massachusetts U.S.A.
- De Robertis, E.D.P. and De Robertis, E.M.F. 2006. Cell and Molecular Biology. 8th edition. Lippincott Williams and Wilkins, Philadelphia
- Karp, G. 2010. Cell and Molecular Biology: Concepts and Experiments. 6th Edition. John Wiley & Sons. Inc.
- Lewin, B. 2018. Genes XII, Oxford University Press, Oxford, UK
- Alberts, B.Bray, D.Lewis, J., Raff, M.., Roberts, K. and Watson J.D. 1999. Molecular Biology of Cell. Garland Publishing Co., Inc., New York, USA.
- Gupta, P.K. 1999. A textbook of Cell and Molecular Biology. Rastogi Publications, Meerut, India.
- Kleinsmith, L. J and Kish, V.M. 1995. Principles of Cell and Molecular Biology (2nd edition) Harper Collins College Publishers, New York, USA.
- Lodish, H., Berk, A., Zipursky, S.L., Matsudaria, P., Baltimoe, D. and Darnell, J. 2000. Molecular, Cell Biology, W.H. Freeman and Co., New York., USA.

Session: 2023-24			
Part A - Introduction			
Subject	**GENETICS**		
Semester	**SEMESTER-I**		
Name of the Course	**GENETICS TO MANKIND**		
Course Code	**B23-GEN-102**		
Course Type: (CC/MCC/MDC/CC-M/DSEC/VOC/DSE/PC/AEC/VAC)	**CC-M1**		
Level of the course (As per Annexure-I)	**100-109**		
Pre-requisite for the course (if any)	Nil		
Credits	Theory	Practical	Total
	2	1	3
Contact Hours	2	2	4
Theory Max. Marks: 50 Internal Assessment Marks: 15 End Term Exam Marks: 35	Duration of Exam: 3 hours		
Practical Max. Marks: 20 Internal Assessment Marks: 5 End Term Exam Marks: 15	Duration of Exam: 4 hours		

Part B- Contents of the Course

Instructions for Paper- Setter

1. Nine questions will be set in all. All questions will carry equal marks.
2. Question No.1 will be short answer type covering the entire syllabus and will be compulsory. The remaining eight questions will be set unit wise selecting two questions from each unit . The candidate will be required to attempt question No. 1 and four more questions selecting one question from each unit.

Unit	Topics	Contact Hours

I	**HISTORY AND IMPACT OF GENETICS IN MEDICINE AND SOCIETY**: The history of Genetics to Medicine and Society, Medical Genetics, Heredity and environment (twin studies), Eugenics, Euthenics and Euphenics.	7
II	**GENETIC MODIFICATIONS AND DISORDERS:** Cross breeding and genetic modifications in plants and animals Genetic diseases and disorders, Genetic Testing (Prenatal & Postnatal)	8
III	**HUMAN GENOME PROJECT:** Project, Beginning and Organization of the HGP, Sequencing of the Human Genome, Promises and Achievements.	8
IV	**GENE THERAPY:** Stem cells- Properties, types and sources. A brief account on Cord blood banking and Stem cell therapy	7
V*	**PRACTICAL** 1. Karyotype studies of Normal male and female Human from micro photographs 2. Preparation of Idiograms 3. Identification of chromosomal disorders with the help of karyotype. 4. Project report on Genetic Disorders 5. Meiosis through temporary squash preparation. 6. To study the karyotype using a given metaphase chromosome picture (A*llium cepa*). 7. Problems on Genetics based on dihybrid crosses, sex-linked inheritance and blood Groups. 8. Study of various human genetic traits. Genetic disorders	30

Suggested Evaluation Methods

Internal Assessment: ➢ **Theory** ·Class Participation: ·Seminar/presentation/assignment/quiz/class test etc.: ·Mid-Term Exam: ➢ **Practicum** ·Class Participation: ·Seminar/Demonstration/Viva-voce/Lab records etc.: ·Mid-Term Exam:	**End Term Examination:**

Part C-Learning Resources

Recommended Books/e-resources/LMS:

- Introduction to Genetics, A Molecular Approach, T. Brown, Garland Science, 2012
- Genome Duplication, Concepts, Mechanism, Evolution and Disease, M.L. De Pamphilis and S.D. Bell, Garland Science, 2011.
- Human Molecular Genetics, 4th ed., T.Strachan and A.Read, Garland Science, Taylor and Francis Group, 2011.
- A Guide to Genetic Counseling, 2nd ed., W.R.Uhlmann, J.L.Schuette and B.M.Yashar, Wiley, Blackwell, 2009.

Session: 2023-24			
Part A - Introduction			
Subject	**GENETICS**		
Semester	**SEMESTER-I**		
Name of the Course	**CYTOGENETICS**		
Course Code	**B23-GEN-103**		
Course Type: (CC/MCC/MDC/CC-M/DSEC/VOC/DSE/PC/AEC/VAC)	**MDC-1**		
Level of the course (As per Annexure-I)	**100-109**		
Pre-requisite for the course (if any)	Nil		
Credits	Theory	Practical	Total
	2	1	3
Contact Hours	2	2	4
Theory Max. Marks: 50 Internal Assessment Marks: 15 End Term Exam Marks: 35	Duration of Exam: 3 hours		
Practical Max. Marks: 25 Internal Assessment Marks: 5 End Term Exam Marks: 20	Duration of Exam: 4 hours		

Part B- Contents of the Course

Instructions for Paper- Setter

1. Nine questions will be set in all. All questions will carry equal marks.
2. Question No.1 will be short answer type covering the entire syllabus and will be compulsory. The remaining eight questions will be set unit wise selecting two questions from each unit . The candidate will be required to attempt question No. 1 and four more questions selecting one question from each unit.

Unit	Topics	Contact Hours
I	**Cell:** Cell as a unit of structure and function. Organization of plant and animal cells. **Nucleus:** Structure, nuclear pore complex, nucleolus, sex chromatin (Barr body).	8
II	**Chromosomes:** Structure and morphology of chromosomes, chemical organization, karyotype study. **Cell Cycle:** Different Phases of Cell cycle, Brief account of Mitosis and Meiosis	8
III	**Linkage:** History, coupling and repulsion hypothesis, chromosomal theory of linkage, linkage groups and significance of linkage. **Crossing Over:** Introduction, mechanism and its significance.	7
IV	**Structural changes in chromosomes:** Deficiencies, duplications, inversions and translocations; their consequences. **Numerical changes in chromosomes:** Aneuploidy, euploidy, their types and applications.	7
V*	**PRACTICAL** 1.To study the structure and functioning of a compound microscope. 2. Karyotype studies of Normal male and female Human from micro photographs 3. Preparation of Idiograms 4. Identification of chromosomal disorders with the help of karyotype. 5. Study of different stages of mitosis and meiosis from permanent slides. 6. To study different mitotic stages in root tips of *Allium cepa*. 7. To work out the genetics of a cross from the given F_{-2} harvest.	30

Suggested Evaluation Methods

Internal Assessment:	**End Term Examination:**
➢ **Theory** ·Class Participation: ·Seminar/presentation/assignment/quiz/class test etc.: ·Mid-Term Exam: ➢ **Practicum** ·Class Participation: ·Seminar/Demonstration/Viva-voce/Lab records etc.: ·Mid-Term Exam:	

Part C-Learning Resources

Recommended Books/e-resources/LMS:

- Cooper, G.M. and Hausman, R.E. 2009. The Cell: A Molecular Approach. 5th Ed. Sinauer Associates, Inc. • Publishers Sunderland, Massachusetts U.S.A.
- De Robertis, E.D.P. and De Robertis, E.M.F. 2006. Cell and Molecular Biology. 8th edition. Lippincott Williams and Wilkins, Philadelphia
- Snustad, D.P., Simmons, M.J. (2009). Principles of Genetics. V Edition. John Wiley and Sons In.
- Klug, W.S., Cummings, M.R., Spencer, C.A. (2012). Concepts of Genetics. X Edition. Benjamin Cumming
- Griffiths, A.J.F., Wessler, S.R., Lewontin, R.C. and Carroll, S.B. Introduction to Genetic Analysis. IX Edition. W. H. Freeman and Co.
- Gardner, E.J., Simmons, M.J., Snustad, D.P. (2008). Principles of Genetics. VIII Edition. Wiley India

Session: 2023-24			
Part A - Introduction			
Subject	**GENETICS**		
Semester	**SEMESTER - II**		
Name of the Course	**MOLECULAR CYTOGENETICS**		
Course Code	**B23-GEN-201**		
Course Type: (CC/MCC/MDC/CC-M/DSEC/VOC/DSE/PC/AEC/VAC)	**CC-2/MCC-3**		
Level of the course (As per Annexure-I)	**100-109**		
Pre-requisite for the course (if any)	Nil		
Credits	Theory	Practical	Total
	3	1	4
Contact Hours	3	2	5
Theory Max. Marks: 70 Internal Assessment Marks: 20 End Term Exam Marks: 50	Duration of Exam: 3 hours		
Practical Max. Marks: 30 Internal Assessment Marks: 10 End Term Exam Marks: 20	Duration of Exam: 4 hours		

Part B- Contents of the Course

Instructions for Paper- Setter

1. Nine questions will be set in all. All questions will carry equal marks.
2. Question No.1 will be short answer type covering the entire syllabus and will be compulsory. The remaining eight questions will be set unit wise selecting two questions from each unit . The candidate will be required to attempt question No. 1 and four more questions selecting one question from each unit.

Unit	Topics	Contact Hours
I	**Genome Organization:** Hierarchy in genome organization, Mobile DNA. Brief account of Epigenetics.	11

	Somatic Cell Genetics: Agents and mechanism of cell fusion, Heterokaryon – selection of hybrids and chromosome segregation	
II	**Mutation:** Basic features of mutation, Phenotypic effects of mutations, Molecular basis of gene mutation, Mutations induced by chemicals, radiation, Mutations caused by the DNA replication machinery, Detection of mutation- The Ames Test. **DNA repair mechanisms:** DNA repair mechanisms; Diseases resulting from defects in DNA repair mechanisms	11
III	**Molecular Cytogenetic Techniques:** DNA fingerprinting: Principle, procedure and applications, Flow cytometry, Chromosome painting, Polymerase chain reaction (PCR), Fluorescence in situ hybridization (FISH). **Mitochondrial DNA and human diseases:** Structure of mitochondrial DNA and human diseases.	12
IV	**Genetics of cancer:** Properties of cancer cells, metastasis, Oncogenes, Tumor suppressor genes. **Drosophila Genetics:** Introduction to *Drosophila* genetics, advantages of *Drosophila* as a model organism for genetic studies. Polytene chromosomes.	11
V*	**PRACTICAL** 1. Demonstration of Barr bodies in leucocytes of human female 2. Demonstration of salivary gland chromosomes from Chironomus /Drosophila Larvae 3. Study of meiosis from Grasshopper / Rat testes using smear method 4. Histological demonstration of meiosis in Rat testis 5. Preparation of human karyotypes by using photograph/picture 6. Problems on Genetics based on dihybrid crosses, sex-linked inheritance and blood Groups. 7. Study of various human genetic traits. Genetic disorders 8. Study of mDNA disorders through Photographic slides	30

Suggested Evaluation Methods

Internal Assessment: ➢ **Theory** ·Class Participation: ·Seminar/presentation/assignment/quiz/class test etc.: ·Mid-Term Exam: ➢ **Practicum** ·Class Participation: ·Seminar/Demonstration/Viva-voce/Lab records etc.: ·Mid-Term Exam:	**End Term Examination:**

Part C-Learning Resources

Recommended Books/e-resources/LMS:

- Atherly, A.G., J.R. Girton and J.F. McDonald. The Science of Genetics. Saunders College Publishing, Harcourt Brace College Publishers, NY.
- Brooker, R.J. Genetics: Analysis and Principles, Benjamin Cummings, Longman
- Fairbanks, D.J.and W.R.Anderson. Genetics – The continuity of Life. Brooks/Cole Publishing Company ITP, NY, Toronto.
- Gardner, E.J., M.J. Simmons and D.P. Snustad. Principles of Genetics. John Wiley and Sons,Inc. NY.
- Griffiths, A.J.F., J.H.Miller, D.T. Suzuki, R.C. Lewontin and W.M. Gelbart. An Introduction to genetic analysis. W.H. Freeman and Company, NewYork.
- Lewin, B. Genes. VI. Oxford University Press, Oxford, New York, Tokyo.
- Snustad, D.P. and M.J. Simmons. Principles of Genetics. John Wiley & Sons.
- Watson, J.D., N.H. Hopkins, J.W. Roberts, J.A. Steiz and A.M. Weiner, Molecular Biology of Genes. The Benjamin/Cummings Pub. Co. Inc.Tokyo
- Mange E.J.and A.P.Mange.Basic Human Genetics 2nd edn.Sinauer Associates
- Russel P. J. Genetics 5th edn.The Benjamin/Cummings Pub.Co.
- Vogel, F. and A.G.Motulsky.Human Genetics . 2nd edn.Springer-Verlog, NY
- Hartl.D.L.and E.W.Jones: Genetics-Principles and analysis.4th edn. Jones & Bartlett Pub.Boston
- Weaver R.F. & P.W.Hedrick : Genetics 3rd edn. Wm.C.Brown Pub.London
- Tollefsbol T. Handbook of Epigenetics : The New Molecular and Medical Genetics. Academic Press

Session: 2023-24			
Part A - Introduction			
Subject	**GENETICS**		
Semester	**SEMESTER-II**		
Name of the Course	**BASIC HUMAN GENETICS**		
Course Code	**B23-GEN-202**		
Course Type: (CC/MCC/MDC/CC-M/DSEC/VOC/DSE/PC/AEC/VAC)	**CC-M2**		
Level of the course (As per Annexure-I)	**100-109**		
Pre-requisite for the course (if any)	Nil		
Credits	Theory	Practical	Total
	3	1	4
Contact Hours	3	2	5
Theory Max. Marks: 50 Internal Assessment Marks: 15 End Term Exam Marks: 35	Duration of Exam: 3 hours		
Practical Max. Marks: 20 Internal Assessment Marks: 5 End Term Exam Marks: 15	Duration of Exam: 4 hours		

Part B- Contents of the Course

Instructions for Paper- Setter

1. Nine questions will be set in all. All questions will carry equal marks.
2. Question No.1 will be short answer type covering the entire syllabus and will be compulsory. The remaining eight questions will be set unit wise selecting two questions from each unit . The candidate will be required to attempt question No. 1 and four more questions selecting one question from each unit.

Unit	Topics	Contact Hours
I	**History and Development of Human Genetics:** Overview of historical milestones in Human genetics, Fields of Human genetics, Study tools in	11

	Human Genetics: pedigree- gathering family history symbols, construction of pedigree, pedigree analysis in monogenetic traits; Human Genome Project.	
II	**Human Cytogenetics:** Human chromosomes, Human karyotype, Nomenclature of banding, techniques in human chromosome analysis, Nomenclature of aberrant karyotypes; autosomal and sex chromosomal abnormalities and common genetic disorders: Down syndrome, Klinefelter syndrome, Turner syndrome, Cri-du-chat syndrome, Haemophilia, Alkaptonuria.	12
III	**Cancer genetics:** Cancer cells, Characteristics of cancer cells, origin, tumour suppressor genes, Oncogenes; Types and cure of cancer, Leukaemias, Lymphomes, myelomas.	11
IV	**Human genetics and Ethical, legal and social considerations:** Human cloning; Human rights, Surrogate mothers, Ethical, legal and social issues in Human Genetics, Medical ethics in India.	11
V*	**PRACTICAL** 1. Preparation of Karyotype of Normal male and female from the provided photographs of metaphase plates. 2. To prepare karyotype for the provided metaphase plates and identify the genetic condition: i. Down' syndrome ii. Turner syndrome iii. Klinefelter syndrome iv. Patau syndrome v. Fragile X syndrome 3. To study inheritance patterns by pedigree analysis. 4. Preparation of Idiograms from the provided photographs of metaphase plates.	30

Suggested Evaluation Methods

Internal Assessment: ➢ **Theory** ·Class Participation: ·Seminar/presentation/assignment/quiz/class test etc.: ·Mid-Term Exam: ➢ **Practicum** ·Class Participation: ·Seminar/Demonstration/Viva-voce/Lab records etc.: ·Mid-Term Exam:	**End Term Examination:**

Part C-Learning Resources

Recommended Books/e-resources/LMS:

- Human Heredity : Principles and Issues by Micheal R. Cummings; 11th edition, Cengage Learning, 2016.
- Essential of Human Genetics (4th edition) by S. M. Bhatnagar, M. L. Kothari and L. A. Mehta (ISBN: 81-250-1426-8).
- Cell Biology, Genetics, Molecular Biology, Evolution and Ecology by P S Verma and V K Agraval (Multicolour/14th Edition) Published by S. Chand and company Ltd., New Delhi (ISBN: 81-219-2442-1).
- Verma, Ram S. / Babu, Arvind, Human Chromosomes, Principles and Techniques 2nd edition, Mc Graw-Hill, Inc., New York, 1995, ISBN 0-07-105432-4
- Essential of Modern Genetics by V C Shah. Nirav Prakashan, Ahmedabad
- Hema Purandare & Amit Chakravarty, Bhalani Publishing House, Mumbai. Human Cytogenetic Techniques & Clinical Applications, 2000, ISBN 81 85578 41 9
- Essentials of Human Genetics by S.M. Bhatnagar et al, 4th Edition, (1999), Orient Longman. ISBN: 81-250-1426-8
- Modern Genetic Analysis, Griffiths AJF, Gelbart WM, Miller JH et al., - Freeman
- An Introduction to Genetic Analysis, Griffiths AJF, Miller JH, Suzuki DT et al., - Freeman

Session: 2023-24			
Part A - Introduction			
Subject	**GENETICS**		
Semester	**SEMESTER-II**		
Name of the Course	**PLANT BREEDING**		
Course Code	**B23-GEN-203**		
Course Type: (CC/MCC/MDC/CC-M/DSEC/VOC/DSE/PC/AEC/VAC)	**MDC-2**		
Level of the course (As per Annexure-I)	**100-109**		
Pre-requisite for the course (if any)	Nil		
Credits	Theory	Practical	Total
	2	1	3
Contact Hours	2	2	4
Theory Max. Marks: 50 Internal Assessment Marks: 15 End Term Exam Marks: 35	Duration of Exam: 3 hours		
Practical Max. Marks: 25 Internal Assessment Marks: 5 End Term Exam Marks: 20	Duration of Exam: 4 hours		

Part B- Contents of the Course

Instructions for Paper- Setter

1. Nine questions will be set in all. All questions will carry equal marks.
2. Question No.1 will be short answer type covering the entire syllabus and will be compulsory. The remaining eight questions will be set unit wise selecting two questions from each unit . The candidate will be required to attempt question No. 1 and four more questions selecting one question from each unit.

Unit	Topics	Contact Hours
I	Objectives of plant breeding; modes of reproduction in crop plants; important achievements and undesirable consequences of plant breeding	7

II	Centers of origin and domestication of crop plants; plant genetic resources; acclimatization; selection methods for self-pollinated, cross-pollinated and vegetatively propagated plants	7
III	Cytogenetic basis of plant breeding-variation in chromosome number, mutation, fertility regulation mechanism, gene recombination in plant breeding	8
IV	Inbreeding depression and heterosis; role of mutations, distant hybridization and biotechnology in crop improvement.	8
V*	**PRACTICAL** 1. To study strains and fixatives used in cytogenetics. 2. To study the karyotype using a given metaphase chromosome picture (A*llium cepa*). 3. To work out the genetics of a cross from the given F_{-2} harvest. 4. To study different tools and techniques used in plant breeding. 5. To study grafting methods and its advantages. 6. To study different methods of vegetative propagation. 7. Plant Breeder's kit, Study of germplasm of various crops 8. Study of floral structure of self-pollinated and cross pollinated crops 9. Emasculation and hybridization techniques in self pollinated crops 10. Emasculation and hybridization techniques in cross pollinated crops 11. Designs used in plant breeding experiments, analysis of Randomized Block Design 12. Methods of calculating mean, range, variance, standard deviation, heritability 13. Prediction of performance of double cross hybrids 14. Consequences of inbreeding on genetic structure of resulting populations 15. Study of male sterility system	30

Suggested Evaluation Methods

Internal Assessment: ➢ **Theory** ·Class Participation: ·Seminar/presentation/assignment/quiz/class test etc.: ·Mid-Term Exam: ➢ **Practicum** ·Class Participation: ·Seminar/Demonstration/Viva-voce/Lab records etc.: ·Mid-Term Exam:	**End Term Examination:**

Part C-Learning Resources

Recommended Books/e-resources/LMS:

- Singh, B.D. 2022. Plant Breeding: Principles and Methods. Medtech Science Press. 12th edition.
- Singh, BD. 2020. Genetics. Kalyani Publishers Delhi.
- Cummings MR, Klug WS, Spencer, CA, Palladino, MA, Killian D. 2019. Concepts of Genetics, Pearson. 12th edition.
- Chopra, V.L. 2018. Plant Breeding: Theory and Practices New India Publishing Agency-NIPA, New Delhi. 2nd edition.
- Simmonds, N.W. & Smart J. 2013. Principles of crop improvement. Wiley India Pvt Ltd. 2nd edition.
- Acquaah, G. 2012. Principles of Plant Genetics & Breeding. Willey-Blackwell Publishing. 2nd edition.
- Gardner E.J., Simmons M.J., Snustad D.P. 2012. Principles of Genetics. Wiley India. 8th edition.
- Griffiths, A.J.F., Wessler, S.R., Carroll, S.B., Doebley, J. 2010. Introduction to Genetic Analysis.W. H. Freeman and Co., U.S.A. 10th edition.
- Brown, J. Caligari, P. & Campos H. 2008. Plant Breeding. Willey-Blackwell Publishing. 2nd edition.

KURUKSHETRA UNIVERSITY KURUKSHETRA

Scheme of Examination and Syllabus for Under-Graduate Programmes – Multidisciplinary

Scheme - A

(Subject: Biochemistry)

Under Multiple Entry-Exit, Internship and CBCS-LOCF in accordance to NEP-2020w.e.f. 2023-24 (in phased manner)

DEPARTMENT OF BIOCHEMISTRY, KURUKSHETRA UNIVERSITY, KURUKSHETRA

Scheme of Examination and Syllabus for Under-Graduate Programmes – Multidisciplinary (Scheme – A)

Under Multiple Entry-Exit, Internship and CBCS-LOCF in accordance to NEP-2020 w.e.f. 2023-24 (in phased manner), Subject: Biochemistry

FIRST YEAR: SEMESTER-1									
Semester	**Course**	**Paper(s)**	**Nomenclature of Paper**	**Credits**	**Hours/ Week**	**Internal marks**	**External Marks**	**Total Marks**	**Exam Duration**
I	**CC-1/ MCC-1 4 credits**	B23-BCH-101	Biomolecules	3	3	20	50	70	3 hrs.
			Practical	1	2	10	20	30	4 hrs.
	CC-M1 2 credits	B23-BCH-103	Molecules of Life-I	1	1				3 hrs.
			Practical	1	2	5	15	20	4 hrs.
	MDC-1 3 credits	B23-BCH-104	Biochemical Insights into the Human Body	2	2	15	35	50	3 hrs.
			Practical	1	2	5	20	25	4 hrs.
	AEC-1 2 credits	From Available AEC-1 of two credits as per NEP							
	SEC-1 3 credits	From Available SEC-1 of three credits as per NEP							
	VAC-1 2 credits	From Available VAC-1 of two credits as per NEP							
FIRST YEAR: SEMESTER-2									
Semester	**Course**	**Paper(s)**	**Nomenclature of Paper**	**Credits**	**Hours/ Week**	**Internal marks**	**External Marks**	**Total Marks**	**Exam Duration**
II	**CC-2/ MCC-3 4 credits**	B23-BCH-201	Enzymology	3	3	20	50	70	3 hrs.
			Practical	1	2	10	20	30	4 hrs.
	CC-M2 2 credits	B23-BCH-203	Molecules of Life-II	1	1	10	20	30	3 hrs.
			Practical	1	2	5	15	20	4 hrs.
	MDC-2 3 credits	B23-BCH-204	Biochemistry& Health	2	2	15	35	50	3 hrs.
			Practical	1	2	5	20	25	4 hrs.
	AEC-2 2 credits	From Available AEC-2 of two credits as per NEP							
	SEC-2 3 credits	From Available SEC-2 of three credits as per NEP							
	VAC-2 2 credits	From Available VAC-2 of two credits as per NEP							
Internship of 4 credits of 4-6 weeks duration after 2nd Semester									

DEPARTMENT OF BIOCHEMISTRY, KURUKSHETRA UNIVERSITY, KURUKSHETRA

SECOND YEAR: SEMESTER-3

Semester	Course	Paper(s)	Nomenclature of Paper	Credits	Hours/ Week	Internal marks	External Marks	Total Marks	Exam Duration
III	**CC-3/ MCC-4 4 credits**	B23-BCH-301	Carbohydrate and Lipid Metabolism	3	3	20	50	70	3 hrs.
			Practical	1	2	10	20	30	4 hrs.
	MDC-3 3 credits	B23-BCH-303	Biochemistry of Lifestyle Diseases	2	2	15	35	50	3 hrs.
			Practical	1	2	5	20	25	4 hrs.
	CC-M3 4 credits	From Available CC-M3 of 4 credits as per NEP							
	AEC-3 2 credits	From Available AEC-3 of two credits as per NEP							
	SEC-3 3 credits	From Available SEC-3 of three credits as per NEP							

SECOND YEAR: SEMESTER-4

Semester	Course	Paper(s)	Nomenclature of Paper	Credits	Hours/ Week	Internal marks	External Marks	Total Marks	Exam Duration
IV	**CC-4/ MCC-6 4 credits**	B23-BCH-401	Amino acid and Nucleotide Metabolism	3	3	20	50	70	3 hrs.
			Practical	1	2	10	20	30	4 hrs.
	CC-M4(V) 4 credits	From Available CC-M4(V) of 4 credits as per NEP							
	AEC-4 2 credits	From Available AEC-3 of two credits as per NEP							
	VAC-3 2 credit	From Available VAC-3 of two credits as per NEP							

Internship of 4 credits of 4-6 weeks duration after 4th Semester (if not done after second semester)

DEPARTMENT OF BIOCHEMISTRY, KURUKSHETRA UNIVERSITY, KURUKSHETRA

THIRD YEAR: SEMESTER-5									
Semester	**Course**	**Paper(s)**	**Nomenclature of Paper**	**Credits**	**Hours/ Week**	**Internal marks**	**External Marks**	**Total Marks**	**Exam Duration**
V	**CC-5/ MCC-9 4 credits**	B23-BCH-501	Molecular Biology	3	3	20	50	70	3 hrs.
			Practical	1	2	10	20	30	4 hrs.
	CC-M5(V) 4 credits	From Available CC-M5(V) of 4 credits as per NEP							
	Internship 4 credits	Internship#4 credit after 4th semester							
THIRD YEAR: SEMESTER-6									
Semester	**Course**	**Paper(s)**	**Nomenclature of Paper**	**Credits**	**Hours/ Week**	**Internal marks**	**External Marks**	**Total Marks**	**Exam Duration**
VI	**CC-6/ MCC-11 4 credits**	B23-BCH-601	Immunology	3	3	20	50	70	3 hrs.
			Practical	1	2	10	20	30	4 hrs.
	CC-M6 4 credits	From Available CC-M6 of 4 credits as per NEP							
	CC-M7(V) 4 credits	From Available CC-M7(V) of 4 credits as per NEP							

PROGRAM LEARNING OUTCOMES (PLO)

1. Inculcate comprehensive knowledge and acquire skills in the field's biology
2. Develop experimenting skills in laboratory that enhances critical thinking skills, logical application these skills in problem solving
3. To equip students with necessary theoretical and practical skills to enable them to pursue multidisciplinary courses at Post Graduate level
4. Demonstrate the abilities to work in collaborative activities and inculcate leadership qualities
5. Identify and follow the ethical issues related to Biology, biosafety, and perform unbiased and truthful actions
6. Capability for raising relevant questions relating to basic understanding and applications biology and planning, executing and reporting the results of an experiment or investigation

KURUKSHETRA UNIVERSITY KURUKSHETRA

Scheme of Examination and Syllabus for Under-Graduate Programmes

Scheme-B

(When student opts to continue with single Major subject in second year)

(Subject: Biochemistry)

Under Multiple Entry-Exit, Internship and CBCS-LOCF in accordance to NEP-2020 w.e.f. 2023-24 (in phased manner)

DEPARTMENT OF BIOCHEMISTRY, KURUKSHETRA UNIVERSITY, KURUKSHETRA

Scheme of Examination and Syllabus for Under-Graduate Programmes – (**Scheme-B)**

(When student opts to continue with single Major subject in second year)

Under Multiple Entry-Exit, Internship and CBCS-LOCF in accordance to NEP-2020 w.e.f. 2023-24 (in phased manner), Subject: Biochemistry

FIRST YEAR: SEMESTER-1									
Semester	**Course**	**Paper(s)**	**Nomenclature of Paper**	**Credits**	**Hours/ Week**	**Internal marks**	**External Marks**	**Total Marks**	**Exam Duration**
I	**CC-1/ MCC-1 4 credits**	B23-BCH-101	Biomolecules	3	3	20	50	70	3 hrs.
			Practical	1	2	10	20	30	4 hrs.
	CC-M1 2 credits	B23-BCH-103	Molecules of Life-I	1	1	10	20	30	3 hrs.
			Practical	1	2	5	15	20	4 hrs.
	MDC-1 3 credits	B23-BCH-104	Biochemical Insights into the Human Body	2	2	15	35	50	3 hrs.
			Practical	1	2	5	20	25	4 hrs.
	AEC-1 2 credits	From Available AEC-1 of two credits as per NEP							
	SEC-1 3 credits	From Available SEC-1 of three credits as per NEP							
	VAC-1 2 credits	From Available VAC-1 of two credits as per NEP							
FIRST YEAR: SEMESTER-2									
Semester	**Course**	**Paper(s)**	**Nomenclature of Paper**	**Credits**	**Hours/ Week**	**Internal marks**	**External Marks**	**Total Marks**	**Exam Duration**
II	**CC-2/ MCC-3 4 credits**	B23-BCH-201	Enzymology	3	3	20	50	70	3 hrs.
			Practical	1	2	10	20	30	4 hrs.
	CC-M2 2 credits	B23-BCH-203	Molecules of Life-II	1	1	10	20	30	3 hrs.
			Practical	1	2	5	15	20	4 hrs.
	MDC-2 3 credits	B23-BCH-204	Biochemistry& Health	2	2	15	35	50	3 hrs.
			Practical	1	2	5	20	25	4 hrs.
	AEC-2 2 credits	From Available AEC-2 of two credits as per NEP							
	SEC-2 3 credits	From Available SEC-2 of three credits as per NEP							
	VAC-2 2 creditss	From Available VAC-2 of two credits as per NEP							
Internship of 4 credits of 4-6 weeks duration after 2nd Semester									

DEPARTMENT OF BIOCHEMISTRY, KURUKSHETRA UNIVERSITY, KURUKSHETRA

SECOND YEAR: SEMESTER-3

Semester	Course	Paper(s)	Nomenclature of Paper	Credits	Hours/ Week	Internal marks	External Marks	Total Marks	Exam Duration
III	**MCC-2 4 credits**	B23-BCH-102	Cell Biochemistry	3	3	20	50	70	3 hrs.
			Practical	1	2	10	20	30	4 hrs.
	CC-3/ MCC-4 4 credits	B23-BCH-301	Carbohydrate and Lipid Metabolism	3	3	20	50	70	3 hrs.
			Practical	1	2	10	20	30	4 hrs.
	MCC-5 4 credits	B23-BCH-302	Hormones	3	3	20	50	70	3 hrs.
			Practical	1	2	10	20	30	4 hrs.
	MDC-3 3 credits	B23-BCH-303	Biochemistry of Lifestyle Diseases	2	2	15	35	50	3 hrs.
			Practical	1	2	5	20	25	4 hrs.
	CC-M3 (V) 4 credits	From Available CC-M3(V) of 4 credits as per NEP							
	AEC-3 2 credits	From Available AEC-3 of two credits as per NEP							
	SEC-3 3 credits	From Available SEC-3 of three credits as per NEP							

SECOND YEAR: SEMESTER-4

Semester	Course	Paper(s)	Nomenclature of Paper	Credits	Hours/ Week	Internal marks	External Marks	Total Marks	Exam Duration
IV	**CC-4/ MCC-6 4 credits**	B23-BCH-401	Amino acid and Nucleotide Metabolism	3	3	20	50	70	3 hrs.
			Practical	1	2	10	20	30	4 hrs.
	MCC-7 4 credits	B23-BCH-402	Basics of Genetic Information	3	3	20	50	70	3 hrs.
			Practical	1	2	10	20	30	4 hrs.
	MCC-8 4 credits	B23-BCH-403	Elementary Microbial Biochemistry	3	3	20	50	70	3 hrs.
			Practical	1	2	10	20	30	4 hrs.
	DSE-1 4 credits Select one option	B23-BCH-404	Animal Biochemistry	3	3	20	50	70	3 hrs.
			Practical	1	2	10	20	30	4 hrs.
		B23-BCH-405	Plant Biochemistry	3	3	20	50	70	3 hrs.
			Practical	1	2	10	20	30	4 hrs.
	CC-M4(V) 4 credits	From Available CC-M4(V) of 4 credits as per NEP							
	AEC-4 2 credits	From Available AEC-3 of two credits as per NEP							
	VAC-3 2 credits	From Available VAC-3 of two credits as per NEP							

Internship of 4 credits of 4-6 weeks duration after 4th Semester (if not done after second semester)

DEPARTMENT OF BIOCHEMISTRY, KURUKSHETRA UNIVERSITY, KURUKSHETRA

THIRD YEAR: SEMESTER-5									
Semester	**Course**	**Paper(s)**	**Nomenclature of Paper**	**Credits**	**Hours/ Week**	**Internal marks**	**External Marks**	**Total Marks**	**Exam Duration**
V	**CC-5/ MCC-9 4 credits**	B23-BCH-501	Molecular Biology	3	3	20	50	70	3 hrs.
			Practical	1	2	10	20	30	4 hrs.
	MCC-10 4 credits	B23-BCH-502	Biochemical Techniques	3	3	20	50	70	3 hrs.
			Practical	1	2	10	20	30	4 hrs.
	DSE-2 4 credits Select one Option	B23-BCH-503	Clinical Biochemistry	3	3	20	50	70	3 hrs.
			Practical	1	2	10	20	30	4 hrs.
		B23-BCH-504	Nutritional Biochemistry	3	3	20	50	70	3 hrs.
			Practical	1	2	10	20	30	4 hrs.
	DSE-3 4 credits Select one Option	B23-BCH-505	Molecular Basis of Infectious Diseases	3	3	20	50	70	3 hrs.
			Practical	1	2	10	20	30	4 hrs.
		B23-BCH-506	Food Biochemistry	3	3	20	50	70	3 hrs.
			Practical	1	2	10	20	30	4 hrs.
	Internship 4 credits	Internship#4 credit after 4th semester							

THIRD YEAR: SEMESTER-6									
Semester	**Course**	**Paper(s)**	**Nomenclature of Paper**	**Credits**	**Hours/ Week**	**Internal marks**	**External Marks**	**Total Marks**	**Exam Duration**
VI	**CC-6/ MCC-11 4 credits**	B23-BCH-601	Immunology	3	3	20	50	70	3 hrs.
			Practical	1	2	10	20	30	4 hrs.
	MCC-12 4 credits	B23-BCH-602	Recombinant DNA Technology	3	3	20	50	70	3 hrs.
			Practical	1	2	10	20	30	4 hrs.
	DSE-4 4 credits Select one Option	B23-BCH-603	Molecular Basis of non-infectious Diseases	3	3	20	50	70	3 hrs.
			Practical	1	2	10	20	30	4 hrs.
		B23-BCH-604	Industrial Biochemistry	3	3	20	50	70	3 hrs.
			Practical	1	2	10	20	30	4 hrs.
	DSE-5 4 credits Select one Option	B23-BCH-605	Plant Physiology	3	3	20	50	70	3 hrs.
			Practical	1	2	10	20	30	4 hrs.
		B23-BCH-606	Biopharmaceuticals	3	3	20	50	70	3 hrs.
			Practical	1	2	10	20	30	4 hrs.
	CC-M5(V) 4 credits	From Available CC-M5(V) of 4 credits as per NEP							

DEPARTMENT OF BIOCHEMISTRY, KURUKSHETRA UNIVERSITY, KURUKSHETRA

FOURTH YEAR: SEMESTER-7 (FOR HONOURS/HONOURS WITH RESEARCH IN BIOCHEMISTRY)									
Semester	**Course**	**Paper(s)**	**Nomenclature of Paper**	**Credits**	**Hours/ Week**	**Internal marks**	**External Marks**	**Total Marks**	**Exam Duration**
VII	**CC-H1 4 credits**	B23-BCH-701	Gene Regulation	4	4	30	70	100	3 hrs.
	CC-H2 4 credits	B23-BCH-702	Animal Cell Culture	4	4	30	70	100	3 hrs.
	CC-H3 4 credits	B23-BCH-703	Protein Purification	4	4	30	70	100	3 hrs.
	DSE-H1 4 credits Select one Option	B23-BCH-704	Clinical trials & Management	4	4	30	70	100	3 hrs.
		B23-BCH-705	Bioinformatics	4	4	30	70	100	3 hrs.
	PC-H1 4 credits	B23-BCH-706	Practical Based on B23-BCH-701 TO 704/705	4	8	30	70	100	6 hrs.
	CC-HM1 4 credits	From Available Minor of 4 credits as per NEP							
SEMESTER-8 (FOR HONOURS IN BIOCHEMISTRY)									
Semester	**Course**	**Paper(s)**	**Nomenclature of Paper**	**Credits**	**Hours/ Week**	**Internal marks**	**External Marks**	**Total Marks**	**Exam Duration**
VIII	**CC-H4 4 credits**	B23-BCH-801	Research Methods & Documentation	4	4	30	70	100	3 hrs.
	CC-H5 4 credits	B23-BCH-802	Biosafety and Intellectual Property Rights	4	4	30	70	100	3 hrs.
	CC-H6 4 credits	B23-BCH-803	Stem Cell Biology	4	4	30	70	100	3 hrs.
	DSE-H2 4 credits Select one option	B23-BCH-804	Biostatistics	4	4	30	70	100	3 hrs.
		B23-BCH-805	Agriculture Waste Management	4	4	30	70	100	3 hrs.
	PC-H2 4 credits	B23-BCH-806	Practical Based on B23-BCH-801 TO 804/805	4	8	30	70	100	6 hrs.
	CC-HM2 4 credits	From Available Minor of 4 credits as per NEP							
ORSEMESTER-8 (FOR HONOURS WITH RESEARCH IN BIOCHEMISTRY)									
Semester	**Course**	**Paper(s)**	**Nomenclature of Paper**	**Credits**	**Hours/ Week**	**Internal marks**	**External Marks**	**Total Marks**	**Exam Duration**
VIII	**CC-H4 4 credits**	B23-BCH-801	Research Methods& Documentation	4	4	30	70	100	3 hrs.
	CC-H5 4 credits	B23-BCH-802	Biosafety and Intellectual Property Rights	4	4	30	70	100	3 hrs.
	Project/Dissertation 12 credits	B23-BCH-807	Project/Dissertation	8+4	-	-	-	-	-
	CC-HM2 4 credits	From Available Minor of 4 credits as per NEP							

PROGRAM LEARNING OUTCOMES (PLO)

1. Inculcate comprehensive knowledge and acquire skills in the field's biology
2. Develop experimenting skills in laboratory that enhances critical thinking skills, logical application these skills in problem solving
3. To equip students with necessary theoretical and practical skills to enable them to pursue multidisciplinary courses at Post Graduate level
4. Demonstrate the abilities to work in collaborative activities and inculcate leadership qualities
5. Identify and follow the ethical issues related to Biology, biosafety, and perform unbiased and truthful actions
6. Capability for raising relevant questions relating to basic understanding and applications biology and planning, executing and reporting the results of an experiment or investigation

KURUKSHETRA UNIVERSITY KURUKSHETRA

Scheme of Examination and Syllabus for Under-Graduate Programmes - Single Major

(Scheme –C)

(A student will take admission in UG Programme with Single Major Subject in the first year)

(Subject: Biochemistry)

Under Multiple Entry-Exit, Internship and CBCS-LOCF in accordance to NEP-2020 w.e.f. 2023-24 (in phased manner)

DEPARTMENT OF BIOCHEMISTRY, KURUKSHETRA UNIVERSITY, KURUKSHETRA

Scheme of Examination for Under-Graduate Programme – Scheme C

(A student will take admission in UG Programme with Single Major Subject in the first year)

Under Multiple Entry-Exit, Internship and CBCS-LOCF in accordance to NEP-2020 w.e.f. 2023-24 (in phased manner), Subject: Biochemistry

FIRST YEAR: SEMESTER-1

Semester	Course	Paper(s)	Nomenclature of Paper	Credits	Hours/ Week	Internal marks	External Marks	Total Marks	Exam Duration
I	CC-1/ MCC-1 4 credits	B23-BCH-101	Biomolecules	3	3	20	50	70	3 hrs.
			Practical	1	2	10	20	30	4 hrs.
	MCC-2 4 credits	B23-BCH-102	Cell Biochemistry	3	3	20	50	70	3 hrs.
			Practical	1	2	10	20	30	4 hrs.
	MDC-1 3 credits	B23-BCH-104	Biochemical Insights into the Human Body	2	2	15	35	50	3 hrs.
			Practical	1	2	5	20	25	4 hrs.
	CC-M1 4 credits	From Available CC-M1 of 4 credits as per NEP							
	AEC-1 2 credits	From Available AEC-1 of two credits as per NEP							
	SEC-1 3 credits	From Available SEC-1 of three credits as per NEP							
	VAC-1 2 credits	From Available VAC-1 of two credits as per NEP							

FIRST YEAR: SEMESTER-2

Semester	Course	Paper(s)	Nomenclature of Paper	Credits	Hours/ Week	Internal marks	External Marks	Total Marks	Exam Duration
II	CC-2/ MCC-3 4 credits	B23-BCH-201	Enzymology	3	3	20	50	70	3 hrs.
			Practical	1	2	10	20	30	4 hrs.
	DSEC-2 4 credits	B23-BCH-202	Bioanalytical Techniques	3	3	20	50	70	3 hrs.
			Practical	1	2	10	20	30	4 hrs.
	MDC-2 3 credits	B23-BCH-204	Biochemistry& Health	2	2	15	35	50	3 hrs.
			Practical	1	2	5	20	25	4 hrs.
	CC-M2 4 credits	From Available CC-M2 of 4 credits as per NEP							
	AEC-2 2 credits	From Available AEC-2 of two credits as per NEP							
	SEC-2 3 credits	From Available SEC-2 of three credits as per NEP							
	VAC-2 2 credits	From Available VAC-2 of two credits as per NEP							

Internship of 4 credits of 4-6 weeks duration after 2nd Semester

DEPARTMENT OF BIOCHEMISTRY, KURUKSHETRA UNIVERSITY, KURUKSHETRA

SECOND YEAR: SEMESTER-3									
Semester	**Course**	**Paper(s)**	**Nomenclature of Paper**	**Credits**	**Hours/ Week**	**Internal marks**	**External Marks**	**Total Marks**	**Exam Duration**
III	**CC-3/ MCC-4 4 credits**	B23-BCH-301	Carbohydrate and Lipid Metabolism	3	3	20	50	70	3 hrs.
			Practical	1	2	10	20	30	4 hrs.
	MCC-5 4 credits	B23-BCH-302	Hormones	3	3	20	50	70	3 hrs.
			Practical	1	2	10	20	30	4 hrs.
	MDC-3 3 credits	B23-BCH-303	Biochemistry of Lifestyle Diseases	2	2	15	35	50	3 hrs.
			Practical	1	2	5	20	25	4 hrs.
	CC-M3 4 credits	From Available CC-M3 of 4 credits as per NEP							
	AEC-3 2 credits	From Available AEC-3 of two credits as per NEP							
	SEC-3 3 credits	From Available SEC-3 of three credits as per NEP							
	VAC-3 2 credits	From Available VAC-3 of two credits as per NEP							

SECOND YEAR: SEMESTER-4									
Semester	**Course**	**Paper(s)**	**Nomenclature of Paper**	**Credits**	**Hours/ Week**	**Internal marks**	**External Marks**	**Total Marks**	**Exam Duration**
IV	**CC-4/ MCC-6 4 credits**	B23-BCH-401	Amino acid and Nucleotide Metabolism	3	3	20	50	70	3 hrs.
			Practical	1	2	10	20	30	4 hrs.
	MCC-7 4 credits	B23-BCH-402	Basics of Genetic Information	3	3	20	50	70	3 hrs.
			Practical	1	2	10	20	30	4 hrs.
	MCC-8 4 credits	B23-BCH-403	Elementary Microbial Biochemistry	3	3	20	50	70	3 hrs.
			Practical	1	2	10	20	30	4 hrs.
	DSE-1 4 credits Select one option	B23-BCH-404	Animal Biochemistry	3	3	20	50	70	3 hrs.
			Practical	1	2	10	20	30	4 hrs.
		B23-BCH-405	Plant Biochemistry	3	3	20	50	70	3 hrs.
			Practical	1	2	10	20	30	4 hrs.
	CC-M4(V) 4 credits	From Available CC-M4(V) of 4 credits as per NEP							
	AEC-4 2 credits	From Available AEC-3 of two credits as per NEP							
	VAC-4 2 credits	From Available VAC-4 of two credits as per NEP							
Internship of 4 credits of 4-6 weeks duration after 4th Semester (if not done after second semester)									

DEPARTMENT OF BIOCHEMISTRY, KURUKSHETRA UNIVERSITY, KURUKSHETRA

THIRD YEAR: SEMESTER-5									
Semester	**Course**	**Paper(s)**	**Nomenclature of Paper**	**Credits**	**Hours/ Week**	**Internal marks**	**External Marks**	**Total Marks**	**Exam Duration**
V	**CC-5/ MCC-9 4 credits**	B23-BCH-501	Molecular Biology	3	3	20	50	70	3 hrs.
			Practical	1	2	10	20	30	4 hrs.
	MCC-10 4 credits	B23-BCH-502	Biochemical Techniques	3	3	20	50	70	3 hrs.
			Practical	1	2	10	20	30	4 hrs.
	DSE-2 4 credits Select one Option	B23-BCH-503	Clinical Biochemistry	3	3	20	50	70	3 hrs.
			Practical	1	2	10	20	30	4 hrs.
		B23-BCH-504	Nutritional Biochemistry	3	3	20	50	70	3 hrs.
			Practical	1	2	10	20	30	4 hrs.
	DSE-3 4 credits Select one Option	B23-BCH-505	Molecular Basis of Infectious Diseases	3	3	20	50	70	3 hrs.
			Practical	1	2	10	20	30	4 hrs.
		B23-BCH-506	Food Biochemistry	3	3	20	50	70	3 hrs.
			Practical	1	2	10	20	30	4 hrs.
	CC-M5(V) 4 credits	From Available CC-M5(V) of 4 credits as per NEP							
	Internship 4 credits	Internship#4 credit after 4th semester							
THIRD YEAR: SEMESTER-6									
Semester	**Course**	**Paper(s)**	**Nomenclature of Paper**	**Credits**	**Hours/ Week**	**Internal marks**	**External Marks**	**Total Marks**	**Exam Duration**
VI	**CC-6 MCC-11 4 credits**	B23-BCH-601	Immunology	3	3	20	50	70	3 hrs.
			Practical	1	2	10	20	30	4 hrs.
	MCC-12 4 credits	B23-BCH-602	Recombinant DNA Technology	3	3	20	50	70	3 hrs.
			Practical	1	2	10	20	30	4 hrs.
	DSE-4 4 credits Select one Option	B23-BCH-603	Molecular Basis of non-infectious Diseases	3	3	20	50	70	3 hrs.
			Practical	1	2	10	20	30	4 hrs.
		B23-BCH-604	Industrial Biochemistry	3	3	20	50	70	3 hrs.
			Practical	1	2	10	20	30	4 hrs.
	DSE-5 4 credits Select one Option	B23-BCH-605	Plant Physiology	3	3	20	50	70	3 hrs.
			Practical	1	2	10	20	30	4 hrs.
		B23-BCH-606	Biopharmaceuticals	3	3	20	50	70	3 hrs.
			Practical	1	2	10	20	30	4 hrs.
	CC-M6(V) 4 credits	From Available CC-M6(V) of 4 credits as per NEP							
	SEC-4 2 credits	From Available SEC-4 of two credits as per NEP							

DEPARTMENT OF BIOCHEMISTRY, KURUKSHETRA UNIVERSITY, KURUKSHETRA

FOURTH YEAR: SEMESTER-7 (FOR HONOURS/HONOURS WITH RESEARCH IN BIOCHEMISTRY)									
Semester	**Course**	**Paper(s)**	**Nomenclature of Paper**	**Credits**	**Hours/ Week**	**Internal marks**	**External Marks**	**Total Marks**	**Exam Duration**
VII	**CC-H1 4 credits**	B23-BCH-701	Gene Regulation	4	4	30	70	100	3 hrs.
	CC-H2 4 credits	B23-BCH-702	Animal Cell Culture	4	4	30	70	100	3 hrs.
	CC-H3 4 credits	B23-BCH-703	Protein Purification	4	4	30	70	100	3 hrs.
	DSE-H1 4 credits Select one Option	B23-BCH-704	Clinical trials & Management	4	4	30	70	100	3 hrs.
		B23-BCH-705	Bioinformatics	4	4	30	70	100	3 hrs.
	PC-H1 4 credits	B23-BCH-706	Practical Based on B23-BCH-701 TO 704/705	4	8	30	70	100	6 hrs.
	CC-HM1 4 credits	From Available Minor of 4 credits as per NEP							
SEMESTER-8 (FOR HONOURS IN BIOCHEMISTRY)									
Semester	**Course**	**Paper(s)**	**Nomenclature of Paper**	**Credits**	**Hours/ Week**	**Internal marks**	**External Marks**	**Total Marks**	**Exam Duration**
VIII	**CC-H4 4 credits**	B23-BCH-801	Research Methods & Documentation	4	4	30	70	100	3 hrs.
	CC-H5 4 credits	B23-BCH-802	Biosafety and Intellectual Property Rights	4	4	30	70	100	3 hrs.
	CC-H6 4 credits	B23-BCH-803	Stem Cell Biology	4	4	30	70	100	3 hrs.
	DSE-H2 4 credits Select one option	B23-BCH-804	Biostatistics	4	4	30	70	100	3 hrs.
		B23-BCH-805	Agriculture Waste Management	4	4	30	70	100	3 hrs.
	PC-H2 4 credits	B23-BCH-806	Practical Based on B23-BCH-801 TO 804/805	4	8	30	70	100	6 hrs.
	CC-HM2 4 credits	From Available Minor of 4 credits as per NEP							
ORSEMESTER-8 (FOR HONOURS WITH RESEARCH IN BIOCHEMISTRY)									
Semester	**Course**	**Paper(s)**	**Nomenclature of Paper**	**Credits**	**Hours/ Week**	**Internal marks**	**External Marks**	**Total Marks**	**Exam Duration**
VIII	**CC-H4 4 credits**	B23-BCH-801	Research Methods & Documentation	4	4	30	70	100	3 hrs.
	CC-H5 4 credits	B23-BCH-802	Biosafety and Intellectual Property Rights	4	4	30	70	100	3 hrs.
	Project/Dissertation 12 credits	B23-BCH-807	Project/Dissertation	8+4	-	-	-	-	-
	CC-HM2 4 credits	From Available Minor of 4 credits as per NEP							

PROGRAM LEARNING OUTCOMES (PLO)

1. Inculcate comprehensive knowledge and acquire skills in the field's biology
2. Develop experimenting skills in laboratory that enhances critical thinking skills, logical application these skills in problem solving
3. To equip students with necessary theoretical and practical skills to enable them to pursue multidisciplinary courses at Post Graduate level
4. Demonstrate the abilities to work in collaborative activities and inculcate leadership qualities
5. Identify and follow the ethical issues related to Biology, biosafety, and perform unbiased and truthful actions
6. Capability for raising relevant questions relating to basic understanding and applications biology and planning, executing and reporting the results of an experiment or investigation

KURUKSHETRA UNIVERSITY KURUKSHETRA

Scheme of Examination and Syllabus for Vocational Courses- (Voc) under UG Programmes

Under Multiple Entry-Exit, Internship and CBCS-LOCF in accordance to NEP-2020 w.e.f. 2023-24 (in phased manner)

DEPARTMENT OF BIOCHEMISTRY, KURUKSHETRA UNIVERSITY, KURUKSHETRA

Scheme of Examination and Syllabus for Vocational Courses (Voc) under UG Programmes

Under Multiple Entry-Exit, Internship and CBCS-LOCF in accordance to NEP-2020 w.e.f. 2023-24 (in phased manner), Subject: Biochemistry

Course	Paper(s)	Nomenclature of Paper	Credits	Hours/ Week	Internal marks	External Marks	Total Marks	Exam Duration
CC-M3 (VOC) 4 credits								
	B23-VOC-124	Biomedical Waste Management	2	2	15	35	50	3 hrs.
		Practical	2	4	15	35	50	4 hrs.

KURUKSHETRA UNIVERSITY KURUKSHETRA

Scheme of Examination and Syllabus for Skill Enhancement Courses (SEC) For under UG Programmes

Under Multiple Entry-Exit, Internship and CBCS-LOCF in accordance to NEP-2020w.e.f. 2023-24 (in phased manner)

DEPARTMENT OF BIOCHEMISTRY, KURUKSHETRA UNIVERSITY, KURUKSHETRA

Scheme of Examination and Syllabus for Skill Enhancement Courses (SEC) For under UG Programmes

Under Multiple Entry-Exit, Internship and CBCS-LOCF in accordance to NEP-2020 w.e.f. 2023-24 (in phased manner), Subject: Biochemistry

Semester	Course	Paper(s)	Nomenclature of Paper	Credits	Hours/ Week	Internal marks	External Marks	Total Marks	Exam Duration
2									
	SEC-2 3 credits	B23-SEC-222	Bioanalytical Techniques	2	2	15	35	50	3 hrs.
			Practical	1	2	5	20	25	4 hrs.
3									
	SEC-3 3 credits	B23-SEC-322	Immunological Techniques	2	2	15	35	50	3 hrs.
			Practical	1	2	5	20	25	4 hrs.
	SEC-3 3 credits	B23-SEC-323							
			Genetic Engineering	2	2	15	35	50	3 hrs.
			Practical	1	2	5	20	25	4 hrs.

Session: 2023-24			
Part A – Introduction			
Subject	Biochemistry		
Semester	1		
Name of the Course	Biomolecules		
Course Code	B23-BCH-101		
Course Type: (CC/MCC/MDC/CC-M/DSEC/VOC/DSE/PC/AEC/VAC)	CC/MCC		
Level of the course (As per Annexure-I	100-199		
Pre-requisite for the course (if any)	Senior secondary (10+2) or Equivalent in any stream		
Course Learning Outcomes (CLO):	After completing this course, the learner will be able to: 1. Exhibit the knowledge to classify, define and explain various properties of carbohydrates and correlate them to their functions. 2. Learn to classify, define, draw structures and explain functions of various types of lipids: Illustrate various parameters of characterization of lipids. 3. Gain knowledge to classify, draw structures of standard amino acids, explain chemical and physical properties of amino acids; Describe different classes of proteins and explain different levels of structural organization in protein architecture. 4. Understand the characteristics and draw structures of various types of nucleic acids.		
	5* Learn to prepare various types of solutions used in qualitative and quantitative biochemical estimations; analyze the unknown samples qualitatively for the presence of various biomolecules.		
Credits	Theory	Practical	Total

	3	1	4
Contact Hours	45	15	60
Max. Marks: 100 **Internal Assessment Marks: 30 (20T+10P)** **End Term Exam Marks: 70 (50T+20P)**		**Time: T-3hrs.** **P-4hrs.**	

Part B- Contents of the Course

Instructions for Paper- Setter: The question paper will consist of NINE questions out of which the candidate would be required to attempt FIVE questions. The first question will be compulsory and will have 5 short answer questions uniformly spread over entire syllabus. The remaining EIGHT questions will be set taking TWO questions from each of the four units. Each question will carry 10 marks. The candidate would be required to attempt ONE question from each unit in addition to compulsory question.

Unit	Topics	Contact Hours
I	Carbohydrates: **Definition and classification. Monosaccharides: Structure, occurrence and biological importance of monosaccharides; Stereoisomerism of sugars; Mutarotation; Reactions: oxidation, reduction, formation of glycosides and esters. Important derivatives of monosaccharides: deoxy sugars and amino sugars. Structure, occurrence and functions of important disaccharides. Polysaccharides: Structure, occurrence and biological importance of starch, glycogen, cellulose, chitin.**	11
II	Lipids: **Definition and classification. Fatty acids: introduction, classification, nomenclature, structure and properties of saturated and unsaturated fatty acids. Essential fatty acids. Waxes, Triacylglycerols: physical and chemical properties. Saponification values, iodine value, rancidity of fats. Biological significance of fats. Structure & biological functions of glycerophospholipids (lecithin, cephalin, phosphatidylserine, phosphatidylinositol) and sphingolipids. Structure & biological functions of cholesterol.**	12
III	Proteins: **Amino acids: common structural features, stereoisomerism and RS system of designating optical isomers, classification and structures of standard amino acids as Zwitter ion in aqueous solutions, titration of amino acids, essential amino acids and non-protein amino acids. Protein classification based on solubility, shape and functions. Protein structure: levels of structure in protein architecture (Primary, secondary, tertiary and quaternary structures of proteins) and forces stabilizing these structures.**	11

IV	**Nucleic acids:** Structures of purines and pyrimidines, nucleosides and nucleotides in RNA and DNA, features of DNA double helix and forces stabilizing DNA double helix. A, B and Z-DNAs. Chargaff's rules. Denaturation (T_m and buoyant density and their relationship with G-C content in DNA) and annealing of DNA. Structure and roles of different types of RNA.	11
V*	1. To study biochemistry laboratory safety rules and guidelines. 2. Preparation of normal, molar, percent solutions, buffer solutions and determination of their pH. 3. Qualitative tests for Carbohydrates. 4. Qualitative tests for lipids. 5. Qualitative tests for amino acids and Proteins.	15

Suggested Evaluation Methods

Internal Assessment: ➢ **Theory** • Class Participation: • Seminar/presentation/assignment/quiz/class test etc.: • Mid-Term Exam: ➢ **Practicum** • Class Participation: • Seminar/Demonstration/Viva-voce/Lab records etc.: • Mid-Term Exam:	**End Term Examination:** Written theory examination will be conducted as per scheme. Evaluation of the practical skill will be done by an external examiner.

Part C-Learning Resources

1. Lehninger: Principles of Biochemistry, 7th edition, by David L. Nelson and M.M. Cox. (2017). Maxmillan/ Worth publishers.
2. Fundamentals of Biochemistry: Life at the Molecular Level, 5th Edition, by Donald Voet, Judith G Voet, Charlotte W. Pratt. (2016). John Wiley & Sons, NY
3. Biochemistry, 4th edition, by R.H. Garrett and C.M. Grisham (2010). Saunders College Publishing, NY.
4. Biochemistry, 8th edition, by J.M. Berg, John L. Tymoczko, L. Stryer. (2015). W.H. Freeman & Co., NY.
5. Harpers Illustrated Biochemistry, 31st edition, Peter J. Kennelly, P. Anthony Weil, Victor W Rodwell, David A. Bender, Kathleen M. Botham. (2018). McGraw Hill Educations Publishers.
6. Fundamental of Biochemistry by J.L. Jain, Sanjay Jain, Nitin Jain, S. Chand & Co. Publication.
7. An introduction to Practical Biochemistry, 3rd Edition, by David Plummer. (2017). Tata Mc-Graw Hill.
8. Introductory Practical Biochemistry by S.K. Sawhney & R. Singh. (2014). Narosa Publishers.
9. Biochemical Methods, 3rd edition, by Sadasivam & Manickam. (2018). New Age International (P) Ltd.

*Applicable for courses having practical component.

Session: 2023-24	
Part A – Introduction	
Subject	Biochemistry
Semester	1
Name of the Course	Cell Biochemistry
Course Code	B23-BCH-102
Course Type: (CC/MCC/MDC/CC-M/DSEC/VOC/DSE/PC/AEC/VAC)	CC/MCC
Level of the course (As per Annexure-I	100-199
Pre-requisite for the course (if any)	Senior secondary (10+2) or Equivalent in any stream
Course Learning Outcomes (CLO):	After completing this course, the learner will be able to: 1. Exhibit the knowledge of the structural organization of prokaryotic and eukaryotic cell, the chemical composition and functions of plasma membrane. 2. Understand the mechanism of membrane transport, passive and active transport; know the maintenance of cytoskeleton structure and cell motility. 3. Know the structure and functions of cell organelles; understand the role of endoplasmic reticulum & Golgi apparatus in protein segregation & secretion. 4. Learn the structural organization of nucleus and nucleolus; know the events in cell division; enumerate the phases of cell cycle; understand the process of apoptosis.
	5*. Impart practical knowledge to conduct the morphomatric analysis of cell and demonstrate cell division; able to identify variations in human chromosomes.

Credits	Theory	Practical	Total
	3	1	4
Contact Hours	45	15	60

Max. Marks: 100 **Internal Assessment Marks: 30 (20T+10P)** **End Term Exam Marks: 70 (50T+20P)**	**Time: T-3hrs.** **P-4hrs.**

Part B- Contents of the Course

Instructions for Paper- Setter: The question paper will consist of NINE questions out of which the candidate would be required to attempt FIVE questions. The first question will be compulsory and will have 5 short answer questions uniformly spread over entire syllabus. The remaining EIGHT questions will be set taking TWO questions from each of the four units. Each question will carry 10 marks. The candidate would be required to attempt ONE question from each unit in addition to compulsory question.

Unit	Topics	Contact Hours
I	**Cell Type:** Discovery of cells, Basic properties of cells, Two fundamentally different classes of cells: structure of Prokaryotic and Eukaryotic cell, Differences between Prokaryotic and Eukaryotic cell, Model organisms. **Plasma Membrane:** Studies on plasma membrane (brief history), Structure (Lamellar-models, micellar models and fluid mosaic model) and chemical composition of plasma membrane (lipids, proteins and carbohydrates), Functions of plasma membrane.	12
II	**Membrane Transport:** Passive and facilitated diffusion, carrier proteins (uni, sym and anti-porters), channel proteins (voltage and ligand gated), Active transport (primary and secondary). **Cytoskeleton:** Structure and functions of microfilaments, microtubules (cilia and flagella) and intermediary filaments.	11
III	Structure and functions of cell organelles: Mitochondria- **the power house**, Chloroplast- **the site of photosynthesis,** Ribosomes- **the site of protein synthesis,** Lysosomes and Peroxisomes- **the organelles of hydrolytic reactions** **Endoplasmic reticulum:** Structure and function including role in protein segregation Golgi Apparatus: **Structure and function including role in protein secretion.**	11

IV	**Nucleus:** Structure of nuclear envelope, nuclear pore complex, nucleolus. **Cell Division:** Mitosis (cell cycle stages, cytokinesis), Meiosis (reproductive cycle stages, synaptonemal complex, recombination nodules). Comparison between mitosis and meiosis. **Apoptosis** (Programmed cell death).	11
V*	6. Visualization of animal and plant cell by methylene blue. 7. Sub-cellular fractionation. 8. Visualization of nuclear fraction by acetocarmine stain. 9. Isolation of genetic material from onion peel.	15

Suggested Evaluation Methods

Internal Assessment: ➢ **Theory** • Class Participation: • Seminar/presentation/assignment/quiz/class test etc.: • Mid-Term Exam: ➢ **Practicum** • Class Participation: • Seminar/Demonstration/Viva-voce/Lab records etc.: • Mid-Term Exam:	**End Term Examination:** Written theory examination will be conducted as per scheme. Evaluation of the practical skill will be done by an external examiner.

Part C-Learning Resources

10. The Cell: A Molecular Approach, 5th ed., Cooper, G.M. and Hausman, R.E. (2009). ASM Press & Sunderland (Washington DC), Sinauer Associates, MA.
11. Cell and molecular biology: concepts and experiments. Karp, G. (2009). John Wiley & Sons, NY.
12. Molecular Cell Biology. Lodish, H., Berk, A., Zipursky, S.L., Matsudaria, P., Baltimoe, D. and Darnell, J. (2008). W.H. Freeman and Co., New York., USA.
13. Genetics. Russel, P.J. 1998. The Benjamin/Cummings Publishing Co. Inc., USA.
14. Principles of Genetics. 5th ed., Snustad, D.P. and Simmons, M.J. 2015. John Wiley and Sons, Inc. USA.
15. Molecular Biology of the Cell (2008) 5th ed., Alberts, B., Johnson, A., Lewis, J., and Enlarge, M., Garland Science (Princeton).

*Applicable for courses having practical component.

Session: 2023-24			
Part A - Introduction			
Subject	Biochemistry		
Semester	1		
Name of the Course	Molecules of Life-1		
Course Code	B23-BCH-103		
Course Type: (CC/MCC/MDC/CC-M/DSEC/VOC/DSE/PC/AEC/VAC)	CC-M		
Level of the course (As per Annexure-I	100-199		
Pre-requisite for the course (if any)	Senior secondary (10+2) or Equivalent in any stream		
Course Learning Outcomes (CLO):	After completing this course, the learner will be able to: 1. Learn to classify, define and explain various properties of monosaccharides and correlate them to their functions. 2. Understand structure, occurrence and biological functions of disaccharides and polysaccharides. 3. Impart knowledge to classify, define fatty acids; illustrate various parameters of characterization of lipids. **4.** Learn to draw structures and explain functions of various types of lipids.		
	5* Learn to prepare various types of solutions used in qualitative and quantitative biochemical estimations; analyze the unknown samples qualitatively for the presence of various **biomolecules.**		
Credits	Theory	Practical	Total

	1	1	1
Contact Hours	15	15	30

Max. Marks: 50 **Internal Assessment Marks: 15 (10T+5P)** **End Term Exam Marks: 35 (20T+15P)**	**Time: T-3hrs.** **P-4hrs.**

Part B- Contents of the Course

Instructions for Paper- Setter: The question paper will consist of NINE questions out of which the candidate would be required to attempt FIVE questions. The first question will be compulsory and will have 5 short answer questions uniformly spread over entire syllabus. The remaining EIGHT questions will be set taking TWO questions from each of the four units. Each question will carry 10 marks. The candidate would be required to attempt ONE question from each unit in addition to compulsory question.

Unit	Topics	Contact Hours
I	Carbohydrates: Definition and classification. Monosaccharides: Structure and biological importance of monosaccharides; Stereoisomerism of sugars; Mutarotation; Important derivatives of monosaccharides: deoxy sugars and amino sugars.	4
II	Structure and functions of important disaccharides. Polysaccharides: Structure, occurrence and biological importance of starch, glycogen, cellulose, chitin.	4
III	Lipids: Definition and classification. Fatty acids: introduction, classification, nomenclature, structure and properties of saturated and unsaturated fatty acids. Essential fatty acids. Waxes, Triacylglycerols: physical and chemical properties.	4
IV	Biological functions of glycerophospholipids (lecithin, cephalin, phosphatidylserine, phosphatidylinositol) and sphingolipids. Structure & biological functions of cholesterol.	3
V*	10. Safety measures in laboratories. 11. Preparation of normal and molar solutions. 12. Qualitative tests for Carbohydrates. 13. Qualitative tests for lipids.	15

Suggested Evaluation Methods

Internal Assessment: ➢ **Theory** • Class Participation: • Seminar/presentation/assignment/quiz/class test etc.: • Mid-Term Exam: ➢ **Practicum** • Class Participation: • Seminar/Demonstration/Viva-voce/Lab records etc.: • Mid-Term Exam:	**End Term Examination:** Written theory examination will be conducted as per scheme. Evaluation of the practical skill will be done by an external examiner.

Part C-Learning Resources

Recommended Books/e-resources/LMS:

1. Lehninger: Principles of Biochemistry, 7th edition, by David L. Nelson and M.M. Cox (2017) Maxmillan/ Worth publishers.
2. Fundamentals of Biochemistry: Life at the Molecular Level, 5th Edition, by Donald Voet, Judith G Voet, Charlotte W. Pratt (2016). John Wiley & Sons, NY
3. Biochemistry, 4th edition, by R.H. Garrett and C.M. Grisham (2010). Saunders College Publishing, NY.
4. Biochemistry, 8th edition, by J.M. Berg, John L. Tymoczko, L. Stryer (2015). W.H. Freeman & Co.,NY.
5. Harpers Illustrated Biochemistry, 31st edition, by Peter J. Kennelly, P. Anthony Weil, Victor W Rodwell, David A. Bender, Kathleen M. Botham (2018). McGraw Hill Educations Publishers.
6. Fundamental of Biochemistry by J.L. Jain, Sanjay Jain, Nitin Jain, S. Chand & Co. Publication.
7. Introductory Practical Biochemistry by S.K. Sawhney & R. Singh (2014). Narosa Publishers.
8. Biochemical Methods, 3rd edition, by Sadasivam & Manickam (2018). New Age International (P) Ltd.

*Applicable for courses having practical component.

Session: 2023-24			
Part A - Introduction			
Subject	Biochemistry		
Semester	1		
Name of the Course	Biochemical Insights into the Human Body		
Course Code	B23-BCH-104		
Course Type: (CC/MCC/MDC/CC-M/DSEC/VOC/DSE/PC/AEC/VAC)	MDC		
Level of the course (As per Annexure-I	100-199		
Pre-requisite for the course (if any)	Senior secondary (10+2) or Equivalent in any stream		
Course Learning Outcomes (CLO):	After completing this course, the learner will be able to: 1. Learn and correlate the biochemistry and human biology; illustrate role of biomolecules in body. 2. Understand the biochemical nature and functions of hormones. 3. Learn to correlate the cellular metabolism and energy production. 4. Know the various applications of biochemistry in industrial & medical sector.		
	5*. Acquire knowledge and hands-on training of analytical tools of biochemistry & understanding of good laboratory practices; learn qualitative aspects of various biomolecules.		
Credits	Theory	Practical	Total

	2	1	3
Contact Hours	30	15	45

Max. Marks: 75 **Internal Assessment Marks: 20 (15T+5P)** **End Term Exam Marks: 55 (35T+20P)**	**Time: T-3hrs.** **P-4hrs.**

Part B- Contents of the Course

Instructions for Paper- Setter: The question paper will consist of NINE questions out of which the candidate would be required to attempt FIVE questions. The first question will be compulsory and will have 5 short answer questions uniformly spread over entire syllabus. The remaining EIGHT questions will be set taking TWO questions from each of the four units. Each question will carry 10 marks. The candidate would be required to attempt ONE question from each unit in addition to compulsory question.

Unit	Topics	Contact Hours
I	Introduction to Biochemical Architecture: Overview of biochemistry and its relevance to human biology. Biomolecules and their role in body composition: Carbohydrate, Lipids, Proteins, Nucleic acids and Enzymes.	7
II	Metabolism and Energy Production: Introduction to energy balance; Role of diet, exercise and life style in management of energy balance.	8
III	Hormones- role in growth, in reproductive system, in the diseases like hypothyroidism, hyperthyroidism, diabetes, blood pressure, Parkinson and schizophrenia.	7
IV	Integration and Applications of Biochemical Knowledge in the field of food, health, industry (food processing; leather; detergent) and medicine.	8
V*	1. Safety measures to be taken while handling Biochemicals. 2. To detect the presence of carbohydrates in food (glucose/sucrose/starch). 3. To detect the presence of proteins in food. 4. To detect the presence of fats (lipid) in different plants and animal materials.	15

Suggested Evaluation Methods	
Internal Assessment: ➢ **Theory** • Class Participation: • Seminar/presentation/assignment/quiz/class test etc.: • Mid-Term Exam: ➢ **Practicum** • Class Participation: • Seminar/Demonstration/Viva-voce/Lab records etc.: • Mid-Term Exam:	**End Term Examination:** Written theory examination will be conducted as per scheme. Evaluation of the practical skill will be done by an external examiner.

Part C-Learning Resources

Recommended Books/e-resources/LMS:

1. Lehninger: Principles of Biochemistry, 7th edition, by David L. Nelson and M.M. Cox (2017). Maxmillan/ Worth publishers.
2. Fundamentals of Biochemistry: Life at the Molecular Level, 5th Edition, by Donald Voet, Judith G Voet, Charlotte W. Pratt (2016). John Wiley & Sons, NY
3. Biochemistry, 8th edition, by J.M. Berg, John L. Tymoczko, L. Stryer (2015). W.H. Freeman &Co., NY.
4. Harpers Illustrated Biochemistry, 31st edition, Peter J. Kennelly, P. Anthony Weil, Victor W Rodwell, David A. Bender, Kathleen M. Botham (2018). McGraw Hill Educations Publishers.
5. Essentials of Biochemistry, 5th edition by Satyanarayana and Chakrapani. (2019). Elsevier, India.
6. Introductory Practical Biochemistry by S.K. Sawhney & R. Singh (2014). Narosa Publishers.
7. Practical Biochemistry by David Plummer (2001). Tata Mc-Graw Hill
8. Biochemical Methods, 3rd edition, by Sadasivam & Manickam (2018) New Age International (P) Ltd.

*Applicable for courses having practical component.

Session: 2023-24	
Part A - Introduction	
Subject	Biochemistry
Semester	2
Name of the Course	Enzymology
Course Code	B23-BCH-201
Course Type: (CC/MCC/MDC/CC-M/DSEC/VOC/DSE/PC/AEC/VAC)	CC/MCC
Level of the course (As per Annexure-I	100-199
Pre-requisite for the course (if any)	Students appeared in B.Sc. 1st semester
Course Learning Outcomes (CLO):	After completing this course, the learner will be able to: 1. Learn various characteristics of enzymes, classify them and elaborate the role of cofactors in enzyme catalysis 2. Correlate the structure of enzymes to their functions, mechanism of enzyme catalysis. 3. Exhibit the knowledge of enzyme kinetics of unisubstrate reactions, various kinetics parameters (Km, Vmax etc.) and describe different types of enzyme inhibitions. 4. Correlate different ways of enzyme regulation to cellular metabolism: discuss and analyze the importance of immobilized enzymes and the techniques to prepare them.

	5*. Knowledge to extract and quantitatively estimate the enzyme activity and protein content of the samples; exhibit skills in studying various characteristics of enzymes like temperature optima, Km, Vmax.		
Credits	Theory	Practical	Total
	3	1	4
Contact Hours	45	15	60
Max. Marks: 100 **Internal Assessment Marks: 30 (20T+10P)** **End Term Exam Marks: 70 (50T+20P)**		**Time: T-3hrs.** **P-4hrs.**	

Part B- Contents of the Course

Instructions for Paper- Setter: The question paper will consist of NINE questions out of which the candidate would be required to attempt FIVE questions. The first question will be compulsory and will have 5 short answer questions uniformly spread over entire syllabus. The remaining EIGHT questions will be set taking TWO questions from each of the four units. Each question will carry 10 marks. The candidate would be required to attempt ONE question from each unit in addition to compulsory question.

Unit	Topics	Contact Hours
I	**Enzymes:** General characteristics, nomenclature & classification, significance of numbering system, holoenzyme, apoenzyme, coenzymes, cofactors, activators, inhibitors, active site, metallo-enzymes, isoenzymes, monomeric enzymes, oligomeric enzymes, multifunctional enzyme and multi-enzyme complexes. Enzyme specificity (absolute and group specificity), Three-point attachment theory of enzyme specificity, Measurement and expression of enzyme activity: Enzyme assay, enzyme units, enzyme turn over number and specific activity.	11
II	**Role of cofactors in enzyme catalysis:** NAD/NADP, FMN/FAD, CoA, TPP, PLP, tetrahydrofolate and metal ions. **Enzyme catalysis:** Reaction co-ordinate diagram, transition state, acid-base catalysis, covalent catalysis, proximity and orientation effects, strain and distortion theory. Mechanism of action of chymotrypsin and ribonuclease.	11

III	**Enzyme Kinetics:** Factors affecting enzyme activity- enzyme concentration, substrate concentration, pH and temperature. Derivation of Michaelis-Menten equation for uni-substrate reactions. K_m and its significance. Lineweaver-Burk plot. Importance of K_{cat}/K_m. Reversible (competitive, non-competitive and uncompetitive inhibitions) and irreversible inhibition. Impact of inhibitors on K_m & V_{max} value of enzyme. Bi-substrate reactions- brief introduction of sequential and ping-pong mechanisms with examples.	12
IV	**Enzyme regulation:** Feedback inhibition, Allosteric enzymes. Covalently modulated enzymes. Zymogen activation. **Immobilized enzymes:** Advantages, methods of immobilization - Adsorption, ionic binding, covalent coupling, cross-linking, entrapment, microencapsulation. Applications of immobilized enzymes (A brief account).	11
V*	1. Estimation of protein by Biuret/Lowry method 2. Assay of acid phosphatase activity from germinating mungbean seeds and calculation of specific activity of acid phosphatase. 3. Effect of enzyme concentration on enzyme activity. 4. Effect of substrate concentration on acid phosphatase activity and determination of its Km value. 5. Effect of Temperature on Enzyme activity and determination of optimum temperature.	15
Suggested Evaluation Methods		
Internal Assessment: ➢ **Theory** • Class Participation: • Seminar/presentation/assignment/quiz/class test etc.: • Mid-Term Exam: ➢ **Practicum** • Class Participation: • Seminar/Demonstration/Viva-voce/Lab records etc.: • Mid-Term Exam:		**End Term Examination:** Written theory examination will be conducted as per scheme. Evaluation of the practical skill will be done by an external examiner.
Part C-Learning Resources		

1. Structure and mechanism in Protein Science, by Alan Fersht (2017). World Scientific.
2. Fundamentals of Enzymology, 3rd edition, by Nicholas C. Price and Lewis Stevens (2009) Oxford U.
3. Enzymes: Biochemistry, Biotechnology and Clinical Chemistry by Trevor Palmer, Philip Bonner (2008). East West Publishing.
4. The Chemical Kinetics of Enzyme action by K.J. Laidler and P.S. Bunting, Oxford University Press London.
5. An introduction to Practical Biochemistry, 3rd Edition, by David Plummer (2017). Tata Mc-Graw Hill
6. Introductory Practical Biochemistry by S.K. Sawhney& R. Singh (2014). Narosa Publishers
7. Modern Experimental Biochemistry, 3rd edition, by R. Boyer (2002). Addison-Wesley Longman.
8. Biochemical Methods, 3rd edition, by Sadasivam & Manickam (2018). New Age International (P) Ltd.
9. An introduction to Practical Biochemistry, 3rd Edition, by David Plummer (2017). Tata Mc-Graw Hill.

*Applicable for courses having practical component.

Session: 2023-24			
Part A - Introduction			
Subject	Biochemistry		
Semester	2		
Name of the Course	Bioanalytical Techniques		
Course Code	B23-BCH-202		
Course Type: (CC/MCC/MDC/CC-M/DSEC/VOC/DSE/PC/AEC/VAC)	DSEC		
Level of the course (As per Annexure-I	100-199		
Pre-requisite for the course (if any)	Students appeared in B.Sc. 1st semester		
Course Learning Outcomes (CLO):	After completing this course, the learner will be able to: 1. Understand the basic chemistry and properties of water; physiological buffers. 2. Demonstrate the knowledge of the general principles, components and applications of centrifuges. 3. Learn the principles and applications of chromatographic techniques in isolation, quantification and characterization of biomolecules. 4. Know the general principles, components and applications of spectrophotometer.		
	5*. Develop the skills to verify and apply the basic principles of spectroscopy; separation of amino acids by thin layer/ paper chromatography. .		
Credits	Theory	Practical	Total
	3	1	4

Contact Hours	45	15	60

Max. Marks: 100 **Internal Assessment Marks: 30 (20T+10P)** **End Term Exam Marks: 70 (50T+20P)**	**Time: T-3hrs.** **P-4hrs.**

Part B- Contents of the Course

Instructions for Paper- Setter: The question paper will consist of NINE questions out of which the candidate would be required to attempt FIVE questions. The first question will be compulsory and will have 5 short answer questions uniformly spread over entire syllabus. The remaining EIGHT questions will be set taking TWO questions from each of the four units. Each question will carry 10 marks. The candidate would be required to attempt ONE question from each unit in addition to compulsory question.

Unit	Topics	Contact Hours
I	Water and Buffers: **Structure, hydrogen bonding, solvent properties, and ionization, Weak acids and bases, ionization of weak acids, titration of weak acid by a strong base, pH, buffers, Henderson-Hasselbalch equation and physiological buffers.** **Measurement of pH:** Principles and composition of reference electrodes, glass electrode and combined electrode.	12
II	**Centrifugation**: Basic principle of centrifugation techniques, sedimentation rate, Svedberg unit / sedimentation coefficient. Preparative ultracentrifuge, Differential centrifugation, density gradient centrifugation, rate zonal, isopycnic, equilibrium centrifugation. Analytical ultracentrifuge method.	11
III	**Chromatographic techniques**- General principles and applications of adsorption, ion-exchange, molecular-sieve, thin layer & paper chromatography.	11
IV	**UV-Visible Spectroscopic techniques:** Beer-Lambert law, light absorption and its transmittance, extinction coefficient, a brief account of instrumentation and applications of UV-visible spectroscopic techniques (structure elucidation excluded).	11
V*	1. Determination of pKa of acetic acid and glycine. 2. Verification of Beer- Lambert's Law.	15

	3. Estimation of Amino acid by Ninhydrin method. 4. Estimation of Protein by Biuret method. 5. Separation of amino acids/ sugars by thin layer chromatography/paper chromatography.	

Suggested Evaluation Methods

Internal Assessment: ➢ **Theory** • Class Participation: • Seminar/presentation/assignment/quiz/class test etc.: • Mid-Term Exam: ➢ **Practicum** • Class Participation: • Seminar/Demonstration/Viva-voce/Lab records etc.: • Mid-Term Exam:	**End Term Examination:** Written theory examination will be conducted as per scheme. Evaluation of the practical skill will be done by an external examiner.

Part C-Learning Resources

10. Principles & Techniques of Biochemistry & Molecular Biology, 7th edition, by Keith Wilson and John Walker (2018).
11. Biophysical Chemistry: Principles and Techniques, by A. Upadhyay, K. Upadhyay and N. Nath. (2016). Himalaya Publishing House, Delhi.
12. Introductory Practical Biochemistry by S.K. Sawhney and Randhir Singh (2014). Narosa Publishing House, New Delhi.
13. An introduction to Practical Biochemistry, 3rd Edition, by David Plummer (2017). Tata Mc-Graw Hill
14. Modern Experimental Biochemistry, 3rd edition, by R. Boyer (2002) Addison-Wesley Longman.
15. Biochemical Methods, 3rd edition, by Sadasivam & Manickam (2018) New Age International (P) Ltd.
16. A Lab. Manual in Biochemistry by J. Jayaraman (1996) New Age International (P) Ltd.

*Applicable for courses having practical component.

Session: 2023-24			
Part A - Introduction			
Subject	Biochemistry		
Semester	2		
Name of the Course	Molecules of Life-II		
Course Code	B23-BCH-203		
Course Type: (CC/MCC/MDC/CC-M/DSEC/VOC/DSE/PC/AEC/VAC)	CC-M		
Level of the course (As per Annexure-I	100-199		
Pre-requisite for the course (if any)	Students appeared in B.Sc. 1st semester		
Course Learning Outcomes (CLO):	After completing this course, the learner will be able to: 5. Exhibit the knowledge to classify, draw structures of standard amino acids, explain chemical and physical properties of amino acids. 6. Understand different classes of proteins and explain different levels of structural organization in protein architecture. 7. Know structure, biological functions and importance of nucleotides. 8. Learn the characteristics and draw structures of various types of nucleic acids.		
	5* Learn preparation of buffer and qualitatively & quantitatively estimation of amino acids, proteins and nucleic acids in the unknown samples.		
Credits	Theory	Practical	Total

	1	1	2
Contact Hours	15	15	30
Max. Marks: 50 **Internal Assessment Marks: 15 (10T+5P)** **End Term Exam Marks: 35 (20T+15P)**		**Time: T-3hrs.** **P-4hrs.**	

Part B- Contents of the Course

Instructions for Paper- Setter: The question paper will consist of NINE questions out of which the candidate would be required to attempt FIVE questions. The first question will be compulsory and will have 5 short answer questions uniformly spread over entire syllabus. The remaining EIGHT questions will be set taking TWO questions from each of the four units. Each question will carry 10 marks. The candidate would be required to attempt ONE question from each unit in addition to compulsory question.

Unit	Topics	Contact Hours
I	**Amino acids**: Common structural features, stereoisomerism and RS system of designating optical isomers, classification and structures of standard amino acids as Zwitter ion in aqueous solutions, physical and chemical properties, essential amino acids and non-protein amino acids.	4
II	**Proteins:** Protein classification based on solubility, shape and functions. Protein structure: levels of structure in protein architecture (Primary, secondary, tertiary and quaternary structures of proteins), and forces stabilizing these structures.	4
III	**Nucleotides:** Structures and function of purines and pyrimidines; Nucleosides & Nucleotides, biologically important nucleotides.	3
IV	**Nucleic acids**: Generalized structural plan of nucleic acids, nomenclature used in writing structure of nucleic acids, features of DNA double helix and forces stabilizing DNA double helix. A, B and Z-DNAs. Chargaff's rules.	4
V*	14. Preparation of buffers, phosphate and acetate buffers and determination of their pH. 15. Qualitative tests for amino acids and Proteins. 16. Quantitative estimation of proteins by Lowry's method. 17. Estimation of DNA by diphenylamine method.	15

Suggested Evaluation Methods

Internal Assessment: ➢ **Theory** • Class Participation: • Seminar/presentation/assignment/quiz/class test etc.: • Mid-Term Exam: ➢ **Practicum** • Class Participation: • Seminar/Demonstration/Viva-voce/Lab records etc.: • Mid-Term Exam:	**End Term Examination:** Written theory examination will be conducted as per scheme. Evaluation of the practical skill will be done by an external examiner.

Part C-Learning Resources

Recommended Books/e-resources/LMS:

9. Lehninger: Principles of Biochemistry, 7th edition, by David L. Nelson and M.M. Cox (2017) Maxmillan/ Worth publishers.
10. Fundamentals of Biochemistry: Life at the Molecular Level, 5th Edition, by Donald Voet, Judith G Voet, Charlotte W. Pratt (2016). John Wiley & Sons, NY
11. Biochemistry, 4th edition, by R.H. Garrett and C.M. Grisham (2010). Saunders College Publishing, NY.
12. Biochemistry, 8th edition, by J.M. Berg, John L. Tymoczko, L. Stryer (2015). W.H. Freeman & Co.,NY.
13. Harpers Illustrated Biochemistry, 31st edition, Peter J. Kennelly, P. Anthony Weil, Victor W Rodwell, David A. Bender, Kathleen M. Botham (2018) McGraw Hill Educations Publishers.
14. Fundamental of Biochemistry by J.L. Jain, Sanjay Jain, Nitin Jain, S. Chand & Co. Publication.
15. An introduction to Practical Biochemistry, 3rd Edition, by David Plummer (2017). Tata Mc-Graw Hill
16. Introductory Practical Biochemistry by S.K.Sawhney & R. Singh (2014). Narosa Publishers.

*Applicable for courses having practical component.

Session: 2023-24			
Part A - Introduction			
Subject	Biochemistry		
Semester	2		
Name of the Course	Biochemistry and Health		
Course Code	B23-BCH-204		
Course Type: (CC/MCC/MDC/CC-M/DSEC/VOC/DSE/PC/AEC/VAC)	MDC		
Level of the course (As per Annexure-I	100-199		
Pre-requisite for the course (if any)	Students appeared in B.Sc. 1st semester		
Course Learning Outcomes (CLO):	After completing this course, the learner will be able to: 1. Exhibit the knowledge of the importance of biochemistry with reference to health. 2. Learn the biochemical functions and role of major and minor nutrients. 3. Know the relationship between biochemistry, exercise and energy metabolism. 4. Understand the Biochemistry of Aging and effect of environmental toxins and pollutants on human health.		
	5*. An understanding of quantitatively analyze the sample for vitamin, minerals and lactose.		
Credits	Theory	Practical	Total
	2	1	3

Contact Hours	30	15	45

Max. Marks: 75 **Internal Assessment Marks: 20 (15T+5P)** **End Term Exam Marks: 55 (35T+20P)**	**Time: T-3hrs.** **P-4hrs.**

Part B- Contents of the Course

Instructions for Paper- Setter: The question paper will consist of NINE questions out of which the candidate would be required to attempt FIVE questions. The first question will be compulsory and will have 5 short answer questions uniformly spread over entire syllabus. The remaining EIGHT questions will be set taking TWO questions from each of the four units. Each question will carry 10 marks. The candidate would be required to attempt ONE question from each unit in addition to compulsory question.

Unit	Topics	Contact Hours
I	**Overview of Health:** Components of health (physical, mental and emotional), importance of air, water and food in health and relevance of studying Biochemistry in maintaining good health.	7
II	**Nutritional Biochemistry and Health:** Macronutrients and micronutrients: roles and biochemical functions of macronutrients and micronutrients in human health.	8
III	**Biochemistry and Exercise Physiology:** Energy metabolism during exercise; Biochemical adaptations to physical activity; and complications related to sedentary life style, Sports nutrition and performance-enhancing substances.	7
IV	**Biochemistry of Aging:** Biochemical changes associated with aging; impact on hormones, muscle and nervous system. Impact of environmental toxins and pollutants on human health.	8
V*	1. Estimation of carbohydrate in milk. 2. Estimation of protein in milk. 3. Estimation of fats in milk. 4. Estimation of sugar in blood – before and after exercise	15

Suggested Evaluation Methods	
Internal Assessment: ➢ **Theory** • Class Participation: • Seminar/presentation/assignment/quiz/class test etc.: • Mid-Term Exam: ➢ **Practicum** • Class Participation: • Seminar/Demonstration/Viva-voce/Lab records etc.: • Mid-Term Exam:	**End Term Examination:** Written theory examination will be conducted as per scheme. Evaluation of the practical skill will be done by an external examiner.

Part C-Learning Resources

Recommended Books/e-resources/LMS:

9. Textbook of Biochemistry with Clinical Correlations (2011) Devlin, T.M. John Wiley & Sons, Inc. (New York).
10. Nutrition for health, fitness and sport (2013); Williams. M.H, Anderson, D.E, Rawson, E.S. McGraw Hill international edition.
11. Krause's Food and Nutrition Care process. (2012); Mahan, L.K Strings, S.E, Raymond, J. Elsevier's Publications.
12. Principles of Nutritional Assessment (2005) Rosalind Gibson. Oxford University Press.
13. Essentials of Biochemistry, 5th edition by Satyanarayana and Chakrapani. (2019) Elsevier, India.
14. Introductory Practical Biochemistry by S.K. Sawhney & R. Singh (2014). Narosa Publishers
15. Practical Biochemistry by David Plummer (2001). Tata Mc-Graw Hill
16. Biochemical Methods, 3rd edition, by Sadasivam & Manickam (2018) New Age International (P) Ltd.

*Applicable for courses having practical component.

Session: 2023-24	
Part A - Introduction	
Subject	Biochemistry
Semester	3
Name of the Course	Carbohydrate and Lipid Metabolism
Course Code	B23-BCH-301
Course Type: (CC/MCC/MDC/CC-M/DSEC/VOC/DSE/PC/AEC/VAC)	CC/MCC
Level of the course (As per Annexure-I	200-299
Pre-requisite for the course (if any)	Students appeared in B.Sc. 2nd semester
Course Learning Outcomes (CLO):	After completing this course, the learner will be able to: 1. Apply the knowledge of biological redox reactions, coupled reactions, energy rich compounds and the energy transactions in studying metabolism. 2. Describe the metabolic pathways *i.e.* glycolysis (catabolism), gluconeogenesis (anabolism), and TCA cycle and their regulations. **3.** Discuss the reactions, regulation and importance of pentose phosphate pathway, glycogen metabolism and glyoxylate cycle. **4.** To understand ETC and apply the concept of oxidative phosphorylation to calculate energy production by oxidation of carbohydrates.
	5*. Determine biomolecules in the samples quantitatively; isolate and characterize carbohydrates, lipids and proteins from the natural sources.

Credits	Theory	Practical	Total
	3	1	4
Contact Hours	45	15	60

Max. Marks: 100 **Internal Assessment Marks: 30 (20T+10P)** **End Term Exam Marks: 70 (50T+20P)**	**Time: T-3hrs.** **P-4hrs.**

Part B- Contents of the Course

Instructions for Paper- Setter: The question paper will consist of NINE questions out of which the candidate would be required to attempt FIVE questions. The first question will be compulsory and will have 5 short answer questions uniformly spread over entire syllabus. The remaining EIGHT questions will be set taking TWO questions from each of the four units. Each question will carry 10 marks. The candidate would be required to attempt ONE question from each unit in addition to compulsory question.

Unit	Topics	Contact Hours
I	**Bioenergetics:** Concept of free energy, standard free energy, relation between equilibrium constant and standard free energy change and coupled reactions. Biological oxidation-reduction. High-energy compounds: phosphate group transfer potential, free energy of hydrolysis of ATP, PEP and other sugar phosphates along with reasons for high ΔG^0.	11
II	**Carbohydrate Metabolism:** Reactions and energetics of glycolysis. Alcoholic and lactic acid fermentations. Feeder pathways, Entry of fructose, galactose, mannose etc. into glycolysis. Reactions of TCA cycle. Regulation of glycolysis and TCA cycle.	11
III	**Carbohydrate-related other metabolic pathways:** Gluconeogenesis, Glycogenesis and glycogenolysis. Regulation of glycogen metabolism. Reactions and physiological significance of pentose phosphate pathway. Glyoxylate cycle**.**	11
IV	**Electron Transport Chain and Oxidative Phosphorylation:** Structure of mitochondria, organization and sequence of electron carriers, sites of ATP production, inhibitors of electron transport chain. Oxidative phosphorylation: chemiosmotic theory, structure of ATP synthase, binding change mechanism	12

	for proton driven ATP synthesis, Inhibitors and uncouplers of oxidative phosphorylation. Transport of reducing equivalents from cytosol into mitochondria.	
V*	1. Estimation of nitrogen by micro-Kjeldahl method /nesslers reagent. 2. Estimation of blood glucose by colorimetrically. 3. Estimation of ascorbic acid by titrimetric method. 4. Preparation of starch from potato and determination of achromatic point by salivary amylase 5. Determination of total lipids by Folch's method.	15

Suggested Evaluation Methods

Internal Assessment: ➢ **Theory** • Class Participation: • Seminar/presentation/assignment/quiz/class test etc.: • Mid-Term Exam: ➢ **Practicum** • Class Participation: • Seminar/Demonstration/Viva-voce/Lab records etc.: • Mid-Term Exam:	**End Term Examination:** Written theory examination will be conducted as per scheme. Evaluation of the practical skill will be done by an external examiner.

Part C-Learning Resources

1. Lehninger: Principles of Biochemistry, 7th edition, by David L. Nelson and M.M. Cox (2017). Maxmillan/ Worth publishers.
2. Fundamentals of Biochemistry: Life at the Molecular Level, 5th Edition, by Donald Voet, Judith G Voet, Charlotte W. Pratt (2016). John Wiley & Sons, NY
3. Biochemistry, 4th edition, by R.H. Garrett and C.M. Grisham (2010). Saunders College Publishing, NY.
4. Biochemistry, 5th edition, by Laurence A. Moran, H. R. Horton, K.G. Scrimgeour, Marc D. Perry (2011). Pearson Publishers.
5. An introduction to Practical Biochemistry, 3rd Edition, by David Plummer (2017). Tata Mc-Graw Hill
6. Introductory Practical Biochemistry by S.K. Sawhney & R. Singh (2014). Narosa Publishers
7. Modern Experimental Biochemistry, 3rd edition, by R. Boyer (2002). Addison-Wesley Longman.
8. Biochemical Methods, 3rd edition, by Sadasivam & Manickam (2018). New Age International (P) Ltd.

*Applicable for courses having practical component.

Session: 2023-24			
Part A – Introduction			
Subject	Biochemistry		
Semester	3		
Name of the Course	Hormones		
Course Code	B23-BCH-302		
Course Type: (CC/MCC/MDC/CC-M/DSEC/VOC/DSE/PC/AEC/VAC)	MCC		
Level of the course (As per Annexure-I	200-299		
Pre-requisite for the course (if any)	Students appeared in B.Sc. 2nd semester		
Course Learning Outcomes (CLO):	After completing this course, the learner will be able to: 1. Gain knowledge on functions, classification and regulation of hormones. 2. Understand the role of secondary messengers, effector systems and protein kinases, tyrosine kinases in hormonal action. 3. Acquire detailed knowledge of the biochemical action and physiological role of peptide hormones. **4.** Learn the biochemical and physiological role of steroid hormones & amino acid derivatives.		
	5*. Get more acquainted with the determination of macronutrients & electrolytes in the serum sample quantitatively; quantitative analysis of hormones in serum sample.		
Credits	Theory	Practical	Total
	3	1	4
Contact Hours	45	15	60

Max. Marks: 100 **Internal Assessment Marks: 30 (20T+10P)** **End Term Exam Marks: 70 (50T+20P)**	**Time: T-3hrs.** **P-4hrs.**

Part B- Contents of the Course

Instructions for Paper- Setter: The question paper will consist of NINE questions out of which the candidate would be required to attempt FIVE questions. The first question will be compulsory and will have 5 short answer questions uniformly spread over entire syllabus. The remaining EIGHT questions will be set taking TWO questions from each of the four units. Each question will carry 10 marks. The candidate would be required to attempt ONE question from each unit in addition to compulsory question.

Unit	Topics	Contact Hours
I	**Introduction to endocrinology**: Characteristic and general functions of hormones. Classification of hormones- Based on chemical nature and mechanism of action, Chemical signaling of hormones- endocrine, paracrine, autocrine, Regulation of hormones (Feedback mechanism), Factors regulating hormone action.	11
II	**Mechanism of hormone action:** Hormones that bind to intracellular receptors and hormones that bind to cell surface receptors. Role of secondary messengers, signaling involving cyclic AMP, cyclic GMP, phosphoinositide, calcium, diacylglycerol and nitric oxide, kinase-phosphatase system.	12
III	**Biochemical and physiological role of peptide Hormones:** Pancreatic hormones, Hypophyseal hormones, Para-thyroidal hormones, Gastro-intestinal tract hormones.	11
IV	**Biochemical and physiological role of steroid Hormones:** Ovarian hormones, Testicular hormones, Adrenal cortical hormones and Corpus luteal hormone. **Biochemical and physiological role of Amino Acid derivatives:** Thyroidal hormones and Adrenal medullary hormones	11

V*	1. Glucose tolerance test. 2. Estimation of serum Ca^{2+}. 3. Estimation of serum T_4. 4. Estimation of serum electrolytes.	15

Suggested Evaluation Methods

Internal Assessment: ➢ **Theory** • Class Participation: • Seminar/presentation/assignment/quiz/class test etc.: • Mid-Term Exam: ➢ **Practicum** • Class Participation: • Seminar/Demonstration/Viva-voce/Lab records etc.: • Mid-Term Exam:	**End Term Examination:** Written theory examination will be conducted as per scheme. Evaluation of the practical skill will be done by an external examiner.

Part C-Learning Resources

1. Textbook of Biochemistry and Human Biology (3rd Edition). Talwar G.P, Srivastava L.M. and Moudgil K.D. (2002). Prentice-Hall of India Private Limited, New Delhi, India.
2. Lehninger: Principles of Biochemistry (7th edition). Nelson D.L. and Cox, M.M. (2017). Worth Publishers, New York, USA.
3. Essentials of Medical Physiology (5th Edition). Sembuligam K. and Sembulingam P (2010). Jaypee Brothers Medical Publishers, New Delhi, India.
4. Endocrinology (6th Edition). Hadley M.C. and Levine. (2007). J.E. Pearson Education, New Delhi.
5. The Cell: A Molecular Approach (5th Edition). Cooper G.M. and Hausman R.E (2009). ASM Press & Sunderland, Washington DC.
6. Introductory Practical Biochemistry by S.K. Sawhney & R. Singh (2017). Narosa Publishers.
7. Biochemical Methods, 3rd edition, by Sadasivam & Manickam (2018). New Age International (P) Ltd.
8. Modern Experimental Biochemistry, 3rd edition, by R. Boyer (2002) Addison-Wesley Longman.

*Applicable for courses having practical component.

Session: 2023-24			
Part A - Introduction			
Subject	Biochemistry		
Semester	3		
Name of the Course	Biochemistry of Lifestyle Diseases		
Course Code	B23-BCH-303		
Course Type: (CC/MCC/MDC/CC-M/DSEC/VOC/DSE/PC/AEC/VAC)	MDC		
Level of the course (As per Annexure-I	200-299		
Pre-requisite for the course (if any)	Students appeared in B.Sc. 2nd semester		
Course Learning Outcomes (CLO):	After completing this course, the learner will be able to: 5. Demonstrate the knowledge of various types of lifestyle diseases; correlation among lifestyle and metabolic disorders. 6. Give an insight on Diabetes and cancer (lifestyle factors, exercise and management). 7. Know about the Diet and lifestyle interventions in management of heart diseases. 8. Understand and analyze the relationship of Sedentary Lifestyle and metabolism and significance of physical exercise in maintaining good health.		
	5*. An understanding of qualitative analysis of normal and abnormal constituents of urine; quantitative analysis of constituents of blood.		
Credits	Theory	Practical	Total

	2	1	3
Contact Hours	30	15	45

Max. Marks: 75 **Internal Assessment Marks: 20 (15T+5P)** **End Term Exam Marks: 55 (35T+20P)**	**Time: T-3hrs.** **P-4hrs**

Part B- Contents of the Course

Instructions for Paper- Setter: The question paper will consist of NINE questions out of which the candidate would be required to attempt FIVE questions. The first question will be compulsory and will have 5 short answer questions uniformly spread over entire syllabus. The remaining EIGHT questions will be set taking TWO questions from each of the four units. Each question will carry 10 marks. The candidate would be required to attempt ONE question from each unit in addition to compulsory question.

Unit	Topics	Contact Hours
I	**Overview of lifestyle diseases:** Impact of lifestyle diseases on public health, economy and society. **Obesity and metabolic syndrome:** Molecular mechanisms linking lifestyle factors (diet, physical activity) to metabolic disorders.	7
II	**Diabetes:** Role of diet, exercise, and other lifestyle factors in diabetes management. **Cancer:** Lifestyle factors influencing cancer development; Diet and lifestyle interventions in management of cancer.	8
III	**Heart diseases and atherosclerosis development:** Diet and lifestyle interventions in management of these diseases.	7
IV	**Modern Lifestyle and Exercise:** Impact of physical inactivity on metabolism and health; Biochemical changes induced by exercise and physical activity; Exercise prescription and its role in preventing lifestyle diseases.	8
V*	5. Qualitative analysis of sugar in urine. 6. Monitoring blood pressure (systolic and diastolic) using sphygmomanometer. 7. Estimation of hemoglobin. 8. Monitoring oxygen level and heart rate during and after exercise.	15

Suggested Evaluation Methods

Internal Assessment: ➢ **Theory** • Class Participation: • Seminar/presentation/assignment/quiz/class test etc.: • Mid-Term Exam: ➢ **Practicum** • Class Participation: • Seminar/Demonstration/Viva-voce/Lab records etc.: • Mid-Term Exam:	**End Term Examination:** Written theory examination will be conducted as per scheme. Evaluation of the practical skill will be done by an external examiner.

Part C-Learning Resources

Recommended Books/e-resources/LMS:

1. Teitz text book of clinical chemistry, 6th edition, Carl A. Burtis and Edward R. Ashwood, W. B. (2017). Saunders Company.
2. Harper's Biochemistry by R.K. Murray, P.A. Hayes, D.K. Granner, P.A. Mayes and V.W. Rodwell (2003). Prentice Hall International.
3. Textbook of Biochemistry with Clinical Correlations, 5th edition, by T.M. Devlin (2002). Wiley-liss.
4. Biochemistry 4th edition, by U. Satyanarayana (2013). Books and allied (P) Ltd.
5. Textbook of Biochemistry and Human Biology, 3rd edition, Talwar G.P, Srivastava L.M. and Moudgil K.D. (2002). Prentice-Hall of India Private Limited, New Delhi, India.
6. Introductory Practical Biochemistry by S.K. Sawhney & R. Singh (2014). Narosa Publishers.
7. Biochemical Methods, 3rd edition, by Sadasivam & Manickam (2018). New Age International (P) Ltd.
8. Modern Experimental Biochemistry, 3rd edition, by R. Boyer (2002) Addison-Wesley Longman.

*Applicable for courses having practical component.

Session: 2023-24			
Part A – Introduction			
Subject	Biochemistry		
Semester	4		
Name of the Course	Amino acid and Nucleotide Metabolism		
Course Code	B23-BCH-401		
Course Type: (CC/MCC/MDC/CC-M/DSEC/VOC/DSE/PC/AEC/VAC)	CC/MCC		
Level of the course (As per Annexure-I	200-299		
Pre-requisite for the course (if any)	Students appeared in B.Sc. 3rd semester		
Course Learning Outcomes (CLO):	After completing this course, the learner will be able to: 1. Know the reactions and regulation of lipid biosynthesis and catabolism by beta oxidative pathways: ketone bodies metabolism and integration to the metabolism of other biomolecules. 2. Understand how amino acid catabolism leads to formation of diverse type molecules including ketone bodies, glucose, urea. 3. Learn the catabolism and anabolism of nucleic acids. **4.** Acquire detailed knowledge of porphyrin Metabolism.		
	5*. Develop the skills of performing analysis of transaminases profile of serum; quantitatively analyze the serum sample for metabolized product.		
Credits	Theory	Practical	Total

	3	1	4
Contact Hours	45	15	60
Max. Marks: 100 **Internal Assessment Marks: 30 (20T+10P)** **End Term Exam Marks: 70 (50T+20P)**		**Time: T-3hrs.** **P-4hrs.**	

Part B- Contents of the Course

Instructions for Paper- Setter: The question paper will consist of NINE questions out of which the candidate would be required to attempt FIVE questions. The first question will be compulsory and will have 5 short answer questions uniformly spread over entire syllabus. The remaining EIGHT questions will be set taking TWO questions from each of the four units. Each question will carry 10 marks. The candidate would be required to attempt ONE question from each unit in addition to compulsory question.

Unit	Topics	Contact Hours
I	**Lipid Metabolism:** Introduction, hydrolysis of triacylglycerols, activation of fatty acids, transport of fatty acyl CoA into mitochondria, beta-oxidation of saturated, unsaturated and odd chain fatty acids. ATP yield from fatty acid oxidation. Biosynthesis of saturated fatty acids. Biosynthesis of triglycerides. Metabolism of ketone bodies.	12
II	**Amino acid Metabolism:** General reactions of amino acid metabolism: transamination, oxidative and non-oxidative deamination and decarboxylation. Urea cycle. Glycogenic and ketogenic amino acids. Biosynthesis of aromatic amino acids. Glucose-Alanine cycle.	11
III	**Nucleotide Metabolism:** Sources of the atoms in the purine and pyrimidine molecules, *denovo* biosynthesis and degradation of purine and pyrimidine nucleotides, Regulation of purine and pyrimidine biosynthesis. Salvage pathways of purines and pyrimidines.	11
IV	**Porphyrin Metabolism:** Structure of porphyrins, Biosynthesis and degradation of heme. Disorders of porphyrin metabolism and their treatment (Chronic hepatic, acute hepatic and erythroietic); jaundice (Hemolytic and obstructive jaundice).	11

V*	1. Assay of serum transaminases – SGOT. 2. Assay of serum transaminases –SGPT. 3. Estimation of serum urea. 4. Estimation of serum uric acid. 5. Estimation of serum creatinine.	15

Suggested Evaluation Methods

Internal Assessment: ➢ **Theory** • Class Participation: • Seminar/presentation/assignment/quiz/class test etc.: • Mid-Term Exam: ➢ **Practicum** • Class Participation: • Seminar/Demonstration/Viva-voce/Lab records etc.: • Mid-Term Exam:	**End Term Examination:** Written theory examination will be conducted as per scheme. Evaluation of the practical skill will be done by an external examiner.

Part C-Learning Resources

9. Lehninger: Principles of Biochemistry, 7th edition, by David L. Nelson and M.M. Cox (2017). Maxmillan/ Worth publishers.
10. Fundamentals of Biochemistry: Life at the Molecular Level, 5th Edition, by Donald Voet, Judith G Voet, Charlotte W. Pratt. (2016). John Wiley & Sons, NY
11. Biochemistry, 4th edition, by R.H. Garrett and C.M. Grisham. (2010). Saunders College Publishing, NY.
12. Biochemistry, 5th edition, by Laurence A. Moran, H. R. Horton, K.G. Scrimgeour, Marc D. Perry. (2011), Pearson Publishers.
13. Introductory Practical Biochemistry by S.K. Sawhney & R. Singh (2014). Narosa Publishers
14. Modern Experimental Biochemistry, 3rd edition, by R. Boyer (2002) Addison-Wesley Longman.
15. An introduction to Practical Biochemistry, 3rd Edition, by David Plummer (2017). Tata Mc-Graw Hill.
16. Biochemical Methods, 3rd edition, by Sadasivam & Manickam (2018). New Age International (P) Ltd.

*Applicable for courses having practical component.

Session: 2023-24			
Part A – Introduction			
Subject	Biochemistry		
Semester	4		
Name of the Course	Basics of Genetic Information		
Course Code	B23-BCH-402		
Course Type: (CC/MCC/MDC/CC-M/DSEC/VOC/DSE/PC/AEC/VAC)	MCC		
Level of the course (As per Annexure-I	200-299		
Pre-requisite for the course (if any)	Students appeared in B.Sc. 3rd semester		
Course Learning Outcomes (CLO):	After completing this course, the learner will be able to: 1. Understand the basic Concepts of Genetic Information and genomic organization. 2. Explain the concepts of genes and their role in genetic inheritance and evolution; know the chromatin & chromosomal organization. 3. Understand the organization and function of chromosomes and their impact on cellular functioning and development; also know the overview of chromosomal anomalies. 4. Know the details about the transposable elements and elaborate the DNA supercoiling; nucleases and various approaches of sequencing of DNA.		
	5*. Develop proficiency in laboratory techniques for chromosome and genomic analysis and isolation of genetic material from biological samples.		
Credits	Theory	Practical	Total
	3	1	4

Contact Hours	45	15	60

Max. Marks: 100 **Internal Assessment Marks: 30 (20T+10P)** **End Term Exam Marks: 70 (50T+20P)**	**Time: T-3hrs.** **P-4hrs.**

Part B- Contents of the Course

Instructions for Paper- Setter: The question paper will consist of NINE questions out of which the candidate would be required to attempt FIVE questions. The first question will be compulsory and will have 5 short answer questions uniformly spread over entire syllabus. The remaining EIGHT questions will be set taking TWO questions from each of the four units. Each question will carry 10 marks. The candidate would be required to attempt ONE question from each unit in addition to compulsory question.

Unit	Topics	Contact Hours
1	**Basic Concepts of Genetic Information:** Nucleic acids as genetic information carriers: experimental evidences e.g. bacterial genetic transformation, Hershey-Chase experiment, TMV reconstitution experiment. Central dogma of molecular genetics: current version. **Genome organization:** Viruses and prokaryotes, Eukaryotes-Organization of nuclear and organellar genomes, C-value paradox, Repetitive DNA - satellite DNAs and interspersed repeat DNAs.	12
II	**Concept of gene**: Conventional and modern views, fine structure of gene, split genes, pseudogenes, non-coding genes, overlapping genes and multi-gene families. **Eukaryotic chromatin and chromosome:** Histones: structure and functions, Nucleosome morphology and higher-level organization, Functional states of chromatin and alterations in chromatin organization.	11
III	**Chromosome organization:** Metaphase chromosomes: centromere and kinetochore, telomere and its maintenance, Holocentric chromosomes, Heterochromatin and euchromatin, Chromosomal domains (matrix, loop domains) and their functional significance, Chromatin remodeling. **Chromosomal anomalies:** Overview of numerical and structural alterations, and their impact on cellular functioning and development, induced chromosomal aberrations in somatic cells.	11
IV	**Transposable elements**: Barbara McClintock's experiment of maize, Autonomous and non-autonomous transposons, clonal	11

	selection, retrotransposons, LINES, SINES, Alu family, Application of transposons in mutagenesis, genome mapping and evolution. **DNA Supercoiling:** A brief account of DNA supercoiling and topoisomerases. DNA Sequencing: Sequencing of DNA by chemical cleavage and dideoxy methods. Nucleases: Important DNases and RNases including restriction endonucleases.	
V*	1. Laboratory orientation and demonstration of basic equipments to be used in chromosome/gene analysis. 2. Chromosome Analysis: karyotyping. 3. Metaphase chromosome preparation with G banding and C banding from any biological sample. 4. Isolation of genomic DNA from any biological sample. 5. Isolation of metagenome from soil/water samples.	15

Suggested Evaluation Methods

Internal Assessment: ➢ **Theory** • Class Participation: • Seminar/presentation/assignment/quiz/class test etc.: • Mid-Term Exam: ➢ **Practicum** • Class Participation: • Seminar/Demonstration/Viva-voce/Lab records etc.: • Mid-Term Exam:	**End Term Examination:** Written theory examination will be conducted as per scheme. Evaluation of the practical skill will be done by an external examiner.

Part C-Learning Resources

17. Lehninger: Principles of Biochemistry, 7th edition, by David L. Nelson and M.M. Cox (2017). Maxmillan/ Worth publishers.
18. Fundamentals of Biochemistry: Life at the Molecular Level, 5th edition, by Donald Voet, Judith G Voet, Charlotte W. Pratt (2016). John Wiley & Sons, NY.
19. Biochemistry, 4th edition, by R.H. Garrett and C.M. Grisham (2010). Saunders College Publishing, NY.
20. Biochemistry, 5th edition, by Laurence A. Moran, H. R. Horton, K.G. Scrimgeour, Marc D. Perry (2011), Pearson Publishers.
21. Biochemistry, 8th edition, by J.M. Berg, John L. Tymoczko, L. Stryer (2015). W.H. Freeman & Co.,NY.
22. Molecular Cell Biology, 8th edition, by Harvey Lodish et al. (2016), Macmillian learning.
23. Molecular Biology of the Gene, 7th edition, by J.D. Watson (2017), Pearson Publisher.
24. Genes XII by B. Lewin (2017), Jones and Bartlett Publishers.

*Applicable for courses having practical component.

Session: 2023-24	
Part A - Introduction	
Subject	Biochemistry
Semester	4
Name of the Course	Elementary Microbial Biochemistry
Course Code	B23-BCH-403
Course Type: (CC/MCC/MDC/CC-M/DSEC/VOC/DSE/PC/AEC/VAC)	MCC
Level of the course (As per Annexure-I	200-299
Pre-requisite for the course (if any)	Students appeared in B.Sc. 3rd semester
Course Learning Outcomes (CLO):	After completing this course, the learner will be able to: 1. Know various types of microbes, understand the classification strategy, microbial diversity and morphology of major groups of microorganisms. 2. Demonstrate the cultivation and maintenance of microorganisms including the factors affecting the microbial growth; learn the various methods of control of microorganisms. 3. Exhibit the knowledge of microbial metabolism and types of reproduction in bacteria. 4. Able to understand the various aspects of water and food microbiology.
	5*. Exhibit skills in preparation of media and staining; isolate, identify and characterize bacteria from

	different sources.		
Credits	Theory	Practical	Total
	3	1	4
Contact Hours	45	15	60
Max. Marks: 100 **Internal Assessment Marks: 30 (20T+10P)** **End Term Exam Marks: 70 (50T+20P)**		**Time: T-3hrs.** **P-4hrs.**	

Part B- Contents of the Course

Instructions for Paper- Setter: The question paper will consist of NINE questions out of which the candidate would be required to attempt FIVE questions. The first question will be compulsory and will have 5 short answer questions uniformly spread over entire syllabus. The remaining EIGHT questions will be set taking TWO questions from each of the four units. Each question will carry 10 marks. The candidate would be required to attempt ONE question from each unit in addition to compulsory question.

Unit	Topics	Contact Hours
I	**Introduction to Microbiology:** Some important events in the development of Microbiology, The species concept in Microbiology, Classical taxonomy, Microbial phylogeny and current classification of bacteria, Microbial Diversity: Distribution and characterization of Prokaryotic and Eukaryotic cells, Morphology and cell structure of major groups of microorganisms e.g. Bacteria, Algae, Fungi, Protozoa and Unique features of viruses.	12
II	**Cultivation and Maintenance of microorganisms**: Nutritional categories of micro-organisms, Culture Media, Isolation of pure cultures, Microbial growth: Growth curve, Generation time, Continuous culture, factors affecting growth of bacteria: temperature, pH, osmolarity and oxygen. 1 **Control of Microorganisms:** Physical and chemical methods.	11
III	**An overview of metabolism**: Energy conservation, Fermentation: Some common microbial fermentations, Aerobic and anaerobic respiration, Chemolithotrophy and Phototrophy.	11

	Bacterial Genetics: Transformation, Transduction and Conjugation.	
IV	**Water Microbiology:** Public health and water quality, Coliform test, Drinking water purification, Waterborne microbial diseases: Cholera and Typhoid fever **Food Microbiology**: Food spoilage, major food born infections and intoxications, Basic approaches to food preservation, Fermented foods.	11
V*	1. Isolation of bacteria & their biochemical characterization. 2. Preparation of media & Sterilization of microbial media by autoclave. 3. Isolation of pure cultures: (i) Streak plate method. (ii) Serial dilution method. 4. Gram Staining Techniques.	15

Suggested Evaluation Methods

Internal Assessment: ➢ **Theory** • Class Participation: • Seminar/presentation/assignment/quiz/class test etc.: • Mid-Term Exam: ➢ **Practicum** • Class Participation: • Seminar/Demonstration/Viva-voce/Lab records etc.: • Mid-Term Exam:	**End Term Examination:** Written theory examination will be conducted as per scheme. Evaluation of the practical skill will be done by an external examiner.

Part C-Learning Resources

1. Microbiology. Prescott, Harley, Klein. (2008). McGraw-Hill Higher Education, Boston.
2. Microbiology. Pelczar M.J, Chan E.C.S, Krieg N.R. (1998). McGraw-Hill, New York.
3. A textbook of Microbiology. Dubey R.C. and Maheshwari D.K. (2008). S. Chand and Company Ltd, New Delhi.
4. Text book of Microbiology, 8th edition, Ananthanarayan R and Paniker CKJ. (2009). University Press.
5. Biology of Microorganisms. Madigan M., Martinko., Parker J. Brock's. (2007). Pearson Prentice Hall.
6. An introduction to Practical Biochemistry, 3rd Edition, by David Plummer. (2017). Tata Mc-Graw Hill.
7. Introductory Practical Biochemistry by S.K. Sawhney & R. Singh (2014). Narosa Publishers.
8. Principles & Techniques of Biochemistry & Molecular Biology, 7th edition, by Keith

Wilson and John Walker. (2018).

*Applicable for courses having practical component.

Session: 2023-24			
Part A - Introduction			
Subject	Biochemistry		
Semester	4		
Name of the Course	Animal Biochemistry		
Course Code	B23-BCH-404		
Course Type: (CC/MCC/MDC/CC-M/DSEC/VOC/DSE/PC/AEC/VAC)	DSE		
Level of the course (As per Annexure-I	200-299		
Pre-requisite for the course (if any)	Students appeared in B.Sc. 3rd semester		
Course Learning Outcomes (CLO):	After completing this course, the learner will be able to: 1. Understand the concept of homeostasis and its importance in maintaining a stable internal environment. 2. Understand the anticoagulant and fibrinolytic systems and their regulation of blood and will also be able to analyze the urine composition. 3. Understand the concepts of water and acid-base balance in the human body and the specific role of the kidneys in regulating acid-base balance. 4. Understand the composition and structure of specialized tissues of the body.		
	5*. Knowledge of experiments of hematology like RBC, WBC, differential leucocyte count; quantitative analysis of constituents of blood and their estimation using standard methods.		
Credits	Theory	Practical	Total
	3	1	4

Contact Hours	45	15	60

Max. Marks: 100 **Internal Assessment Marks: 30 (20T+10P)** **End Term Exam Marks: 70 (50T+20P)**	**Time: T-3hrs.** **P-4hrs.**

Part B- Contents of the Course

Instructions for Paper- Setter: The question paper will consist of NINE questions out of which the candidate would be required to attempt FIVE questions. The first question will be compulsory and will have 5 short answer questions uniformly spread over entire syllabus. The remaining EIGHT questions will be set taking TWO questions from each of the four units. Each question will carry 10 marks. The candidate would be required to attempt ONE question from each unit in addition to compulsory question.

Unit	Topics	Contact Hours
I	**Homeostasis and the organization of body fluid compartments:** Blood composition and biochemical functions of erythrocytes, leucocytes and platelets. Important plasma proteins and their functions. Homeostasis: Intracellular, extracellular and interstitial fluid.	12
II	**Blood Clotting:** Molecular mechanism of blood coagulation, role of vitamin K in coagulation, anticoagulant and fibrinolytic systems. Urine composition and analysis.	11
III	**Electrolyte and acid base balance:** Disorders of electrolytes (hypernatremia, hyponatremia, hypokalemia, hyperkalemia, hyperchloremia, hypochloremia); water and acid base balance (metabolic and respiratory acidosis, metabolic and respiratory alkalosis); Role of blood buffers; respiratory and renal mechanism in the maintenance of blood pH. Role of kidneys in acid base balance.	11
IV	**Composition and metabolism of specialized tissues:** Muscle, connective tissue, skin, nervous tissue and adipose tissue.	11
V*	1. RBC and WBC counting 2. Differential leucocyte count. 3. Identify and differentiate erythrocytes, leukocytes, and platelets. 4. Separation of serum and plasma from blood. 5. Observe clotting time of the blood	15

Suggested Evaluation Methods

Internal Assessment: ➢ **Theory** • Class Participation: • Seminar/presentation/assignment/quiz/class test etc.: • Mid-Term Exam: ➢ **Practicum** • Class Participation: • Seminar/Demonstration/Viva-voce/Lab records etc.: • Mid-Term Exam:	**End Term Examination:** Written theory examination will be conducted as per scheme. Evaluation of the practical skill will be done by an external examiner.

Part C-Learning Resources

9. Lehninger: Principles of Biochemistry, 7th ed., by David L. Nelson and M.M. Cox (2017.) Maxmillan/ Worth publishers.
10. Vander's Human Physiology, 11th ed., Widmaier, E.P., Raff, H. and Strang, K.T. (2008) McGraw Hill International Publications (New York).
11. Harper's Biochemistry, 29th ed., Murray, R.K., Granner, D.K., Mayes and P.A., Rodwell, V.W. (2012) Lange Medical Books/McGraw Hill.
12. Textbook of Medical Physiology, 10th ed., Guyton, A.C. and Hall, J.E. (2011). Reed Elseviers India Pvt. Ltd. (New Delhi).
13. Fundamental of Anatomy and Physiology, 8th ed., Martini, F.H. and Nath, J.L. (2009) Pearson Publications (San Francisco).
14. Biochemistry by Satyanarayana, U. (2013). Elsevier Health Sciences.
15. Immunology, 7th ed., Janis Kuby. (2019). W. H. Freeman and Co.
16. Modern Experimental Biochemistry, 3rd edition, by R. Boyer (2002) Addison-Wesley Longman.

*Applicable for courses having practical component.

Session: 2023-24			
Part A – Introduction			
Subject	Biochemistry		
Semester	4		
Name of the Course	Plant Biochemistry		
Course Code	B23-BCH-405		
Course Type: (CC/MCC/MDC/CC-M/DSEC/VOC/DSE/PC/AEC/VAC)	DSE		
Level of the course (As per Annexure-I	200-299		
Pre-requisite for the course (if any)	Students appeared in B.Sc. 3rd semester		
Course Learning Outcomes (CLO):	After completing this course, the learner will be able to: 1. Exhibit the knowledge of structure and energy generation by the photosynthetic apparatus; CO_2 assimilation by different pathways. 2. Understand CO_2 assimilation by different pathways and photorespiration. 3. Gain knowledge about structural organization and functioning of ETC in chloroplast and mitochondria. 4. Learn in detail about nitrogen metabolism pathway in plants with structure and regulation of enzymes: nitrate reductase and nitrite reductase; exhibit the knowledge of nitrogen fixation with illustrate the mechanism of action of the enzyme nitrogenase.		
	5*. Learn appropriate how to extract and determine quantitatively the contents and the spectral patterns of photosynthetic pigments; determine content of phenols and tannins in plant samples and explore antioxidant property of plant extracts.		
Credits	Theory	Practical	Total

	3	1	4
Contact Hours	45	15	60
Max. Marks: 100 **Internal Assessment Marks: 30 (20T+10P)** **End Term Exam Marks: 70 (50T+20P)**		**Time: T-3hrs.** **P-4hrs.**	

Part B- Contents of the Course

Instructions for Paper- Setter: The question paper will consist of NINE questions out of which the candidate would be required to attempt FIVE questions. The first question will be compulsory and will have 5 short answer questions uniformly spread over entire syllabus. The remaining EIGHT questions will be set taking TWO questions from each of the four units. Each question will carry 10 marks. The candidate would be required to attempt ONE question from each unit in addition to compulsory question.

Unit	Topics	Contact Hours
I	Photosynthesis**: Photosynthetic apparatus, pigments of photosynthesis, role of carotenoids, photosystems I and II, their location; Hill reaction, photosynthetic electron transport and generation of NADPH & ATP, cyclic and non-cyclic photophosphorylation, complexes associated with thylakoid membranes; light harvesting complexes.**	12
II	**Photosynthetic CO_2 Assimilation**: Pathways, reactions and regulation of CO_2 assimilation in C3 plants (wheat, rice), C4 (sugarcane, corn) & CAM (pineapple, moringa) plants. Photorespiration**: Organelles involved in photorespiration, reactions of C2 cycle and co-ordination among the organelles involved, correlation of photosynthesis and photorespiration, importance of photorespiration for plants (correlation to yield).**	11
III	Electron transport system in plants**: Oxidative phosphorylation, mitochondrial respiratory complexes, order and organization of electron carriers, electrochemical gradient, chemiosmotic theory, ATP synthase and mechanism of ATP synthesis. Comparison of plants and animal electron transport chain.**	11
IV	**Nitrogen metabolism**: Nitrate uptake, factors affecting nitrate uptake, structural features of nitrate reductase and nitrite reductase, incorporation of ammonia into organic	11

	compounds, regulation of nitrate reductase, nitrite reductase and nitrate assimilation. **Biological N_2-fixation**: Biological nitrogen fixation by free living organisms. Symbiotic association; structure, function and mechanism of action of the enzyme nitrogenase, strategies for protection of nitrogenase from inhibition by oxygen; structure of nodule, role of leghaemoglobin.	
V*	1. Extraction and estimation of chlorophylls from grass/spinach leaves 2. Extraction and estimation of carotenoids from grass/spinach leaves 3. Extraction and estimation of total phenols in plant samples 4. Estimation of tannins in fruits and vegetables 5. Determination of radical scavenging activity of plant extracts.	15
Suggested Evaluation Methods		
Internal Assessment: ➢ **Theory** • Class Participation: • Seminar/presentation/assignment/quiz/class test etc.: • Mid-Term Exam: ➢ **Practicum** • Class Participation: • Seminar/Demonstration/Viva-voce/Lab records etc.: • Mid-Term Exam:		**End Term Examination:** Written theory examination will be conducted as per scheme. Evaluation of the practical skill will be done by an external examiner.
Part C-Learning Resources		
17. Biochemistry and Molecular Biology of Plants, 2nd edition by Bob, B. Buchanan (2015). 18. Plant Biochemistry & Molecular Biology, 4th edition, by Hans –Walter Heldt (2010), Academic Press. 19. Plant Biochemistry and Molecular Biology, 2nd edition, by Peter J. Lea and Richard C. Leegood (1999). John Wiley and Sons. 20. Plant physiology, 4th edition, by L. Taiz and E-Zeigler (2006). 21. An introduction to Practical Biochemistry, 3rd edition, by David Plummer (2017). Tata Mc-Graw Hill. 22. Introductory Practical Biochemistry by S.K. Sawhney& R. Singh (2014). Narosa Publishers. 23. Modern Experimental Biochemistry, 3rd edition, by R. Boyer (2002). Addison-Wesley Longman.		

*Applicable for courses having practical component.

Session: 2023-24			
Part A - Introduction			
Subject	Biochemistry		
Semester	3		
Name of the Course	Biomedical Waste Management		
Course Code	B23-VOC-124		
CourseType: (CC/MCC/MDC/CC-M/DSEC/VOC/DSE/PC/AEC/VAC)	VOC		
Level of the course (As per Annexure-I	200-299		
Pre-requisite for the course (if any)	Students appeared in B.Sc. 2nd semester		
Course Learning Outcomes (CLO):	After completing this course, the learner will be able to: 1. Exhibit the definition and classification of biomedical waste. 2. Demonstrate the ability to segregate biomedical waste according to its category and color-coding. 3. Analyze the environmental impact of biomedical waste treatment and disposal methods. 4. Demonstrate knowledge of occupational health and safety practices for waste handlers.		
	5* Understand the practical aspect of waste management, specifically on the proper segregation and handling of biomedical waste .		
Credits	Theory	Practical	Total

	2	2	4
Contact Hours	30	30	60

Max. Marks: 100 **Internal Assessment Marks: 30 (15T+15P)** **End Term Exam Marks: 70 (35T+35P)**	**Time: T-3hrs.** **P-4hrs.**

Part B-Contents of the Course

Instructions for Paper- Setter: The question paper will consist of NINE questions out of which the candidate would be required to attempt FIVE questions. The first question will be compulsory and will have 5 short answer questions uniformly spread over entire syllabus. The remaining EIGHT questions will be set taking TWO questions from each of the four units. Each question will carry 10 marks. The candidate would be required to attempt ONE question from each unit in addition to compulsory question.

Unit	Topics	Contact Hours
I	**Introduction to Biomedical Waste Management:** Definition and classification of biomedical waste; Significance of proper biomedical waste management; Health and environmental risks associated with biomedical waste; National and international regulations and guidelines; Role of regulatory bodies and compliance requirements.	8
II	**Biomedical Waste Segregation and Collection:** Segregation techniques and color-coding of waste categories; Safe handling procedures and personal protective equipment (PPE); Collection methods, containers, and labeling requirements; Transportation considerations and logistics; Documentation and record-keeping for waste collection.	7
III	**Biomedical Waste Treatment and Disposal:** Overview of treatment technologies (e.g., autoclaving, incineration, chemical treatment); Environmental impact assessment and considerations; Disposal methods, including landfilling, recycling, and waste-to-energy; Emerging trends in waste treatment and disposal; Effective waste treatment and disposal practices.	8
IV	**Infection Control and Safety Practices:** Infection control measures to prevent the spread of diseases; Occupational health and safety practices for waste handlers; Training	7

	programs and education for healthcare professionals; Auditing, monitoring, and quality assurance; Public awareness campaigns and community engagement.	
V*	1. Visits to healthcare facilities/waste treatment plants/ or waste management companies (to provide students with first hand exposure to biomedical waste management practices). 2. Safety and infection control demonstrations (include proper hand hygiene techniques, waste handling procedures etc). 3. Field survey – survey of 10 hospitals of the area and prepare project report (highlighting real-world challenges and solutions in biomedical waste management) on the management in these organizations. 4. Group projects that involve developing waste management plans for hypothetical healthcare facilities or designing public awareness campaigns.	30

Suggested Evaluation Methods

InternalAssessment: ➢ **Theory** • Class Participation: • Seminar/presentation/assignment/quiz/class test etc.: • Mid-Term Exam: ➢ **Practicum** • Class Participation: • Seminar/Demonstration/Viva-voce/Lab records etc.: • Mid-Term Exam:	**End Term Examination:** Written theory examination will be conducted as per scheme. Evaluation of the practical skill will be done by an external examiner.

Part C-Learning Resources

- Hospital Waste Management: A Guide for Self-Assessment and Review " by Shishir Basarkar (2021).
- Biomedical Waste Management in Hospitals: Dr. G. Latha & Dr. M. Rajasekhar (2021).
- Waste Management and Resource Recycling in the Developing World by André C. S. Batalhão, Arif Ahamad, Pardeep Singh, Pramit Verma, Rishikesh Singh (2022).
- Biomedical Waste Management by Srividya Kartik (2019).

*Applicable for courses having practical component.

Session: 2023-24			
Part A - Introduction			
Subject	Biochemistry		
Semester	2		
Name of the Course	Bioanalytical Techniques		
Course Code	B23-SEC-222		
Course Type: (CC/MCC/MDC/CC-M/DSEC/VOC/DSE/PC/AEC/VAC)	SEC		
Level of the course (As per Annexure-I	100-199		
Pre-requisite for the course (if any)	Students appeared in B.Sc. 1st semester		
Course Learning Outcomes (CLO):	After completing this course, the learner will be able to: 5. Understand the basic chemistry and properties of water; physiological buffers. 6. Demonstrate the knowledge of the general principles, components and applications of centrifuges. 7. Learn the principles and applications of chromatographic techniques in isolation, quantification and characterization of biomolecules. 8. Know the general principles, components and applications of spectrophotometer.		
	5*. Develop the skills to verify and apply the basic principles of spectroscopy; separation of amino acids by thin layer/ paper chromatography. .		
Credits	Theory	Practical	Total
	2	1	3

Contact Hours	30	15	45

Max. Marks: 75 **Internal Assessment Marks: 20 (15T+5P)** **End Term Exam Marks: 55 (35T+20P)**	**Time: T-3hrs.** **P-4hrs.**

Part B- Contents of the Course

Instructions for Paper- Setter: The question paper will consist of NINE questions out of which the candidate would be required to attempt FIVE questions. The first question will be compulsory and will have 5 short answer questions uniformly spread over entire syllabus. The remaining EIGHT questions will be set taking TWO questions from each of the four units. Each question will carry 10 marks. The candidate would be required to attempt ONE question from each unit in addition to compulsory question.

Unit	Topics	Contact Hours
I	Water and Buffers: **Structure, hydrogen bonding, solvent properties, and ionization, Weak acids and bases, ionization of weak acids, titration of weak acid by a strong base, pH, buffers, Henderson-Hasselbalch equation and physiological buffers.** **Measurement of pH:** Principles and composition of reference electrodes, glass electrode and combined electrode.	8
II	**Centrifugation**: Basic principle of centrifugation techniques, sedimentation rate, Svedberg unit / sedimentation coefficient. Preparative ultracentrifuge, Differential centrifugation, density gradient centrifugation, rate zonal, isopycnic, equilibrium centrifugation. Analytical ultracentrifuge method.	7
III	**Chromatographic techniques**- General principles and applications of adsorption, ion-exchange, molecular-sieve, thin layer & paper chromatography.	7
IV	**UV-Visible Spectroscopic techniques:** Beer-Lambert law, light absorption and its transmittance, extinction coefficient, a brief account of instrumentation and applications of visible and UV spectroscopic techniques (structure elucidation excluded).	8
V*	1. Determination of pKa of acetic acid and glycine. 2. Verification of Beer- Lambert's Law.	15

	3. Estimation of Amino acid by Ninhydrin method. 4. Estimation of Protein by Biuret method. 5. Separation of amino acids/ sugars by thin layer chromatography/paper chromatography.	

Suggested Evaluation Methods	
Internal Assessment: ➢ **Theory** • Class Participation: • Seminar/presentation/assignment/quiz/class test etc.: • Mid-Term Exam: ➢ **Practicum** • Class Participation: • Seminar/Demonstration/Viva-voce/Lab records etc.: • Mid-Term Exam:	**End Term Examination**

Part C-Learning Resources

17. Principles & Techniques of Biochemistry & Molecular Biology, 7th edition, by Keith Wilson and John Walker (2018).
18. Biophysical Chemistry: Principles and Techniques, by A. Upadhyay, K. Upadhyay and N. Nath. (2016). Himalaya Publishing House, Delhi.
19. Introductory Practical Biochemistry by S.K. Sawhney and Randhir Singh (2014). Narosa Publishing House, New Delhi.
20. An introduction to Practical Biochemistry, 3rd Edition, by David Plummer (2017). Tata Mc-Graw Hill
21. Modern Experimental Biochemistry, 3rd edition, by R. Boyer (2002) Addison-Wesley Longman.
22. Biochemical Methods, 3rd edition, by Sadasivam & Manickam (2018) New Age International (P) Ltd.

*Applicable for courses having practical component.

Session: 2023-24			
Part A – Introduction			
Subject	Biochemistry		
Semester	3		
Name of the Course	**Immunological Techniques**		
Course Code	B23-SEC-322		
Course Type: (CC/MCC/MDC/CC-M/DSEC/VOC/DSE/PC/AEC/VAC)	SEC		
Level of the course (As per Annexure-I	200-299		
Pre-requisite for the course (if any)	Students appeared in B.Sc. 2nd semester		
Course Learning Outcomes (CLO):	After completing this course, the learner will be able to: 9. Gain the knowledge about the components and production of the immune system including antibodies and antigens 10. Understand about electrophoresis and Immunoprecipitation techniques. 11. Demonstrate principles and applications of agglutination reactions and immunoassays. 12. Demonstrate the knowledge of advance techniques in immunology.		
	5*. Exhibit skills to isolate lymphocytes from blood/spleen and to perform various immunoassays such as Ouchterlony double immunodiffusion (DID); perform techniques to purify immunoglobulins and the blood typing. .		
Credits	Theory	Practical	Total

	2	1	3
Contact Hours	30	15	45
Max. Marks: 75 **Internal Assessment Marks: 20 (15T+5P)** **End Term Exam Marks: 55 (35T+20P)**		**Time: T-3hrs.** **P-4hrs.**	

Part B- Contents of the Course

Instructions for Paper- Setter: The question paper will consist of NINE questions out of which the candidate would be required to attempt FIVE questions. The first question will be compulsory and will have 5 short answer questions uniformly spread over entire syllabus. The remaining EIGHT questions will be set taking TWO questions from each of the four units. Each question will carry 10 marks. The candidate would be required to attempt ONE question from each unit in addition to compulsory question.

Unit	Topics	Contact Hours
I	**Introduction to Immunology and basic technique:** Overview of the immune system and its components; Antigens (Types, properties, and preparation); Antibodies: Structure, types, and functions, Introduction to monoclonal and polyclonal antibodies.	7
II1	**Electrophoresis and Immunoprecipitation Techniques:** Basic principles of electrophoresis; Native and SDS-PAGE (Polyacrylamide Gel Electrophoresis); Agarose gel electrophoresis; Immunoprecipitation techniques in solution; Immunoprecipitation reactions in gel: Radial immune-diffusion (Mancini method) and Ouchterlony double immuno-diffusion.	8
III	**Agglutination reactions and Immunoassays:** Agglutination reactions, immunoassays (principle and methodology); Radioimmunoassay (RIA: Principle and applications); Enzyme-Linked Immunosorbent Assay (ELISA): Direct, indirect, and sandwich; Immuno electrophoresis (principle and methodology): Rocket immunoelectrophoresis: Identification and quantification of antigens;.	8
IV	**Advanced Techniques in Immunology:** Western blotting (immunoblotting- Principle, methodology, and applications); Immunofluorescence techniques: Direct and indirect methods; Principle and applications of immunohistochemistry,	7

	immunocytochemistry and Flow cytometry.	
V*	6. Demonstration of immunodiffusion 7. Purification of immunoglobulins 8. Demonstration of Immunoelectrophoresis 9. Demonstration of Western Blotting 10. Assays based on agglutination reactions – Blood grouping.	15

Suggested Evaluation Methods

Internal Assessment: ➢ **Theory** • Class Participation: • Seminar/presentation/assignment/quiz/class test etc.: • Mid-Term Exam: ➢ **Practicum** • Class Participation: • Seminar/Demonstration/Viva-voce/Lab records etc.: • Mid-Term Exam:	**End Term Examination**

Part C-Learning Resources

23. Immunology – Janis Kuby – W. H. Freeman and Co. 7th edition (2019)
24. Janeway's Immunobiology 2012 8th ed., Murphy, K., Mowat, A., and Weaver, C.T., Garland Science (London & New York), ISBN:978-0-8153-4243-4
25. Immunology, 13th ed. by Roitt et al., Mosby Publications.
26. Immunology" 8th edn. David Male Jonathan Brostoff David Roth Ivan Roitt, 2012.
27. Cellular and Molecular Immunology, 9thed. by Abbas and Litchman, Saunders Publication.
28. Immunology: an introduction, 4th Edition by Ian R Tizard, Saunders College Publishing.

*Applicable for courses having practical component.

Session: 2023-24			
Part A - Introduction			
Subject	Biochemistry		
Semester	3		
Name of the Course	Genetic Engineering		
Course Code	B23-SEC-323		
Course Type: (CC/MCC/MDC/CC-M/DSEC/VOC/DSE/PC/AEC/VAC)	SEC		
Level of the course (As per Annexure-I	200-299		
Pre-requisite for the course (if any)	Students appeared in B.Sc. 2nd semester		
Course Learning Outcomes (CLO):	After completing this course, the learner will be able to: 13. Understand about different terminology related to genetic engineering and tools used for it. 14. Understand about isolation, sequencing and synthesis of genes. 15. Know the techniques for transfer and expression of cloned gene 16. Apply the knowledge of genetic engineering in biological research.		
	5*. Develop the skills to isolate DNA from plants and bacteria, plasmid DNA; Demonstrate the making and transforming competent cells.		
Credits	Theory	Practical	Total
	2	1	3
Contact Hours	30	15	45

Max. Marks: 75 **Internal Assessment Marks: 20 (15T+5P)** **End Term Exam Marks: 55 (35T+20P)**	**Time: T-3hrs.** **P-4hrs.**

Part B- Contents of the Course

Instructions for Paper- Setter: The question paper will consist of NINE questions out of which the candidate would be required to attempt FIVE questions. The first question will be compulsory and will have 5 short answer questions uniformly spread over entire syllabus. The remaining EIGHT questions will be set taking TWO questions from each of the four units. Each question will carry 10 marks. The candidate would be required to attempt ONE question from each unit in addition to compulsory question.

Unit	Topics	Contact Hours
I	**Cloning and amplification of DNA:** Introduction, choice of the organism, use of restriction endonucleases for the production of DNA fragments. Vehicles for cloning - plasmids, phage vectors and cosmids. RNA isolation, preparation and use of cDNAs. Application of recombinant DNA technology.	8
II	**Isolation, sequencing and synthesis of genes:** Isolation of genes, sequencing of genes, synthesis of genes, Cloning of specific eukaryotic genes and their expression in bacteria. Genes involved in regulation, regulatory gene, promoter gene, operator gene and structural genes.	7
III	**Gene transfer methods:** Gene transfer methods for plants- Agrobacterium mediated gene transfer, physical and chemical methods. Gene transfer methods for animals- Biochemical, physical and virus-mediated gene transfer methods.	7
IV	**Applications of Genetic Engineering:** Genetic engineering in animals: Production and applications of transgenic mice, role of ES cells in gene targeting in mice, Therapeutic products produced by genetic engineering.	8
V*	1. Isolation of chromosomal DNA from plant/animal cells 2. Qualitative and quantitative analysis of DNA using spectrophotometer. 3. Plasmid DNA isolation 4. Restriction digestion of DNA 5. Making competent cells 6. Transformation of competent cells.	15

Suggested Evaluation Methods

Internal Assessment: ➢ **Theory** • Class Participation: • Seminar/presentation/assignment/quiz/class test etc.: • Mid-Term Exam: ➢ **Practicum** • Class Participation: • Seminar/Demonstration/Viva-voce/Lab records etc.: • Mid-Term Exam:	**End Term Examination**

Part C-Learning Resources

29. Gene Cloning and DNA Analysis - An Introduction, 7 th edition, by T. A. Brown (2016), Blackwell Publishing.
30. Molecular Biotechnology - Principles & applications of Recombinant DNA, 5th ed., Bernard R. Glick, Cheryl L. Patten (2017), ASM Press.
31. Principles of Gene Manipulation, 7th ed., Sandy B. Primrose, Richard Twyman (2006), Blackwell Scientific Publication.
32. Analysis of Genes and Genomes, 2004 by Richard J Reece, John Wiley & Sons, Ltd.
33. Beier F.K, Crespi R.S and Straus T. Biotechnology and Patent protection, Oxford and IBH Publishing Co. New Delhi.
34. Rajmohan Joshi (Ed.) 2006. Biosafety and Bioethics, Isha Books, Delhi.

*Applicable for courses having practical component.

DEPARTMENT OF ECONOMICS
KURUKSHETRA UNIVERSITY, KURUKSHETRA
(Established by the state Legislature Act –XII of 1956)

Structure, Scheme of Examination and Syllabi (Semester I, II, III & IV) for the Subject of ECONOMICS
Choice Based Credit System (CBCS-LOCF) in accordance with NEP-2020 with Multiple Entry/Exit System
w.e.f. 2023-24 (in phased manner)

List of Courses Offered in Subject of Economics for UG Programmes – Multidisciplinary (Scheme A), Major in Economics & Minor in Other Subject (Scheme B) and Single Major in Economics (Scheme C)

Sem	Course Type	Course Code	Name of Course	Credits	Contact Hours per Week	Internal Assessment Marks	End Term Exam Marks	Total Marks	Duration of Exam (Hrs.)
I	CC-1 MCC-1	B23-ECO-101	MICRO ECONOMICS-I	4	4	30	70	100	3
I	MCC-2	B23-ECO-102	BASIC PUBLIC FINANCE	4	4	30	70	100	3
I	CC-M1	B23-ECO-103	INTRODUCTORY ECONOMICS	2	2	15	35	50	3
I	MDC-1	B23-ECO-104	BASICS OF ECONOMICS	3	3	25	50	75	3
II	CC-2 MCC-3	B23-ECO-201	MACRO ECONOMICS-I	4	4	30	70	100	3
II	CC-M2	B23-ECO-202	INTRODUCTION TO INDIAN ECONOMY	2	2	15	35	50	3
II	DSEC-1	B23-ECO-203	ECONOMIC SURVEY TECHNIQUES	4	5	30	70	100	3
II	MDC-2	B23-ECO-204	INDIAN ECONOMIC ENVIRONMENT	3	3	25	50	75	3
III	CC-3 MCC-4	B23-ECO-301	MICRO ECONOMICS-II	4	4	30	70	100	3
III	MCC-5	B23-ECO-302	BASIC STATS FOR ECONOMICS	4	4	30	70	100	3
III	MDC-3	B23-ECO-303	CURRENT ISSUES IN GLOBAL ECONOMY	3	3	25	50	75	3
IV	CC-4 MCC-6	B23-ECO-401	MACRO ECONOMICS-II	4	4	30	70	100	3
IV	MCC-7	B23-ECO-402	STATISTICAL TOOLS FOR ECONOMICS	4	4	30	70	100	3
IV	MCC-8	B23-ECO-403	INDIAN FINANCIAL SYSTEM	4	4	30	70	100	3
IV	DSE-1 or	B23-ECO-404	INDUSTRIAL ECONOMICS	4	4	30	70	100	3
IV	DSE-1	B23-ECO-405	MONEY & BANKING	4	4	30	70	100	3

Sem	Course Type	Course Code	Name of Course	Credits	Contact Hours per Week	Internal Assessment Marks	End Term Exam Marks	Total Marks	Duration of Exam (Hrs.)
V	CC-5 MCC-9	B23-ECO-501	ECONOMICS OF GROWTH & DEVELOPMENT	4	4	30	70	100	3
V	MCC-10	B23-ECO-502	DEMOGRAPHY	4	4	30	70	100	3
V	DSE-2 or	B23-ECO-503	ECONOMICS OF INFRASTRUCTURE	4	4	30	70	100	3
V	DSE-2	B23-ECO-504	ECONOMICS OF AGRICULTURE	4	4	30	70	100	3
V	DSE-3 or	B23-ECO-505	FINANCIAL ECONOMICS	4	4	30	70	100	3
V	DSE-3	B23-ECO-506	HARYANA ECONOMY	4	4	30	70	100	3
VI	CC-6 MCC-11	B23-ECO-601	INDIAN ECONOMY	4	4	30	70	100	3
VI	MCC-12	B23-ECO-602	ECONOMICS OF LABOUR	4	4	30	70	100	3
VI	DSE-4 or	B23-ECO-603	COMPUTER APPLICATIONS IN ECONOMICS	4	5	30	70	100	3
VI	DSE-4	B23-ECO-604	ECONOMICS OF INSURANCE	4	4	30	70	100	3
VI	DSE-5 or	B23-ECO-605	GENDER ECONOMICS	4	4	30	70	100	3
VI	DSE-5	B23-ECO-606	WELFARE ECONOMICS	4	4	30	70	100	3
VII	CC-H1	B23-ECO-701	MATHEMATICS FOR ECONOMICS	4	4	30	70	100	3
VII	CC-H2	B23-ECO-702	INTERNATIONAL ECONOMICS	4	4	30	70	100	3
VII	CC-H3	B23-ECO-703	PUBLIC ECONOMICS	4	4	30	70	100	3
VII	DSE-6 or	B23-ECO-704	ECONOMETRICS	4	4	30	70	100	3
VII	DSE-6	B23-ECO-705	GROWTH MODELS IN ECONOMICS	4	4	30	70	100	3
VII	PC-H1	B23-ECO-706	ECONOMIC DATA ANALYSIS	4	8	30	70	100	3
VIII	CC-H4	B23-ECO-801	MATHEMATICAL ECONOMICS	4	4	30	70	100	3
VIII	CC-H5	B23-ECO-802	ENVIRONMENTAL ECONOMICS	4	4	30	70	100	3
VIII	CC-H6	B23-ECO-803	SCHOOLS OF ECONOMIC THOUGHT	4	4	30	70	100	3
VIII	DSE-7 or	B23-ECO-804	ECONOMICS OF HEALTH	4	4	30	70	100	3
VIII	DSE-7	B23-ECO-805	ECONOMICS OF EDUCATION	4	4	30	70	100	3
VIII	PC-H2	B23-ECO-806	APPLICATION SOFTWARE FOR ECONOMICS	4	8	30	70	100	3

SCHEME/S AND SYLLABI FOR IN ECONOMICS AS PER NEP-2020 (MULTIPLE ENTRY- MULTIPLE EXIT-WITH (CBCS-LOCF)

UG Programme (Multidisciplinary): Scheme A

FirstYear:Scheme A

Semester	Subject-1 Core Courses	Subject-2 Core Courses	Subject-3Core Courses	Minor /Vocational	Multidisciplinary Courses	Ability Enhancement Courses	Skill Enhancement Courses	Value Added Course	Total Credits	Exit Option
I	CC-A1 (4 credit) B23-ECO-101 MICRO ECONOMICS-I	CC-B1 (4 credit)	CC-C1 (4 credit)	CC-M1 2 credit B23-ECO-103 INTRODUCTORY ECONOMICS	MDC-1 3 credit B23-ECO-104 BASICS OF ECONOMICS	AEC-1 2 credit	SEC-1 3 credit	VAC-1 2 credit	24	Under Graduate Certificate in Discipline with 52 credits
II	CC-A2 (4 credit) B23-ECO-201 MACRO ECONOMICS-I	CC-B2 (4 credit)	CC-C2 (4 credit)	CC-M2 2 credit B23-ECO-202 INTRODUCTION TO INDIAN ECONOMY	MDC-2 3 credit B23-ECO-204 INDIAN ECONOMIC ENVIRONMENT	AEC-2 2 credit	SEC-2 3 credit DSEC-1 B23-ECO-203 ECONOMIC SURVEY TECHNIQUES	VAC-2 2 credit	24	

Internship of 4 credits of 4-6 weeks duration after 2nd semester

Note:

1. Credits(C), Core Courses(CC); Discipline Specific Elective Courses(DSE); Discipline Skill Enhancement Courses (DSEC); Skill Enhancement Courses (SEC); Ability Enhancement Courses (AEC); Practicum Courses (PC); Value Added Courses (VAC); Multidisciplinary Courses (MDC)
2. If a student has been admitted to UG Programme(Multidisciplinary),then that student will select three subjects A, B and C in the first year out of the pool of subjects in that discipline offered by the Department/Institute/College.
3. For second year, a student will opt out of following options at the beginning of 3rd semester:

a) Multi-disciplinary 3Year UG Programme with 3subjects (Scheme A)

b) UG Programme with one Major and Minor subject (Scheme B)

2nd Year- Scheme A										
Semester	**Subject-1 Core Courses**	**Subject-2 Core Courses**	**Subject-3 Core Courses**	**Minor /Vocational**	**Multi Disciplinary Courses**	**Ability Enhancement**	**Skill Enhancement Courses**	**ValueAdded Courses**	**Total Credits**	**Exit Option**
III	CC-A3 (4 credit) B23-ECO-301 MICRO ECONOMICS-II	CC-B3 (4 credit)	CC-C3 (4 credit)	CC-M3 (4 credit) B23-ECO-301 MICRO ECONOMICS-II	MDC-3 3 credit B23-ECO-303 CURRENT ISSUES IN GLOBAL ECONOMY	AEC-3 2 credit	SEC-3 3 credit	--	24	Under Graduate Diploma in Discipline with 96 credits
IV	CC-A4 (4 credit) B23-ECO-401 MACRO ECONOMICS-II	CC-B4 (4 credit)	CC-C4 (4 credit)	CC-M4(V) (4 credit)	--	AEC-4 2 credit	--	VAC-3 2 credit	20	
Internship of 4 credits of 4-6 weeks duration after 4th semester										
3rd Year- Scheme A										
V	CC-A5 (4 credit) B23-ECO-501 ECONOMICS OF GROWTH & DEVELOPMENT	CC-B5 (4 credit)	CC-C5 (4 credit)	CC-M5(V) (4 credit)	--		Internship#(4 credit)s	--	20	Bachelor in Discipline with 132 credits

VI	CC-A6 (4 credit) B23-ECO-601 INDIAN ECONOMY	CC-B6 (4 credit)	CC-C6 (4 credit)	CC-M6 (4 credit) B23-ECO-602 ECONOMICS OF LABOUR CC-M7(V) (4 credit)	--	--	--		20

Credits	**Major=72**	**Minor= 24**	**MDC= 09**	**SEC= 09**	**AEC= 08**	**VAC=06**	**Internship=04**	**Total= 132**

NOTE: FOR SCHEME 'A' AND SCHEME 'B', FIRST YEAR COURSE STRUCTURE IS COMMON.

Scheme B : Bachelor with Major in ECONOMICS and Minor in "OTHER" Subject

2nd Year Scheme B :Bachelor with Major in (ECONOMICS) and Minor in OTHER Subject

Semester	Major Subject	Minor /Vocational	Multidisciplinary Courses	Ability Enhancement Courses	Skill Enhancement Courses	Value Added Courses	Total Credits	ExitOption
III	MCC-A3(4 credit) MCC-2 B23-ECO-102 BASIC PUBLIC FINANCE MCC-A4(4 credit) MCC-4 B23-ECO-301 MICRO ECONOMICS-II MCC-A5(4 credit) MCC-5 B23-ECO-304 BASIC STATS FOR ECONOMICS	CC-M3(V) (4 credit)	MDC-3 3 credit B23-ECO-303 CURRENT ISSUES IN GLOBAL ECONOMY	AEC-3 2 credit	SEC-3 3 credit	--	24	Under Graduate Diploma in Subject with100 credits
IV	MCC-A6(4 credit) B23-ECO-401 MACRO ECONOMICS-II	CC-M4(V) (4 credit)	--	AEC-4 2 credit	--	VAC-3 2 credit	24	

	MCC-A7(4 credit) B23-ECO-402 STATISTICAL TOOLS FOR ECONOMICS MCC-A8(4 credit) B23-ECO-403 INDIAN FINANCIAL SYSTEM DSE-A1(4 credit) B23-ECO-404 INDUSTRIAL ECONOMICS OR B23-ECO-405 MONEY & BANKING							
Internship of 4 credits of 4-6weeks duration after 4th semester								

3rd Year Scheme B :Bachelor with Major in (ECONOMICS) and Minor in OTHER Subject								
V	MCC-A9 (4 credit) B23-ECO-501 ECONOMICS OF GROWTH & DEVELOPMENT MCC-A10 (4 credit) B23-ECO-502 DEMOGRAPHY DSE-A2 (4 credit) B23-ECO-503 ECONOMICS OF INFRASTRUCTURE OR B23-ECO-504 ECONOMICS OF AGRICULTURE DSE-A3(4 credit) B23-ECO-505 FINANCIAL ECONOMICS OR B23-ECO-506 HARYANA ECONOMY	--	--		Internship#(4 credit)s	--	20	Bachelor with Major in (Subject) and Minor in (Subject) after earning 136 Credits

VI	MCC-A11(4 credit) B23-ECO-601 INDIAN ECONOMY MCC-A12(4 credit) B23-ECO-602 ECONOMICS OF LABOUR DSE-A4(4 credit) B23-ECO-603 COMPUTER APPLICATIONS IN ECONOMICS OR B23-ECO-604 ECONOMICS OF INSURANCE DSE-A5(4 credit) B23-ECO-605 GENDER ECONOMICS OR B23-ECO-606 WELFARE ECONOMICS	CC-M5(V) (4 credit)	--	--	--	--	20	

Credits	**Major = 68**	**Minor = 32**	**MDC = 09**	**SEC = 09**	**AEC = 08**	**VAC = 06**	**Internship = 04**	**Total = 136**

#Four credits of internship, earned by a student during summer internship after 2nd semester or 4th semester, will be taken into account in 5th semester of a student who pursue 3year UG Programmes without taking exit option.

SCHEME 'C' : UG Programme with Single Major (ECONOMICS)
(A student will take admission in UG Programme with Single Major (Economics) in the first year)

I Year Scheme C:Bachelor with Major in (Economics) and Minor in Same Subject (Economics)								
Semester	**Major Subject**	**Minor /Vocational**	**Multidisciplinary Courses**	**Ability Enhancement Courses**	**Skill Enhancement Courses**	**Value Added Courses**	**Total Credits**	**Exit Option**
I	MCC-A1(4 credit) B23-ECO-101 MICRO ECONOMICS-I MCC-A2(4 credit) B23-ECO-102 BASIC PUBLIC FINANCE	CC-M1 (4 credit) B23-ECO-103 INTRODUCTORY ECONOMICS	MDC-1 3 credit B23-ECO-104 BASIC ECONOMICS	AEC-1 2 credit	SEC-1 3 credit	VAC-1 2credit	22	Under Graduate Certificate in Subjects with 48 credits
II	MCC-A3(4 credit) B23-ECO-201 MACRO ECONOMICS-I DSEC-A1(4 credit) B23-ECO-203 ECONOMIC SURVEY TECHNIQUES	CC-M2 (4 credit) B23-ECO-202 INTRODUCTION TO INDIAN ECONOMY	MDC-2 3 credit B23-ECO-204 INDIAN ECONOMIC ENVIRONMENT	AEC-2 2 credit	SEC-2 3 credit	VAC-2 2 credit	22	
	Internship of (4 credit)s of 4-6 weeks duration after 2nd semester							

2nd Year Scheme C:UG Programme with Single Major (Economics)								
III	MCC-A4 (4 credit) B23-ECO-301 MICRO ECONOMICS-II MCC-A5 (4 credit) MCC-5 B23-ECO-304 BASIC STATS FOR ECONOMICS	CC-M3 (4 credit)	MDC-3 3 credit B23-ECO-303 CURRENT ISSUES IN GLOBAL ECONOMY	AEC-3 2 credit	SEC-3 3 credit	VAC-3 2 credit	22	Under Graduate Diploma in Subjects with 94 credits

IV	MCC-A6 (4 credit) B23-ECO-401 MACRO ECONOMICS-II MCC-A7 (4 credit) B23-ECO-402 STATISTICAL TOOLS FOR ECONOMICS MCC-A8(4 credit) B23-ECO-403 INDIAN FINANCIAL SYSTEM DSE-A1 (4 credit) B23-ECO-404 INDUSTRIAL ECONOMICS OR B23-ECO-405 MONEY & BANKING	CC-M4(V) (4 credit)	--	AEC-4 2 credit	--	VAC-4 2 credit	24	
Internship of (4 credit)s of 4-6 weeks duration after 4th semester								
3rd Year Scheme C:UG Programme with Single Major(Economics)								
Semester	**Major Subject**	**Minor /Vocational**	**MultiDisciplinary Courses**	**Ability Enhancement Courses**	**Skill Enhancement Courses**	**Value Added Courses**	**Total Credits**	**Exit Option**

V	MCC-A9(4 credit) B23-ECO-501 ECONOMICS OF GROWTH & DEVELOPMENT MCC-A10 (4 credit) B23-ECO-502 DEMOGRAPHY DSE-A2(4 credit) B23-ECO-503 ECONOMICS OF INFRASTRUCTURE OR B23-ECO-504 ECONOMICS OF AFRICULTURE DSE-A3(4 credit) B23-ECO-505 FINANCIAL ECONOMICS OR B23-ECO-506 HARYANA ECONOMY	CC-M5(V) (4 credit)	--		Internship#(4 credit)s	--	24	Bachelor with Major in (Economics) and Minor in (Economics) after earning 136 credits
VI	MCC-A11 (4 credit) B23-ECO-601 INDIAN ECONOMY MCC-A12 (4 credit) B23-ECO-	CC-M6(V) (4 credit)	--	--	SEC-4 2 credit	--	22	

	602 ECONOMICS OF LABOUR DSE-A4(4 credit) B23-ECO-603 COMPUTER APPLICATIONS IN ECONOMICS OR B23-ECO-604 ECONOMICS OF INSURANCE DSE-A5(4 credit) B23-ECO-605 GENDER ECONOMICS OR B23-ECO-606 WELFARE ECONOMICS								
Credits	**Major = 72**	**Minor = 24**	**MDC = 09**	**SEC = 11**	**AEC = 08**	**VAC=08**	**Internship = 04**	**Total = 136**	
#Four credits of internship, earned by a student during summer internship after 2nd semester or 4th semester, will be taken into account in 5th semester of a student who pursue 3year UG Programmes without taking exit option.									

Notes:

1. **Subjects, DSE, DSEC, SEC, AEC, MDC and VAC courses will be offered by the Department/ College/ Institute depending upon its available faculty, infrastructure and time table.**
2. **A student will opt for Multidisciplinary Course from the subject which is different from the discipline of major and minor subjects. Students are not allowed to choose or repeat courses already undergone at the higher secondary level (12th class) or opted as major and minor stream under this category. Provided further that if a Multidisciplinary Course across the discipline cannot be offered by the Department/Institute/College, due to its constraints and available resources, then**
   - **i. MDC can be opted out of MOOCs through SWAYAM**
   - **ii. MDC can be completed out of online courses offered by the Kurukshetra University**
   - **iii. MDC can be completed from a cluster college, i.e., from a neighboring college/institute**
3. **A student will opt for AEC, SEC, VAC and Minor(Vocational) courses from the respective pools of courses offered by the Department/College/Institute duly approved by the University. A Department/Institute/College can add more courses in the pools of AEC, SEC,**

VAC and Vocational courses with prior approval of the university.

4. For first and second semester of UG programme (Multidisciplinary) (Scheme A and B), a student can choose a Minor Course of 2 credit from the pool of minor subjects in that semester offered by the Department/Institute/College.

5. For first and second semester of UG programme with Single Major (Scheme C), a student can choose a Minor Course of (4 credit), say Subject E, out of available Core Courses of that subject E offered in that semester.

6. From 3rd semester onwards of all three schemes, a student can choose a Minor Course, say Subject E, out of available Core Courses of that subject E offered in that semester.

7. In the subjects/courses which involve practicum, i.e. Practical/ Laboratory/ Studio/ Project/ Survey/Field work, etc., a course of 4 credits will dedicate 3 credits for lectures and one credit for practicum and in other subjects/courses, a course of 4 credits will dedicate 3 credits for lectures and 1 credit for tutorial. During 4th year, when the practicum course is offered as a separate course in that subject, then a course of 4 credits will dedicate 3 credits for lectures and 1 credit for tutorial. However, for any DSE course, a course of 4 credits will dedicate 3 credits for lectures and one credit for tutorial.

8. In case of AEC of 2 credits, the entire 2 credits will be dedicated for lectures.

9. In the SEC courses of 3 credits, 2 credits will be dedicated for lectures and 1 credit for practicum, In the SEC courses of 2 credits, 1 credits will be dedicated for lecture and 1 credit for practicum and in the DSEC courses of 4 credits, 3 credits will be dedicated for lectures and 1 credit for practicum.

10. If a student takes exit after the second semester, then Undergraduate Certificate in Discipline/subject will be awarded after earning 52/48 credits including 4 credits for the internship of 4-6 weeks during the summer vacation. The nomenclature of the Discipline will depend upon the subjects opted during the programme. For example, if a student has studied two subjects Physics and Chemistry or Physics and Mathematics or Chemistry and Zoology, the Undergraduate Certificate in Physical Science and Life Science respectively will be awarded. Similarly, if a student has studied two subjects Economics and Sociology or Economics and Mathematics or Political Science and Hindi, the Undergraduate Certificate in Arts will be awarded.

11. If a student takes exit after the 4th semester, then Undergraduate Diploma in Discipline will be awarded after earning 96 credits including 4 credits for the internship of 4-6 weeks during the summer vacation. In case, a student takes exit after 2nd year of UG Programme with Single Major, then Undergraduate Diploma in Major Subject will be awarded after 100 credits (scheme B) and 94 credits (scheme C) including 4 credits for the internship of 4-6 weeks during the summer vacation.

NOTE: 4TH YEAR IS SAME FOR SCHEME A, B, AND C

Fourth Year

Semester	Major Subject			Minor Subject		
	Core Courses	**Discipline Specific Courses**	**Practicum Courses**	**Core Courses**	**Total credits**	**Degree to be awarded**
VII Level-8	CC-H1 B23-ECO-701 MATHEMATICS FOR ECONOMICS CC-H2 B23-ECO-702 INTERNATIONAL ECONOMICS CC-H3 B23-ECO-703 PUBLIC ECONOMICS 4+4+4 Credits	DSE-6 H1 (4 credit) B23-ECO-704 ECONOMETRICS OR B23-ECO-705 GROWTH MODELS IN ECONOMICS	PC-H1 (4 credit) B23-ECO-706 ECONOMIC DATA ANALYSIS	CC-HM1 (4 credit)	24	**Bachelor (Honours) In Major Subject** with 184 Credits
VIII Level-8	CC-H4 B23-ECO-801MATHEMATICAL ECONOMICS CC-H5 B23-ECO-802 ENVIRONMENTAL ECONOMICS CC-H6 B23-ECO-803 SCHOOLS OF ECONOMIC THOUGHT 4+4+4 Credits	DSE-7 H2 (4 credit) B23-ECO-804 ECONOMICS OF HEALTH OR B23-ECO-805 ECONOMICS OF EDUCATION	PC-H2 (4 credit) B23-ECO-806 APPLICATION SOFTWARE FOR ECONOMICS	CC-HM2 (4 credit)	24	
	OR					
VII Level-8	CC-H1 B23-ECO-701 MATHEMATICS FOR ECONOMICS	DSE-H1 (4 credit) B23-ECO-704	PC-H1 (4 credit)	CC-HM1 (4 credit)	24	**Bachelor (Honours**

	CC-H2 B23-ECO-702 INTERNATIONAL ECONOMICS CC-H3 B23-ECO-703 PUBLIC ECONOMICS 4+4+4 Credits	ECONOMETRICS OR B23-ECO-705 GROWTH MODELS IN ECONOMICS	B23-ECO-706 ECONOMIC DATA ANALYSIS			**With Research) In Major Subject** with 184 credits
VIII Level-8	CC-H4 B23-ECO-801MATHEMATICAL ECONOMICS CC-H5 B23-ECO-802 ENVIRONMENTAL ECONOMICS 4+4 credits	--	Project /Dissertation12 credits	CC-HM2 (4 credit)	24	

Notes:

1. 4-year UG (Honours) or (Honours with Research) in Major Subject will be offered after completion of 3 year UG programme with one major and one minor subject to those students who have completed at least 60 credits in the concerned major subject. In addition to the above, 4- year UG (Honours with Research) in Major Subject will be offered only to those students who have obtained CGPA 7.5 or more in the 3 year UG programme.

2. Core course in Honours subject (CCH): Discipline specific elective course in Honours (DSE-H); Practicum Course in Honours subject (PC- H); Core Course in Minor Subject (CC-HM) of Honours Program.

3. Bachelor degree (Honours) or (Honours with Research) will be awarded in the Major subject after successful completion of the four year programme securing 184 credits and satisfying the minimum credit requirement as given in the Credit Table.

4. Student opting for Honours with Research will work on a Research Project or do research during the eighth semester. The dissertation work will be of 12 credits. 8 credits will be earmarked for the evaluation report of the dissertation and viva-voce examination will carry weightage of 4 credits.

5. The evaluation of the Dissertation and the conduct of viva-voce examination will be done by an external examiner.

6. The practicum course may be replaced by a theory course wherever not applicable.

DETAILED SYLLABI FOR UG ECONOMICS COURSES FOR SEMESTER I, II, III & IV ONLY

CC-1 MCC-1

Session 2023-2024			
Part-A Introduction			
Subject	Economics		
Semester	I		
Name of the Course	Micro Economics-I		
Course Code	**B23-ECO-101**		
Course Type: (CC/MCC/MDC/ CCM/ DSEC/VOC/DSE/PC/AEC/ VAC	CC, MCC		
Level of the course (As per Annexure-I)	100-199		
Pre-requisite for the course (if any)	N.A.		
Course Learning Outcomes (CLO)	After completing this course, the learner will be able to: 1. Understand the nature and scope of Economics, including the meaning of Economics, its methods, and why it is studied. 2. Analyze the role of an Economist, including the ability to think like an Economist, the Economist as a Scientist, and as a Policy Adviser. 3. Evaluate the different types of economic activities and systems, including the organization of economic activities and the evolution of present economic systems. 4. Apply the concepts of demand and supply, elasticity, consumer equilibrium, production analysis, and cost and revenue analysis to real-world economic situations.		
	5*.		
Credits	Theory	Tutorial	Total
	03	1	04
Contact Hours	03	1	04
Max. Marks: 100 **Internal Assessment Marks: 30** **End Term Exam Marks: 70**	**Time: 3 Hrs**		

Part-B Contents of the Course

Instructions for Paper Setters

1. Nine Questions will be set in all and students will be required to attempt 5 questions.
2. Question No. 1 will be compulsory and will consist of 7 short answer type questions of 2 marks spread over the entire syllabus (2*7=14 marks).
3. For the remaining four questions, students will attempt 1 out of 2 questions from each of the four units (14 marks each).

Unit	**Topics**	**Contact Hours**
I	**Nature and Scope of Economics:** Meaning of Economics; Nature of Economics; Scope of Economics; Methods of Economics; Why Study Economics? **Role of an Economist:** Thinking Like an Economist; The Economist as Scientist; The Economist as Policy Adviser; Economic Policy **Economic Activities and Systems:**	12

	Types of Economic Activities; Organisation of Economic Activities; Evolution of the Present Economic Systems	
II	**Firms and Household:** Meaning of Firms and Household; Relationship Between Firms and Household; Input Markets; Output Markets; Circular Flow of Economic Activities (Two – Sector) **Demand and Supply:** Individual Demand; Market Demand; Law of Demand; Types of Goods (Normal, Inferior and Giffen); Demand Determinants; Supply and its Determinants; Law of Supply; Market Equilibrium	12
III	**Elasticity and its Measurement:** Types of Elasticity of Demand and Supply; Price, Income and Cross Elasticity; Measurement of Elasticity of Demand; Determinants of Elasticity of Demand **Consumer Equilibrium:** Cardinal Utility Analysis (Law of Diminishing Marginal Utility, Law of Equi-Marginal Utility); Ordinal Utility Analysis (Indifference Curve, Properties of Indifference Curve, Budget Line, Equilibrium of Consumer); Consumer Surplus (Marshall & Hicks)	12
IV	**Production Analysis:** Production Function-Short Run and Long Run; Total Product; Marginal Product; Average Product; Law of Returns to Factor (Law of Variable Proportions); Law of Returns to Scale(Increasing, Decreasing and Constant) **Cost and Revenue Analysis:** Fixed and Variable Costs, Opportunity Cost, Implicit and Explicit Costs, Real and Monetary Costs; Traditional short run and long run cost curves and their interrelation; TR, MR, AR and their relationships	12
V*		
Suggested Evaluation Methods		
Internal Assessment: 30 ➢ **Theory (All these activities will be covered under Tutorials. Approximate contact Hours =12)** Class Participation :5 Seminar/Presentation/Assignment/Quiz/Class Test etc. :10 Mid Term Exam :15 ➢ **Practicum** Class Participation Seminar/Demonstration/Viva Voce/Lab Records etc. Mid Term Exam:		**End Term Examination:70** Theory

Part-C Learning Resources

Recommended Books/E-Resources/LMS:

- Ahuja, H.L(2012), *Ucchatar Arthik Siddhant*, S.Chand & Company, New Delhi.
- Dwivedi, D.N(2011), *Microeconomics – Theory & Applications*, Pearson.
- Koutsoyiannis ,A.(1979), *Modern Microeconomics*,(2nd Edition), Macmillan Press, London.
- Mankiw, N.G. (2012), *Principles of Microeconomics*, (6th Edition), South-Western Cengage Learning.
- Salvatore D. (2006), *Microeconomics-Theory and Applications*, Oxford University Press.
- Varian,H. (2003),Intermediate Microeconomics, East-West Press.
- Browing Edger K., Browing Jacquelene, M.: *Microeconomic Theory and Applications*, 2nd Ed. 1986, Kalyani

* Applicable for courses having practical component.

MCC-2

Session 2023-2024			
Part-A Introduction			
Subject	Economics		
Semester	I		
Name of the Course	Basic Public Finance		
Course Code	**B23-ECO-102**		
Course Type: (CC/MCC/MDC/ CCM/ DSEC/VOC/DSE/PC/AEC/ VAC	MCC		
Level of the course (As per Annexure-I)	100-199		
Pre-requisite for the course (if any)	N.A.		
Course Learning Outcomes (CLO)	After completing this course, the learner will be able to: 1. To know the scope and breadth of Public Finance along with understanding the core principles of public sector economics so that they are able to apply the understanding of these concepts to comprehend real world problems along with the ability to think critically and analyze economic problems. 2. To understand the core principles of taxation so that they are able to apply the understanding of these concepts to comprehend real world problems along with the ability to think critically and analyze economic problems. 3. To understand the nature and structure of public expenditure and public debt so that they can analyze the welfare impacts of public expenditure and debt policy.. 4. To exhibit the ability to learn and apply relevant principles of public finance for analysis of public policy on the federal nature of India. Simultaneously Understanding the implications and ethical as well as value part of it.		
	5*.		
Credits	Theory	Tutorial	Total
	03	1	04
Contact Hours	03	1	04
Max. Marks: 100 **Internal Assessment Marks: 30** **End Term Exam Marks: 70**	**Time: 3 Hrs**		

Part-B Contents of the Course

Instructions for Paper Setters

1. Nine Questions will be set in all and students will be required to attempt 5 questions.
2. Question No. 1 will be compulsory and will consist of 7 short answer type questions of 2 marks spread over the entire syllabus (2*7=14 marks).
3. For the remaining four questions, students will attempt 1 out of 2 questions from each of the four units (14 marks each).

Unit	**Topics**	**Contact Hours**
I	**Introduction to public finance:** Nature and Scope of Public Finance; Law of Maximum Social Advantage; Concept and features of Public Goods, Private Goods, Merit Goods; Public Expenditure -Meaning, Importance, Canons and Effects; Components of Public Expenditure in India.	15

II	**Taxation:** Classification and Importance of Taxes; Features of Good Tax System; Concept of Impact, Incidence and Shifting of Taxation; Taxes of Centre and State Governments; Salient features of Indian Tax System; Goods and Services Tax (overview only).	15
III	**Public debt:** Meaning, Types and Effects of Public Debt; Burden of Public Debt; Principles of Public Debt Management; Classification, Growth, and Characteristics of Indian Public Debt; Concepts of Revenue Deficit, Fiscal Deficit, Monetized Deficit, Primary Deficit; Deficit Financing in India.	15
IV	**Budget and Fiscal Federalism:** Types and Structure of Public Budget; Budget of The Government of India (Latest Financial Year); Fiscal Federalism: Principles of efficient division of financial resources between Central and States, Issues in centre-state financial relations, Latest Finance Commission Recommendations.	15
V*		
Suggested Evaluation Methods		
Internal Assessment: 30 ➢ **Theory (All these activities will be covered under Tutorials. Approximate contact Hours =15)** Class Participation :5 Seminar/Presentation/Assignment/Quiz/Class Test etc. :10 Mid Term Exam :15 ➢ **Practicum** Class Participation Seminar/Demonstration/Viva Voce/Lab Records etc. Mid Term Exam:		**End Term Examination:70** Theory

Part-C Learning Resources
Recommended Books/E-Resources/LMS: ● *Harvey Rosen, (2005), Public Finance, Seventh Edition, McGraw Hill Publications.* ● *Joseph E. Stiglitz – Public Sector Economics* ● *Musgrave R.A. and Musgrave P.A. – Public Finance in Theory and Practice* ● *Bhatia H.L. – Public Finance* ● *Tyagi B.P. – Public Finance* ● *Bhargava R.N. Theory and Working of Union Finance in India* ● *Hugh Dalton – Principles of Public Finance* ● Indapurakar Kavita, Sidana Neeru, Jaspal Singh - *Money, Banking & Public Finance 2023, Kalyani*

* Applicable for courses having practical component.

CCM, CC-M1

Session 2023-2024			
Part-A Introduction			
Subject	Economics		
Semester	I		
Name of the Course	Introductory Economics		
Course Code	**B23-ECO-103**		
Course Type: (CC/MCC/MDC/ CCM/ DSEC/VOC/DSE/PC/AEC/ VAC	CCM		
Level of the course (As per Annexure-I)	100-199		
Pre-requisite for the course (if any)	N.A.		
Course Learning Outcomes (CLO)	After completing this course, the learner will be able to: 1. Know the scope and methods of Economics along with understanding the economic problem of scarcity & choice and the core principles of demand and supply. 2. They are able to apply the understanding of these concepts to Comprehend real world problems along with the ability to think critically and analyze economic problems in different types of economic systems and various types of market structures. 3. To understand the concept of national income and various methods of its measurement, aggregate demand & aggregate supply and their relevance. Understanding the different methods to calculate GDP. 4.To understand how governments and central banks use fiscal policy (taxes, spending) and monetary policy (interest rates, money supply) to manage the economy, stabilize it & equilibrium of goods-money market.		
	5*.		
Credits	Theory	Tutorial	Total
	02	-	02
Contact Hours	02	-	02
Max. Marks: 50 **Internal Assessment Marks: 15** **End Term Exam Marks: 35**	**Time: 2 Hrs**		

Part-B Contents of the Course

Instructions for Paper Setters

1. Nine Questions will be set in all and students will be required to attempt 5 questions.
2. Question No. 1 will be compulsory and will consist of 7 short answer type questions of 1 marks each spread over the entire syllabus (1×7=7 marks).
3. For the remaining four questions, students will attempt 1 out of 2 questions from each of the FOUR units (7 marks each).

Unit	**Topics**	**Contact Hours**
I	**Basic Economics**: Scope and Methods of economics, The Economic Problem: Scarcity and Choice, Economic systems and their characteristics, Basic economic questions: what, how, and for whom to Produce.	8
II	**Micro Economics**: Law of Demand; Law of Supply; Elasticity and Its Applications; Concept of Costs and Revenue	7

III	**Macro Economics:** Meaning, difference between micro and macro, meaning of four major sectors of macro economics. Concepts of GDP, GNP and National income, Nominal and Real GDP, Limitations of the GDP concept, Circular Flow of Income in two, three, and four-sector economy	8
IV	**Government Policies:** Monetary policy (meaning, objective, its instruments) fiscal policy (meaning, objective and its instruments):	7
V*		

Suggested Evaluation Methods	
Internal Assessment: 15 ➢ **Theory** Class Participation :4 Seminar/Presentation/Assignment/Quiz/Class Test etc. :4 Mid Term Exam :7 ➢ **Practicum** Class Participation Seminar/Demonstration/Viva Voce/Lab Records etc. Mid Term Exam:	**End Term Examination:35** Theory

Part-C Learning Resources

Recommended Books/E-Resources/LMS:

- Koutsoyiannis, A. (1979). *Modern Microeconomics (2nd Edition).*Macmillan Press, London.
- Mankiw, N.G. (2021, 7e). *Principles of Microeconomics.* Cengage Learning India Private Limited, Mayur Vihar Phase 1, Delhi.
- Pyndick, R.S., Rubinfeld, D.L., MehtaP.L. (2017, 7e). *Micro Economics.* Pearson India Education Services Pvt. Ltd, Noida UP, India.
- Salvatore, D.(2009). *Microeconomics-Theory and Applications.* Oxford University Press.
- Dornbusch, R., Fischer, S., Startz, R. (2018). *Macroeconomics*. MaGraw Hill Education (India) Private Limited, Chennai, India.
- Puri, V.K., Mishra, S.K. (2021, 39e). *Indian Economy*. Himalaya Publishing HousePvt. Ltd., Girgaon, Mumbai, India.
- Salvatore, D. (2008, 8e). International *Economics.* Wiley India (P.) Ltd., Daryaganj, New Delhi, India.
- Lekhi R.K., *Principles of Economics*, 2011, Kalyani

* Applicable for courses having practical component.

MDC-1

Session 2023-2024			
Part-A Introduction			
Subject	Economics		
Semester	I		
Name of the Course	Basics of Economics		
Course Code	**B23-ECO-104**		
Course Type: (CC/MCC/MDC/ CCM/ DSEC/VOC/DSE/PC/AEC/ VAC	MDC		
Level of the course (As per Annexure-I)	100-199		
Pre-requisite for the course (if any)	N.A.		
Course Learning Outcomes (CLO)	After completing this course, the learner will be able to: 1 Have knowledge about basic concepts of Economics. 2. Have Knowledge of basic concepts of Micro Economics: nature and scope of Micro Economics and understanding the key components of Micro Economics for developing economic theories. 3. Have Knowledge of basic concepts of Macro Economics, understanding the various concepts of National Income and developing the ability to construct some basic Macroeconomic Model for analysis of Economic Theories. 4. Have Understanding the basis for trade between two economies, Measure the benefits accrued from International Trade and knowledge of different measures of Economic Development.		
	5*.		
Credits	Theory	Tutorial	Total
	02	1	03
Contact Hours	02	1	03
Max. Marks: 75 **Internal Assessment Marks: 25** **End Term Exam Marks: 50**	**Time: 3 Hrs**		

Part-B Contents of the Course

Instructions for Paper Setters

1. Nine Questions will be set in all and students will be required to attempt 5 questions.
2. Question No. 1 will be compulsory and will consist of 10 short answer type questions of 1 mark, spread over the entire syllabus (1*10=10 marks).
3. For the remaining four questions, students will attempt 1 out of 2 questions from each of the four units (10 marks each).

Unit	**Topics**	**Contact Hours**
I	Nature and scope of Economics, Definitions of Economics, Important concepts of Economics, Scarcity and choice, The basic issues of what to produce, how to produce and for whom to produce, Problem of distribution of output, Branches of Economics.	11
II	Concept of demand, law of demand, determinants of demand, Law of supply, and determinants of supply, market equilibrium and price mechanism. Meaning of elasticity of demand. Different types of Market Structure: Perfect competition and its Characteristics, Monopoly and its characteristics, Monopolistic competition and oligopoly.	12

III	Nature and Scope of macroeconomics, Difference between Micro and Macro economics, Macroeconomic Concerns, The role of Government in the Macro Economy, Introduction to National Income: Concepts of GDP, GNP and National income, Nominal and Real GDP, Limitations of the GDP concept, Circular Flow of Income in two, three, and four-sector economy, Inflation: Meaning and types.	11
IV	Importance of the study of International Economics; Inter-regional and international trade; Theories of absolute advantage and Comparative Advantage. Measurement of development and development gap: GDP, Per capita income, Gini coefficient and Human Development Index (HDI).	11
V*		

Suggested Evaluation Methods	
Internal Assessment: 25 ➢ **Theory** Class Participation :5 Seminar/Presentation/Assignment/Quiz/Class Test etc. :7 Mid Term Exam :13 ➢ **Practicum** Class Participation Seminar/Demonstration/Viva Voce/Lab Records etc. Mid Term Exam:	**End Term Examination:50** Theory

Part-C Learning Resources
Recommended Books/E-Resources/LMS: ● Varian H. *"Microeconomic Analysis"*, W.W Norton New York (Latest Edition). ● Koutsoyiannis, A. *"Modern Microeconomics"*, Macmillan Press, London (Latest Edition) ● Dornbusch, Fischer and Startz, *Macroeconomics*, McGraw Hill, 11th edition, 2010. ● N. Gregory Mankiw. *Macroeconomics*, Worth Publishers, 7th edition, 2010. ● Olivier Blanchard, *Macroeconomics*, Pearson Education, Inc., 5th edition, 2009. ● Salvatore Dominick. International Economics, Wiley India. ● Sodersten Bo and Reed J. International Economics, McMillan Publisher ● Lekhi R.K., *Principles of Economics*, 2011, Kalyani

* Applicable for courses having practical component.

CC-2 MCC-3

Session 2023-2024			
Part-A Introduction			
Subject	Economics		
Semester	II		
Name of the Course	Macro Economics-I		
Course Code	**B23-ECO-201**		
Course Type: (CC/MCC/MDC/ CCM/ DSEC/VOC/DSE/PC/AEC/ VAC	CC/MCC		
Level of the course (As per Annexure-I)	100-199		
Pre-requisite for the course (if any)	N.A.		
Course Learning Outcomes (CLO)	After completing this course, the learner will be able to: 1. Have Insight of Basic Concepts of Macro Economics-Its nature and scope, Methodology; National Income and circular flow of national income in an Economy. 2. Have understanding of Macroeconomic behavior in terms of Classical theory of Employment, Say's law, Keynes' theory of equilibrium level of income and Employment 3. Have knowledge about consumption bevaiour at macroeconomic level, Keynes' psychological law of consumption, hypotheses about long run income-consumption relationship 4. Have understanding about capital and Investment, Decision to invest at macro economic level, determinants of induced investment.		
	5*.		
Credits	Theory	Tutorial	Total
	03	1	04
Contact Hours	03	1	04
Max. Marks: 100 **Internal Assessment Marks: 30** **End Term Exam Marks: 70**	**Time: 3 Hrs**		

Part-B Contents of the Course

Instructions for Paper Setters

1. Nine Questions will be set in all and students will be required to attempt 5 questions.
2. Question No. 1 will be compulsory and will consist of 7 short answer type questions of 2 marks spread over the entire syllabus (2*7=14 marks).
3. For the remaining four questions, students will attempt 1 out of 2 questions from each of the four units (14 marks each).

Unit	**Topics**	**Contact Hours**
I	Nature and Scope of Macro Economics, Difference between Micro and Macro Economics Importance of Macro Economics. Concepts, Measurement and limitations of National Income Statistics, Circular flow of Income in Two, Three and Four Sector Economy	15
II	Say's law of Market, Classical Theory of Income and Employment. Keynesian Theory of Income and Employment, Principle of Effective Demand, Comparison between Classical and Keynesian Theory of Employment	15
III	Consumption Function: Meaning and Technical Attributes, Significance of MPC, Relationship between APC & MPC, Keynesian Psychological Law of Consumption and its Implications, Short-run & Long-run Consumption functions	15
IV	Meaning of Capital and Investment, Types of	

	Investment, Marginal Efficiency of Capital (MEC). Relation between MEC and MEI, Factors affecting Inducement to Invest	15
V*		

Suggested Evaluation Methods

Internal Assessment: 30 ➢ **Theory (All these activities will be covered under Tutorials. Approximate contact Hours =15)** Class Participation :5 Seminar/Presentation/Assignment/Quiz/Class Test etc. :10 Mid Term Exam :15 ➢ **Practicum** Class Participation Seminar/Demonstration/Viva Voce/Lab Records etc. Mid Term Exam:	**End Term Examination:70** Theory

Part-C Learning Resources

Recommended Books/E-Resources/LMS:

- Shapiro, E. (1996), *Macroeconomic Analysis*, Galgotia Publications, New Delhi.
- Dornbusch, R. and F. Stanley (1999), *Macroeconomics*, Irwrin McGraw Hill, Inc. New York, 7th Edition
- Lipsey R.G. and K.A. Chrystal(2007) ―Economics, Oxford University Press
- Ackley, G. (1978), *Macroeconomics: Theory and Policy*, Macmillan, New York.
- Mankiw, N. Greogory (2000), *Macroeconomics* Macmillan Worth Publishers 4th Edition
- Paul Samuelson and Nordhaus: (2005), *Economics* (18thEd.) Tata Hill Publishing Company
- Lekhi R.K. Macro Economics Part - I, 2016 Kalyani

* Applicable for courses having practical component.

CC-M2

Session 2023-2024			
Part-A Introduction			
Subject	Economics		
Semester	II		
Name of the Course	**INTRODUCTION TO INDIAN ECONOMY**		
Course Code	**B23-ECO-202**		
Course Type: (CC/MCC/MDC/ CCM/ DSEC/VOC/DSE/PC/AEC/ VAC	CCM		
Level of the course (As per Annexure-I)	100-199		
Pre-requisite for the course (if any)	N.A.		
Course Learning Outcomes (CLO)	After completing this course, the learner will be able to: 1. Know economic systems, resource allocation, types of economies, Indian economy's size, sectors, challenges, government initiatives, and global standing. 2. Understand causes and consequences of inequality, unemployment, infrastructure challenges, government initiatives, 3. Understand the importance, issue and challenges of Infrastructure and environmental sustainability in Indian economy 4. Understand the challenges, achievements and failure during different five years plans t& know the strategies for economic reforms before and after 1991.		
	5*.		
Credits	Theory	Tutorial	Total
	02	-	02
Contact Hours	02	-	02
Max. Marks: 50 **Internal Assessment Marks: 15** **End Term Exam Marks: 35**	**Time: 3 Hrs**		

Part-B Contents of the Course

Instructions for Paper Setters

1. Nine Questions will be set in all and students will be required to attempt 5 questions.
2. Question No. 1 will be compulsory and will consist of 7 short answer type questions of 1 mark spread over the entire syllabus (1*7=7 marks).
3. For the remaining four questions, students will attempt 1 out of 2 questions from each of the Four units (7 marks each).

Unit	**Topics**	**Contact Hours**
I	**Overview of the Indian Economy:** Introduction to the Indian economy: size, growth, and significance, Key sectors of the Indian economy; Agriculture: importance, challenges, and government initiatives, Industry: manufacturing, mining, and construction sectors, Services: IT, telecommunications, finance and tourism. India's position in the global economy.	7
II	**Major Economic Challenges in India:** **Poverty and Income Inequality:** Causes and consequences of income inequality: Government initiatives and policies to reduce poverty and inequality. **Unemployment and Skill Development:** Types and causes of unemployment in	8

	India, Youth unemployment and the demographic dividend. Government schemes and initiatives to promote employment and skill enhancement.	
III	**Infrastructure Development:** Importance of infrastructure in economic development, Challenges in transportation, energy, and urban infrastructure, Government initiatives such as Smart Cities Mission and Bharatmala Project. **Environmental Sustainability:** Environmental challenges in India, including pollution and climate change, Importance of sustainable development and green initiatives.	7
IV	**Economic Reforms**: Need, objectives and features before 1991; New Economic Policy (Liberalisation Privatisation Globalisation) reforms after 1991**:** achievements and failures**;** NITI Aayog: need, objectives	8
V*		

Suggested Evaluation Methods	
Internal Assessment: 15 ➢ **Theory** Class Participation :4 Seminar/Presentation/Assignment/Quiz/Class Test etc. :4 Mid Term Exam :7 ➢ **Practicum** Class Participation Seminar/Demonstration/Viva Voce/Lab Records etc. Mid Term Exam:	**End Term Examination:35** Theory

Part-C Learning Resources

Recommended Books/E-Resources/LMS:

- Dutt, Gaurav and Mahajan, Ashwani "*Dutt & Sundharam Indian Economy*" S. Chand & Company (Latest Ed.).
- Dhar, P.K. "*Indian Economy – Its Growing Dimensions*" Kalyani Publishers (Latest Ed.).
- Kapila, Uma "*Indian Economy: Performance and Policies*" Academic Foundation, New Delhi (Latest Edition).
- Kapila, Uma "*Indian Economy Since Independence*" Academic Foundation, New Delhi (Latest Edition).
- Mishra S. K. and Puri,V. K. "*Indian Economy*", Himalaya Publishing House (Latest Ed.)

* Applicable for courses having practical component.

DSEC-1

Session 2023-2024			
Part-A Introduction			
Subject	Economics		
Semester	II		
Name of the Course	**ECONOMIC SURVEY TECHNIQUES**		
Course Code	**B23-ECO-203**		
Course Type: (CC/MCC/MDC/ CCM/ DSEC/VOC/DSE/PC/AEC/ VAC	DSEC		
Level of the course (As per Annexure-I)	100-199		
Pre-requisite for the course (if any)	N.A.		
Course Learning Outcomes (CLO)	After completing this course, the learner will be able to: 1. Have Insight of Basics of Data, Types of Data: Quantitative, Qualitative, Cross Sectional and Time Series, Different Scales of Measurement, Data Source: Primary & Secondary, Nature of Data in CSO, NSSO, Census and Economic Survey 2. Have understanding of concept of Survey Technique, Steps involved in conducting Survey, Methods used in collecting data through Survey, Types of Survey Research, Structured and Unstructured Questions in survey, Difficulties and Issues in Survey Research 3. Have knowledge about Questionnaire design, Various Qualitative Methods like Ethnography, Unstructured Interviews, Participant Observation, Recording of Data, Data Presentation and Computer Applications in Data Organization 4. To understand the Random and Non Random Sampling Techniques and Determination of Sample Size.		
	5*. To prepare a project report depicting their ability to collect and organize data		
Credits	Theory	Practical	Total
	03	1	04
Contact Hours	03	02	05
Max. Marks: 100 **Internal Assessment Marks: 20+10(P)** **End Term Exam Marks: 50+20(P)**	**Time: 3 Hrs**		

Part-B Contents of the Course

Instructions for Paper Setters

1. Nine Questions will be set in all and students will be required to attempt 5 questions.
2. Question No. 1 will be compulsory and will consist of 5 short answer type questions of 2 marks spread over the entire syllabus (2*5=10 marks).
3. For the remaining four questions, students will attempt 1 out of 2 questions from each of the four units (10 marks each).

Unit	**Topics**	**Contact Hours**
I	**Basic Ideas of Economic Data** • Data, Information and Statistics • Data Types: Quantitative and Qualitative; Cross Sectional and Time Series • Scales of Measurement: Nominal, Ordinal, Interval, Ratio	15

	• Sources of Data: Primary & Secondary • Understanding the Nature of Data in CSO, NSSO, Census and Economic Survey	
II	**Methodologies of Data Collection** • Survey Technique: Concept, Steps involved in conducting Survey • Methods/Instruments used in collecting data through Survey Research • Types of Survey Research • Types of questions in a Survey Research: Structured and Unstructured Questions • Difficulties and Issues in Survey Research	15
III	**Data Collection and Organization** • Data Collection using Questionnaires: Questionnaire design • Qualitative Methods: Ethnography, Unstructured Interviews, Participant Observation • Recording of Data after completion of Survey: Manually and use of computers • Tabulation and Graphical Presentation of data • Preliminaries of Computer Applications in Data Organization	15
IV	**Sampling Methods** • Probability Sampling Methods- Simple Random Sampling,Systematic Random Sampling, Multistage and Cluster Sampling • Non Probability Sampling Methods • Sampling and Non Sampling Errors • Determination of the Sample Size	15
V*		
Suggested Evaluation Methods		
Internal Assessment: 30 ➢ **Theory: 20 (All these activities will be covered under Tutorials. Approximate contact Hours =15)** Class Participation :10 Seminar/Presentation/Assignment/Quiz/Class Test etc. :10 Mid Term Exam: ➢ **Practicum :**10 Class Participation: Seminar/Demonstration/Viva Voce/Lab Records etc.: Mid Term Exam:		**End Term Examination:**50 Theory **Practicum**: 20 Seminar/Demonstration/Viva Voce/Lab Records etc.:

Part-C Learning Resources
Recommended Books/E-Resources/LMS: • *Kapur J.N. and Saxena H.C. Mathematical Statistics, Sultan Chand Publishing* • *Kothari, C.R. (2004) Research Methodology: An Introduction, Delhi, New Age 3.* • *S.C. Gupta: Fundamentals of Statistics* • *S.P. Gupta: Statistical Methods*

* Applicable for courses having practical component.

MDC-2

Session 2023-2024			
Part-A Introduction			
Subject	Economics		
Semester	II		
Name of the Course	**INDIAN ECONOMIC ENVIRONMENT**		
Course Code	**B23-ECO-204**		
Course Type: (CC/MCC/MDC/ CCM/ DSEC/VOC/DSE/PC/AEC/ VAC	MDC		
Level of the course (As per Annexure-I)	100-199		
Pre-requisite for the course (if any)	N.A.		
Course Learning Outcomes (CLO)	1.To understand and analyze the nature of growth & development of India Economy. 2. Understanding and evolution of Agriculture sector in India. 3. Understanding and evolution of Industrial sector in India. 4. Utilize the detailed skills and techniques to address the problems of Indian economy like poverty, inequality, unemployment.		
	5*.		
Credits	Theory	Tutorial	Total
	03	1	04
Contact Hours	03	1	04
Max. Marks: 75 **Internal Assessment Marks: 25** **End Term Exam Marks: 50**	**Time: 3 Hrs**		

Part-B Contents of the Course

Instructions for Paper Setters

1. Nine Questions will be set in all and students will be required to attempt 4 questions.
2. Question No. 1 will be compulsory and will consist of 10 short answer type questions of 1 mark, spread over the entire syllabus (1*10=10 marks).
3. For the remaining four questions, students will attempt 1 out of 2 questions from each of the three units (10 marks each).

Unit	**Topics**	**Contact Hours**
I	Elements of micro & macro environment; PESTLE analysis. Economic growth & development; primary, secondary and tertiary sectors; structural changes & emerging sectors of the Indian economy.	11
II	Review of five year plans in India, planning strategy and objectives. Current trends in industrial growth, industrial and licensing policy, growth of private sector, problems of public sector units, policy changes for industrial growth; environment for the SME sector.	12
III	Design and strategy of economic reforms and liberalization: India's growth post liberalization. Main trends in imports and exports, balance of payments in recent years, environment for foreign capital and investment.	11
IV	Intellectual property rights and R & D environment. Banking reforms and challenges; Monetary & Fiscal Policies; meaning, importance & instruments.; SEBI;	11

	FEMA	
V*		

Suggested Evaluation Methods

Internal Assessment:25 ➢ **Theory** Class Participation :5 Seminar/Presentation/Assignment/Quiz/Class Test etc. :7 Mid Term Exam :13 ➢ **Practicum** Class Participation Seminar/Demonstration/Viva Voce/Lab Records etc. Mid Term Exam:	**End Term Examination :50** Theory

Part-C Learning Resources

Recommended Books/E-Resources/LMS:

- *Kapila, Uma, "Indian Economy: Performance and Policies"Academic Foundation, NewDelhi (Latest Edition).*
- *Mishra, S.K. and Puri,V.K, "Indian Economy"Himalya Publication House (Latest Edition).*
- *Rudar Dutt and Sundram;Indian Economy S. Chand and Company (Latest Edition)*
- *Datt, Gaurav and Mahajan, Ashwani "Dutt & Sundharam Indian Economy" S. Chand & Company (Latest Ed.).*
- *Sen, R.K. and B.Chatterjee, "IndianEconomy:Agenda for 21st Century (Essays in honour of Prof. P.R. Brahmananda)", Deep & Deep Publications, NewDelhi.*
- *Singh Ramesh (2020-21), "Indian Economy", McGraw Hill Education (India) Private Limited (Latest Ed.).*
- *Purkayastha Gautam, "Dynamics of Indian Economy", Kalyani*

* Applicable for courses having practical component.

CC-3 MCC-4

Session 2023-2024			
Part-A Introduction			
Subject	Economics		
Semester	III		
Name of the Course	**MICRO ECONOMICS– II**		
Course Code	**B23-ECO-301**		
Course Type: (CC/MCC/MDC/ CCM/ DSEC/VOC/DSE/PC/AEC / VAC	CC/ MCC		
Level of the course (As per Annexure-I)	200-299		
Pre-requisite for the course (if any)	CC-1 MCC-1 B23-ECO-101 MICRO ECONOMICS-I OR CC-M1 B23-ECO-103 INTRODUCTORY ECONOMICS		
Course Learning Outcomes (CLO)	After completing this course, the learner will be able to: 1. To understand the concepts in consumer and producer Theory like surplus, economies, isoquants, iso-cost lines etc.. 2. To understand market conditions of perfect competition, monopoly and monopolistic competition. 3. To understand few models of oligopoly. 4. To understand how factor prices are determined		
	5*.		
Credits	Theory	Tutorial	Total
	03	1	04
Contact Hours	03	1	04
Max. Marks: 100 **Internal Assessment Marks: 30** **End Term Exam Marks: 70**	**Time: 3 Hrs**		

Part-B Contents of the Course

1. Nine Questions will be set in all and students will be required to attempt 5 questions.
2. Question No. 1 will be compulsory and will consist of 7 short answer type questions of 2 marks spread over the entire syllabus (2*7=14 marks).
3. For the remaining four questions, students will attempt 1 out of 2 questions from each of the four units (14 marks each).

Unit	**Topics**	**Contact Hours**
I	**Concepts in Consumer and producer Theory** • Producer Surplus • Price, Income and Substitution Effects (Hicks and Slutsky) • Economies and Diseconomies of Scale • Isoquant and Iso-Cost Lines and Producer's Equilibrium	15
II	**Market Structure** • Perfect competition (Meaning, Equilibrium of firm and industry in short run and long run). • Role of time element in price determination. • Monopoly (Meaning, Equilibrium in short run and long run). • Price discriminating monopoly.	15
III	**Market Structure**	

	• Monopolistic Competition (Meaning, Equilibrium of firm and industry in short run and long run). • Cournot's and Bertrand's Duopoly Model. • Kinked Demand Model. • Cartels and Price Leadership Models	15
IV	**Factor Pricing** • Ricardian Theory of Rent • Modern Theory of Rent, Quasi rent • Wage (Demand and Supply of Labour, Marginal Productivity Theory) • Interest (Classical and Keynesian) • Profit (Risk Theory, Dynamic Theory, Schumpeter's Innovation Theory, Uncertainty Bearing Theory)	15
V*		
Suggested Evaluation Methods		
Internal Assessment: 30 ➢ **Theory (All these activities will be covered under Tutorials. Approximate contact Hours =15)** Class Participation :5 Seminar/Presentation/Assignment/Quiz/Class Test etc. :10 Mid Term Exam :15 ➢ **Practicum** Class Participation Seminar/Demonstration/Viva Voce/Lab Records etc. Mid Term Exam:		**End Term Examination:70** Theory

Part-C Learning Resources
Recommended Books/E-Resources/LMS: • *Ahuja, H.L(2012), Ucchatar Arthik Siddhant, S.Chand & Company, New Delhi.* • *Dwivedi, D.N (2011), Microeconomics – Theory & Applications, Pearson.* • *Koutsoyiannis, A.(1979),Modern Microeconomics,(2nd Edition),Macmillan Press, London.* • *Mankiw, N.G. (2012),Principles of Microeconomics, (6th Edition), South-Western Cengage Learning.* • *Salvatore D. (2006),Microeconomics-Theory and Applications,Oxford University Press.* • *Varian,H. (2003),Intermediate Microeconomics, East-West Press.* • Chopra P.N., *Micro Economics*, Kalyani

* Applicable for courses having practical component.

MCC-5

Session 2023-2024			
Part-A Introduction			
Subject	Economics		
Semester	II		
Name of the Course	**BASIC STATISTICS FOR ECONOMICS**		
Course Code	**B23-ECO-302**		
Course Type: (CC/MCC/MDC/ CCM/ DSEC/VOC/DSE/PC/AEC/ VAC	MCC		
Level of the course (As per Annexure-I)	200-299		
Pre-requisite for the course (if any)	N.A.		
Course Learning Outcomes (CLO)	After completing this course, the learner will be able to: 1. Know the nature, scope, and uses of statistics in economics and be able to deal with data organization and presentation with different methods and with detailed knowledge of data presentation with different kinds of diagrams. 2. Able to analyze data with a deep understanding of the concepts of central tendency and dispersion of data with their different types and methods to help find out what the data want to say. 3. Understand the tentative change in data variables with the effects of changes in economic policy and also analyze the change in economic variables over different time periods. 4. Exhibit the estimation of the degree and direction of relationships between different economic variables and also help to find out the cause and effect relationship between the different economic variables..		
	5*.		
Credits	Theory	Tutorial	Total
	03	1	04
Contact Hours	03	1	04
Max. Marks: 100 **Internal Assessment Marks: 30** **End Term Exam Marks: 70**	**Time: 3 Hrs**		

Part-B Contents of the Course

Instructions for Paper Setters

1. Nine Questions will be set in all and students will be required to attempt 5 questions.
2. Question No. 1 will be compulsory and will consist of 7 short answer type questions of 2 marks spread over the entire syllabus (2*7=14 marks).
3. For the remaining four questions, students will attempt 1 out of 2 questions from each of the four units (14 marks each).

Unit	**Topics**	**Contact Hours**
I	**Nature, Scope and Uses of Statistics:** Definition and scope of statistics; Subject matter of statistics, Importance and Limitations of statistics in Economics; data collection(census and sample method); Organization and Presentation of data(Textual and Tabular presentation of data, Diagrammatic presentation of data, Frequency diagram: Histogram, Polygon and Ogive curve)	15
II	**Analysis of Data**: Measures of Central tendency (meaning, purpose and function of Central tendency); Types of statistical	

	average(Arithmetic mean, median and mode) Measures of dispersion(absolute measure range, inter quartile range)	15
III	**Index Number and Time Series Analysis**: Introduction of index number: purpose and uses of index number in economics; Calculation of price index and quantity index (Laspyer, Pasche and Fisher index); Time series: meaning and components of time series; Model of analysis of time series methods of measuring Trends and its components.	15
IV	**Correlation and Regression Analysis:** Correlation: definition, types, degree and methods; Scattered diagram; Karl Pearson and Rank coefficient of correlation; Linear regression analysis: meaning, types, regression lines, regression coefficient.	15
V*		
Suggested Evaluation Methods		
Internal Assessment: 30 ➢ **Theory (All these activities will be covered under Tutorials. Approximate contact Hours =15)** Class Participation :5 Seminar/Presentation/Assignment/Quiz/Class Test etc. :10 Mid Term Exam :15 ➢ **Practicum** Class Participation Seminar/Demonstration/Viva Voce/Lab Records etc. Mid Term Exam:		**End Term Examination:70** Theory

Part-C Learning Resources
Recommended Books/E-Resources/LMS: • *Anderson, David R., Sweeney, Dennis J. & Williams, Thomas A. (2014).Essentials of Statistics for Business and Economics. South-Western Cengage Learning, USA.* • *Gupta S.C(2018). Fundamental of Statistics, Himalaya Publishing House, New Delhi* • *Gupta S.P and Gupta M.P.(2019).Business statistics, Sultan Chand and Sons New Delhi* • *Naghshpour, S. (2012). Statistics for Economics. Business Expert Press.* • *Sharma, J.K. (2012). Business Statistics. Dorling Kindersley (India) Pvt. Ltd., New Delhi*

* Applicable for courses having practical component.

MDC-3

Session 2023-2024			
Part-A Introduction			
Subject	Economics		
Semester	III		
Name of the Course	**CURRENT ISSUES IN GLOBAL ECONOMY**		
Course Code	**B23-ECO-303**		
Course Type: (CC/MCC/MDC/ CCM/ DSEC/VOC/DSE/PC/AEC/ VAC	MDC		
Level of the course (As per Annexure-I)	200-299		
Pre-requisite for the course (if any)	N.A.		
Course Learning Outcomes (CLO)	After completing this course, the learner will be able to: 1. Knowledge of global economic systems, international trade, types of regional agreements, multilateral negotiations, World institutions facilitating trade. 2. Understanding of evolution of the international monetary system, exchange rate regimes and their implications, various global financial crisis and Global financial stability and regulatory frameworks. 3. Analyzing the given situation in the global economy and understanding the social challenges, SDGs and Policies for achieving sustainable development. 4. Understanding of evolution of Economic integrations and its benefits and challenges		
	5*.		
Credits	Theory	Tutorial	Total
	02	1	03
Contact Hours	02	1	03
Max. Marks: 75 **Internal Assessment Marks: 25** **End Term Exam Marks: 50**	**Time: 3 Hrs**		

Part-B Contents of the Course

1. Nine Questions will be set in all and students will be required to attempt 5 questions.
2. Question No. 1 will be compulsory and will consist of 10 short answer type questions of 1 mark, spread over the entire syllabus (1*10=10 marks).
3. For the remaining four questions, students will attempt 1 out of 2 questions from each of the four units (10 marks each).

Unit	**Topics**	**Contact Hours**
I	Introduction to globalization and its impact on the global economy, Free trade and Protection; Tariffs, Quotas and Non-Tariff barriers.	11
II	Evolution of the international monetary system, Exchange rate regimes and their implications,International financial institutions: IMF, World Bank;Contemporary Issues in International finance:East Asian Crisis of 1997;Global recession 2007;Global financial stability and regulatory frameworks.	11
III	Sustainable Development Goals (SDGs): Overview of the SDGs and their significance; Economic dimensions of sustainable development;Policies for achieving sustainable development; Contemporary Issues in development: Poverty, Social development and Infrastructure	11
IV	Economic integration and its benefits and challenges. Integration	12

	experiences-European Union, BRICS, NAFTA, ASEAN, Multilateral trade negotiations-the GATT rounds, UNCTAD and evolution of world trading arrangements, World Trade Organization and fair trade-Development Round, Trade Facilitation, Trade War, Recent Paradigm Shift in global economy.	
V*		

Suggested Evaluation Methods	
Internal Assessment:25 ➢ **Theory** Class Participation :5 Seminar/Presentation/Assignment/Quiz/Class Test etc. :7 Mid Term Exam :13 ➢ **Practicum** Class Participation Seminar/Demonstration/Viva Voce/Lab Records etc. Mid Term Exam:	**End Term Examination:50** Theory

Part-C Learning Resources

Recommended Books/E-Resources/LMS:

- *Obstfeld, M., Melitz, M., & Krugman, P. (2014). International economics: theory and policy.*
- *Aggarwal, M. R. (1979).Regional Economic Cooperation in South Asia. S. Chand and Co.*
- *Bhagwati, Jagdish (1969). Trade tariffs & growth. The MIT Press.*
- *Bhalla, &Bhalla, (1997). Regional Blocs. Palgrave MacMillan.*
- *Bhandari, S. (1998). WTO & Developing Countries. Deep & Deep Publications.*
- *Corden (1971). Theory of Protection. Clarendon Press, Oxford.*
- *Greenaway, David (1983).International trade policy: From Tariffs to the New Protectionism. Macmillan Publishers Limited, London.*
- *Stuenkel, O. (2020). The BRICS and the future of global order. Lexington books.*
- *Klein, M. C., & Pettis, M. (2020). Trade wars are class wars: How rising inequality distorts the global economy and threatens international peace. Yale University Press.*

* Applicable for courses having practical component.

CC-4 MCC-6

	Session 2023-2024		
	Part-A Introduction		
Subject		Economics	
Semester		IV	
Name of the Course		**Macro Economics-II**	
Course Code		**B23-ECO-401**	
Course Type: (CC/MCC/MDC/ CCM/ DSEC/VOC/DSE/PC/AEC/ VAC		CC/MCC	
Level of the course (As per Annexure-I)		200-299	
Pre-requisite for the course (if any)		CC-2 MCC-3 B23-ECO-201 MACRO ECONOMICS-I	
Course Learning Outcomes (CLO)		After completing this course, the learner will be able to: 1. Have understanding about income generation process through Investment, multiplier effect and acceleration effect of income, combined action of multiplier and acceleration effect. 2. Have understanding of value of money; classical, neoclassical approach, Demand for money and Supply of money, components of money supply, role of credit and high-powered money in an economy. 3. Have knowledge about fluctuations in value of money: inflation Causes, process of inflation, measures, Employment –inflation relationship: hypotheses. 4. Have understanding about business cycles, dynamics of business cycles phases, interest rate in macroeconomic perspective-Keynes and Hicks-Hansen approach.	
		5*.	
Credits		Theory	Tutorial / Total
		03	1 / 04
Contact Hours		03	1 / 04
Max. Marks: 100 **Internal Assessment Marks: 30** **End Term Exam Marks: 70**		**Time: 3 Hrs**	

Part-B Contents of the Course

1. Nine Questions will be set in all and students will be required to attempt 5 questions.
2. Question No. 1 will be compulsory and will consist of 7 short answer type questions of 2 marks spread over the entire syllabus (2*7=14marks).
3. For the remaining four questions, students will attempt 1 out of 2 questions from each of the four units (14 marks each).

Unit	**Topics**	**Contact Hours**
I	Keynesian Multiplier: Concepts, Relation between Multiplier, MPC and MPS, Comparative Static and Dynamic Process, Working of Multiplier in UDC'S. Acceleration Principle and Concept of Super Multiplier.	15
II	The Demand for Money: Concepts, Functions and Significance. Quantity Theory of Money - Fisher's Approach and Cambridge Approach, Keynesian Theory of Money. Supply of Money: Meaning and Determinants	15
III	Meaning, Causes and Effects of Inflation Types of Inflation Theories of inflation; Demand Pull and Cost Push Inflation. Phillips Curve in Short run and Long run.	15
IV	Meaning, Nature and Features of Business Cycles. Types and Phases of Business	

	Cycles. Keynes's View of Trade Cycles. Theories of Trade Cycles (Hicks and Samuelson), Rate of Interest: Keynesian Theories of Interest & IS-LM framework.	15
V*		
	Suggested Evaluation Methods	
	Internal Assessment: 30 ➢ **Theory (All these activities will be covered under Tutorials. Approximate contact Hours =15)** Class Participation :5 Seminar/Presentation/Assignment/Quiz/Class Test etc. :10 Mid Term Exam :15 ➢ **Practicum** Class Participation Seminar/Demonstration/Viva Voce/Lab Records etc. Mid Term Exam:	**End Term Examination:70** Theory

Part-C Learning Resources
Recommended Books/E-Resources/LMS: • *Shapiro, E. (1996), Macroeconomic Analysis, Galgotia Publications, New Delhi.* • *Dornbusch, R. and F. Stanley (1999), Macroeconomics, Irwrin McGraw Hill, Inc. New York, 7th Edition* • *Heijdra, B.J. and V.P. Frederick (2002), Foundations of Modern Macroeconomics, Oxford University Press, New Delhi.* • *Lipsey R.G. and K.A. Chrystal (2007) ―Economics, Oxford University Press* • *Lekhi R.K. Macro Economics, Kalyani*

* Applicable for courses having practical component.

MCC-7

Session 2023-2024			
Part-A Introduction			
Subject	Economics		
Semester	IV		
Name of the Course	**ADVANCED STATISTICS FOR ECONOMICS**		
Course Code	**B23-ECO-402**		
Course Type: (CC/MCC/MDC/ CCM/ DSEC/VOC/DSE/PC/AEC/ VAC	MCC		
Level of the course (As per Annexure-I)	200-299		
Pre-requisite for the course (if any)	MCC-5 B23-ECO-302 BASIC STATISTICS FOR ECONOMICS		
Course Learning Outcomes (CLO)	After completing this course, the learner will be able to: 1. Define correlation, calculate, and interpret Pearson's and Spearman's correlation coefficients, understand their properties and limitations, differentiate between correlation and causation 2. Identify dependent and independent variables, formulate regression models, estimate, and interpret coefficients using ordinary least squares, assess goodness of fit using R-squared 3. Understand, solve, and apply the problems on probability 4. Understand and apply various theoretical distributions.		
	5*.		
Credits	Theory	Tutorial	Total
	03	1	04
Contact Hours	03	1	04
Max. Marks: 100 **Internal Assessment Marks: 30** **End Term Exam Marks: 70**	**Time: 3 Hrs**		

Part-B Contents of the Course

1. Nine Questions will be set in all and students will be required to attempt 5 questions.
2. Question No. 1 will be compulsory and will consist of 7 short answer type questions of 2 marks spread over the entire syllabus (2*7=14marks).
3. For the remaining four questions, students will attempt 1 out of 2 questions from each of the four units (14 marks each).

Unit	**Topics**	**Contact Hours**
I	**Correlation Analysis:** Definition of correlation and its importance in economics, Types of correlation: positive, negative, and zero correlation. Methods of Studying Correlation**:** Scatter diagram method, Karl Pearson's coefficient of correlation (Covariance method), Two-way frequency table (Bivariate correlation method), Rank method, Concurrent deviations method; partial and Multiple Correlation (WITH 3 VARIABLES).	15
II	**Regression Analysis:** Introduction to Regression Analysis: Definition and purpose of regression analysis in economics, Understanding the concept of a dependent variable and independent variable, Types of regression models: Simple and multiple linear regression. Estimating the regression coefficients: Ordinary Least Squares Method, Assessing the goodness of fit: Coefficient of determination (R-squared), Interpreting the regression coefficients and their significance.	15
III	**Concept of Probability:** Approaches to probability : Classical approach, Empirical approach, Axiomatic approach; Addition Theorem Of Probability; Multiplication	15

	Theorem Of Probability: Independent and Dependent Events; Bayes's Theorem (Rule for the Inverse Probability)	
IV	**Random Variable:** Discrete And Continuous; Probability Distribution of a Discrete Random Variable; Mathematical Expectation; Binomial Distribution – Conditions, Probability Function Of Binomial Distribution, Constants Of Bionomial Distribution; Poisson Distribution and its applications; properties of Normal distribution and its applications.	15
V*		
Suggested Evaluation Methods		
Internal Assessment: 30 ➢ **Theory (All these activities will be covered under Tutorials. Approximate contact Hours =15)** Class Participation :5 Seminar/Presentation/Assignment/Quiz/Class Test etc. :10 Mid Term Exam :15 ➢ **Practicum** Class Participation Seminar/Demonstration/Viva Voce/Lab Records etc. Mid Term Exam:		**End Term Examination:70** Theory

Part-C Learning Resources

Recommended Books/E-Resources/LMS:

- *Aggarwal, B.L. (2006). Basic Statistics. New Age International Publishers, New Delhi.*
- *Anderson, David R., Sweeney, Dennis J. & Williams, Thomas A. (2014).Essentials of Statistics for Business and Economics. South-Western Cengage Learning, USA.*
- *Croxton Frederiel, Dudley J. Gowden and Sidny Klein: Applied General Statistics, New Delhi:*
- *Griffiths, D., W, Douglas and K. Laurence Weldon (1998): Understanding Data: Principles & Practices*
- *Gupta C.B: An Introduction to Statistical Methods, New Delhi, Vikas Publishers.*
- *Gupta S.P: Statistical Methods, New Delhi, Chand & Co.*
- *Gupta, S.C. &Kapoor, V.K. (2007). Fundamentals of Applied Statistics. S. Chand and Sons, New Delhi..*
- *Kamenta J. (1997). Elements of Econometrics. Macmillan Publishing Co., Inc. New York.*
- *Karmal, P.H. & Polasek, M. (1978). Applied Statistics for Economists. Pitman, Australia.*
- *Naghshpour, S. (2012). Statistics for Economics. Business Expert Press.*
- *Sharma, J.K. (2012). Business Statistics. Dorling Kindersley (India) Pvt. Ltd., New Delhi.*
- *T R Jain, S C Aggarwal, R K Rana: Statistical Methods for Economics V.K Publication House.*

* Applicable for courses having practical component.

MCC-8

Session 2023-2024			
Part-A Introduction			
Subject	Economics		
Semester	IV		
Name of the Course	**INDIAN FINANCIAL SYSYEM**		
Course Code	**B23-ECO-403**		
Course Type: (CC/MCC/MDC/ CCM/ DSEC/VOC/DSE/PC/AEC/ VAC	MCC		
Level of the course (As per Annexure-I)	200-299		
Pre-requisite for the course (if any)	N.A.		
Course Learning Outcomes (CLO)	After completing this course, the learner will be able to: 1. Understand the Indian Financial System and its role in Economic Development. 2. Understand the different financial assets and financial markets 3. Know the role of different financial institutions. 4. Gain knowledge of the different types of Financial Services available under system		
	5*.		
Credits	Theory	Tutorial	Total
	03	1	04
Contact Hours	03	1	04
Max. Marks: 100 **Internal Assessment Marks:30** **End Term Exam Marks: 70**	**Time: 3 Hrs**		

Part-B Contents of the Course

Instructions for Paper Setters

1. Nine Questions will be set in all and students will be required to attempt 5 questions.
2. Question No. 1 will be compulsory and will consist of 7 short answer type questions of 2 marks spread over the entire syllabus (2*7=14marks).
3. For the remaining four questions, students will attempt 1 out of 2 questions from each of the four units (14 marks each).

Unit	**Topics**	**Contact Hours**
I	Indian Financial System; meaning, evolution, characteristics, functions and its components. Role of Indian financial system in economic development.	15
II	Financial instruments (assets) and Financial Markets; money market and capital markets- meaning, constituents, instruments and function. Recent development in financial markets.	15
III	Financial Institutions- banking institutions; commercial banks and cooperative banks. Non-banking institutions; organized and unorganized institutions.	15
IV	Financial services; meaning, nature, functions, importance, types: fund based and non-fund based. Challenges faced by the Indian Financial Service Sector. Recent developments take place in financial service sector in India.	15
V*		

Suggested Evaluation Methods

Internal Assessment: 30	**End Term Examination:70**
➢ **Theory (All these activities will be covered under Tutorials. Approximate contact Hours =15)** Class Participation :5 Seminar/Presentation/Assignment/Quiz/Class Test etc. :10 Mid Term Exam :15 ➢ **Practicum** Class Participation	Theory

Seminar/Demonstration/Viva Voce/Lab Records etc. Mid Term Exam:	

Part-C Learning Resources
Recommended Books/E-Resources/LMS: • *Avdhani: Investment and Securities Markets in India, Himalaya Publications, Bombay.* • *Averbach, Robert D: Money, Banking and Financial Markets; MacMillan, London.* • *Bhole, L.M.: Financial Markets and Institutions, Tata McGraw Hill, Delhi.* • *Ghosh, D: Banking Policy in India, Allied Publications, Delhi.* • *Giddy, I.H: Global Financial Markets, A.I.T.B.S., Delhi.* • *Khan, M.Y: Indian Financial System, Tata McGraw Hill, Delhi.* • *Pathak, Bharati V: The Indian Financial System: Markets, Institutions and Services; Pearson Education, New Delhi.* • *Reserve Bank of India, Various Reports, RBI Publication, Mumbai.* • *Srivastava R.M.: Management of Indian Financial Institution; Himalaya Publishing House, Mumbai.* • *Varshney, P.N: Indian Financial System, Sultan Chand & Sons, New Delhi* • Paul R.R., *Money & Financial System*, Kalyani

* Applicable for courses having practical component.

DSE-1

Session 2023-2024			
Part-A Introduction			
Subject	Economics		
Semester	IV		
Name of the Course	**Industrial Economics**		
Course Code	**B23-ECO-404**		
Course Type: (CC/MCC/MDC/ CCM/ DSEC/VOC/DSE/PC/AEC/ VAC	DSE		
Level of the course (As per Annexure-I)	200-299		
Pre-requisite for the course (if any)	N.A.		
Course Learning Outcomes (CLO)	After completing this course, the learner will be able to: 1. Aims at introducing the students to industrial economics, organization, and objectives of a firm and making them understand the determinants of size and growth of the firm. 2. Understand the objective of giving exposure to students about the theories of location and limiting factors and aims at introducing factors leading to localization of industries and sellers' concentration. 3. Aims at developing an understanding of the role of economies of scale and scope, market structure, and profits of a firm with the objective of acquainting students with product innovation and product pricing practices. 4. Developing an understanding of industrial growth through mergers and acquisitions, product diversification, industrial finance, and the employment potential of Indian industry.		
	5*.		
Credits	Theory	Tutorial	Total
	03	1	04
Contact Hours	03	1	04
Max. Marks: 100 **Internal Assessment Marks: 30** **End Term Exam Marks: 70**	**Time: 3 Hrs**		

Part-B Contents of the Course

1. Nine Questions will be set in all and students will be required to attempt 5 questions.
2. Question No. 1 will be compulsory and will consist of 7 short answer type questions of 2 marks spread over the entire syllabus (2*7=14marks).
3. For the remaining four questions, students will attempt 1 out of 2 questions from each of the four units (14 marks each).

Unit	**Topics**	**Contact Hours**
I	**Introduction of Industrial Economics**: Nature and scope of Industrial Economics; Concept and Organization of a firm (ownership, control and objectives of the firm); Growth of the firm: Size and growth of a firm, Diversification & growth, growth and profitability, constraints on growth	15
II	**Theories of Location:** Theories of industrial location (Weber and Sargent theories); Factors affecting location; Industrial localization and remedial measures; Sellers' concentration.	15
III	**Markets for Industries:** Economies of Scale and scope; Market structure and profitability; Market structure and innovation; Product pricing (theories and evidence).	15
IV	**Indian Industrial Growth and Finance:** Regional Industrial growth in India; Industrial growth through mergers & acquisitions, and diversification; Industrial Finance; Sources of short term and long term finance; Structure of Industrial labour; Employment dimensions of Indian	15

	Industry	
V*		

Suggested Evaluation Methods	
Internal Assessment: 30 ➢ **Theory (All these activities will be covered under Tutorials. Approximate contact Hours =15)** Class Participation :5 Seminar/Presentation/Assignment/Quiz/Class Test etc. :10 Mid Term Exam :15 ➢ **Practicum** Class Participation Seminar/Demonstration/Viva Voce/Lab Records etc. Mid Term Exam:	**End Term Examination:70** Theory

Part-C Learning Resources

Recommended Books/E-Resources/LMS:

- *Ahluwalia,I.J.(1985), Industrial Growth in India, Oxford University Press, New Delhi.*
- *Barthwal, R.R.(1985),Industrial Economics, Wiley Eastern Ltd. New Delhi.*
- *Brahmananda, P.R. and V.R. Panchmukhi (Eds.) (1987), The Development Process of the Indian Economy, Himalaya Publishing, Bombay.*
- *Divine, P.J. and R.M. Jones et.al. (1976),An Introduction to Industrial Economics, George Allen and Unwin*
- *Mamoria and Mamoria (2000), Dynamics of Industrial Relations in India (15th Edition), Himalaya Publishing House, Mumbai.*
- *Cherunilam, F. (1994), Industrial Economics: Indian Perspective (3rd Edition),Himalaya Publishing House*
- Kanwaljit Kaur, Jasmeet Kaur: *Industrial Economics*, Kalyani

* Applicable for courses having practical component.

DSE-1

Session 2023-2024			
Part-A Introduction			
Subject	Economics		
Semester	IV		
Name of the Course	**Money and Banking**		
Course Code	**B23-ECO-405**		
Course Type: (CC/MCC/MDC/ CCM/ DSEC/VOC/DSE/PC/AEC/ VAC	DSE		
Level of the course (As per Annexure-I)	200-299		
Pre-requisite for the course (if any)	N.A.		
Course Learning Outcomes (CLO)	After completing this course, the learner will be able to: 1.Have insight about the Money, Money supply, Money & Capital Markets- Organisation, Structure and Working 2. Have further understanding of Banking, Commercial banks-functions &Credit Creation, RBI and Credit Control measures 3. Have knowledge about nature of financial sector-money and capital market of India, Non-bank financial intermediaries . 4. Have understanding about exchange rates ,and exchange rate mechanism, theories of Exchange rate determination adjustments.		
	5*.		
Credits	Theory	Tutorial	Total
	03	1	04
Contact Hours Per Week	03	1	04
Max. Marks: 100 **Internal Assessment Marks: 30** **End Term Exam Marks: 70**	**Time: 3 Hrs**		

Part-B Contents of the Course

1. Nine Questions will be set in all and students will be required to attempt 5 questions.
2. Question No. 1 will be compulsory and will consist of 7 short answer type questions of 2 marks spread over the entire syllabus (2*7=14marks).
3. For the remaining four questions, students will attempt 1 out of 2 questions from each of the four units (14 marks each).

Unit	**Topics**	**Contact Hours**
I	**Money:** Functions, Classification and Significance; Money Supply: Determinants, Alternative Measures of Money Supply in India (concepts only); Money and Capital Market: Features, Structure, Instruments & Significance	15
II	**Banking:** Commercial Banks- Functions and Importance, Process of Credit Creation; The Reserve Banking of India: Functions and Instruments of credit control, Recent	15

	Monetary Policy of RBI.	
III	**Financial sector:** Money and Capital Markets in India: Structure, Functions and Significance; SEBI: Powers and Functions; Non-Bank Financial Intermediaries- Role and Significance; Recent Financial Sector Reforms in India.	15
IV	**Exchange Rate System**: Fixed and Flexible Exchange Rate ; Meaning, merits and demerits; determination, Theories of Exchange Rate: Mint Par, Purchasing Power Parity, and Balance of Payments Theory	15
V*		
Suggested Evaluation Methods		
Internal Assessment: 30 ➢ **Theory (All these activities will be covered under Tutorials. Approximate contact Hours =15)** Class Participation :5 Seminar/Presentation/Assignment/Quiz/Class Test etc. :10 Mid Term Exam :15 ➢ **Practicum** Class Participation Seminar/Demonstration/Viva Voce/Lab Records etc. Mid Term Exam:		**End Term Examination:70** Theory

Part-C Learning Resources
Recommended Books/E-Resources/LMS: • *M.K. Lewis (2000), Monetary Economics, Oxford University Press.* • *Bailey Roy (2005) The Economics of Financial Markets* • *R.R. Paul "Money, Banking and International Trade" Kalyani Publishers.* • *R.B.I. Bulletin, Annual Report; Report on Currency and Finance.*

* Applicable for courses having practical component.

DEPARTMENT OF ECONOMICS
KURUKSHETRA UNIVERSITY, KURUKSHETRA
(Established by the state Legislature Act –XII of 1956)
Structure, Scheme of Examination and Syllabi (Semester I, II, III & IV) for the Subject of

M. Sc. Economics (Honors) 5 Year Integrated Programme: Scheme C

To be implemented in Institute of Integrated Honors Studies (IIHS)
Choice Based Credit System (CBCS-LOCF) in accordance with NEP-2020 with Multiple Entry/Exit System
w.e.f. 2023-24 (in phased manner)

List of All Courses (For Sem I to VIII only) Offered in Subject of M. Sc. Economics (Honors) 5 Year Integrated Programme – Single Major in Economics (Scheme C)

Sem	Course Type	Course Code	Name of Course	Credits	Contact Hours per Week	Internal Assessment Marks	End Term Exam Marks	Total Marks	Duration of Exam (Hrs.)
I	MCC-1	B23-MSE-101	APPLIED MICRO ECONOMICS-I	4	5	30	70	100	3
I	MCC-2	B23-MSE-102	APPLIED MACRO ECONOMICS-I	4	5	30	70	100	3
I	CC-M1	B23-ECO-103	INTRODUCTORY ECONOMICS	2	2	15	35	50	3
I	MDC-1	B23-ECO-104	BASICS OF ECONOMICS	3	3	25	50	75	3
II	MCC-3	B23-MSE-201	QUANTITATIVE METHODS FOR ECONOMISTS-I	4	5	30	70	100	3
II	CC-M2	B23-ECO-202	INTRODUCTION TO INDIAN ECONOMY	2	2	15	35	50	3
II	DSEC-1	B23-MSE-203	STATISTICAL TECHNIQUES FOR ECONOMICS	4	5	30	70	100	3
II	MDC-2	B23-ECO-204	INDIAN ECONOMIC ENVIRONMENT	3	3	25	50	75	3
III	MCC-4	B23-MSE-301	APPLIED MICRO ECONOMICS-II	4	5	30	70	100	3
III	MCC-5	B23-MSE-302	APPLIED MACRO ECONOMICS-II	4	5	30	70	100	3
III	MDC-3	B23-ECO-303	CURRENT ISSUES IN GLOBAL ECONOMY	3	3	25	50	75	3
IV	MCC-6	B23-MSE-401	QUANTITATIVE METHODS FOR ECONOMISTS-II	4	5	30	70	100	3
IV	MCC-7	B23-MSE-402	BASIC ECONOMETRICS	4	5	30	70	100	3
IV	MCC-8	B23-MSE-403	ADVANCED STATISTICAL METHODS FOR ECONOMISTS	4	5	30	70	100	3
IV	DSE-1	B23-MSE-404	FINACIAL MARKETS & SYSTEM	4	5	30	70	100	3

	OR								
IV	DSE-1	B23-MSE-405	MONEY, BANKING & FINANCE	4	5	30	70	100	3
V	MCC-9	B23-MSE-501	DEVELOPMENT ECONOMICS –I	4	5	30	70	100	3
V	MCC-10	B23-MSE-502	INTERNATIONAL TRADE	4	5	30	70	100	3
V	DSE-2 OR	B23-MSE-503	PUBLIC FINANCE	4	5	30	70	100	3
V	DSE-2	B23-ECO-503	ECONOMICS OF INFRASTRUCTURE	4	4	30	70	100	3
V	DSE-3 OR	B23-MSE-504	CONTEMPORARY ISSUES IN INDIAN ECONOMY-I	4	5	30	70	100	3
V	DSE-3	B23-ECO-506	HARYANA ECONOMY	4	4	30	70	100	3
VI	MCC-11	B23-MSE-601	DEVELOPMENT ECONOMICS-II	4	5	30	70	100	3
VI	MCC-12	B23-MSE-602	INTERNATIONAL FINANCE	4	5	30	70	100	3
VI	DSE-4 OR	B23-MSE-603	ECONOMICS OF SOCIAL CHOICE	4	5	30	70	100	3
VI	DSE-4	B23-ECO-604	ECONOMICS OF INSURANCE	4	4	30	70	100	3
VI	DSE-5 OR	B23-MSE-605	CONTEMPORARY ISSUES IN INDIAN ECONOMY-II	4	5	30	70	100	3
VI	DSE-5	B23-ECO-606	WELFARE ECONOMICS	4	4	30	70	100	3
VII	CC-H1	B23-MSE-701	HISTORY OF ECONOMIC TGHOUGHT	4	5	30	70	100	3
VII	CC-H2	B23-MSE-702	RESOURCE ECONOMICS	4	5	30	70	100	3
VII	CC-H3	B23-MSE-703	RESEARCH METHODOLOGY IN ECONOMICS	4	5	30	70	100	3
VII	DSE-6 OR	B23-MSE-704	ECONOMICS OF INDUSTRIES	4	5	30	70	100	3
VII	DSE-6	B23-MSE-705	ECONOMICS OF FINANCE	4	5	30	70	100	3
VII	PC-H1	B23-ECO-706	ECONOMIC DATA ANALYSIS	4	8	30	70	100	3
VIII	CC-H4	B23-MSE-801	POPULATION STUDIES	4	5	30	70	100	3
VIII	CC-H5	B23-MSE-802	APPLIED MATHEMATICAL ECONOMICS	4	5	30	70	100	3
VIII	CC-H6	B23-MSE-803	AGRICULTURE & RURAL ECONOMICS	4	5	30	70	100	3
VIII	DSE-7 OR	B23-ECO-804	ECONOMICS OF HEALTH	4	4	30	70	100	3
VIII	DSE-7	B23-ECO-805	ECONOMICS OF EDUCATION	4	4	30	70	100	3
VIII	PC-H2	B23-ECO-806	APPLICATION SOFTWARE FOR ECONOMICS	4	8	30	70	100	3

Note: All Syllabi with Paper Code B23-ECO-NUM have been taken from UG Programme in Subject of Economics with Schemes A and B. All Syllabi with Paper Code B23-MSE-NUM are only for M.Sc. Economics (Hons.) 5-Year Integrated Programme : Scheme- C

SCHEME 'C' : UG Programme with Single Major (ECONOMICS)

(A student will take admission in UG Programme with Single Major (Economics) in the first year)

I Year Scheme C:Bachelor with Major in (Economics) and Minor in Same Subject (Economics)								
Semester	Major Subject	Minor /Vocational	Multidisciplinary Courses	Ability Enhancement Courses	Skill Enhancement Courses	Value Added Courses	Total Credits	Exit Option
I	MCC-A1(4 credit) B23-MSE-101 APPLIED MICRO ECONOMICS-I MCC-A2(4 credit) B23-MSE-102 APPLIED MACRO ECONOMICS-I	CC-M1 (4 credit) B23-ECO-103 INTRODUCTORY ECONOMICS	MDC-1 3 credit B23-ECO-104 BASIC ECONOMICS	AEC-1 2 credit	SEC-1 3 credit	VAC-1 2credit	22	Under Graduate Certificate in Economics with 48 credits
II	MCC-A3(4 credit) B23-MSE-201 QUANTITATIVE METHODS FOR ECONOMISTS-I DSEC-A1(4 credit) B23-MSE-203 STATISTICAL TECHNIQUES FOR ECONOMICS	CC-M2 (4 credit) B23-ECO-202 INTRODUCTION TO INDIAN ECONOMY	MDC-2 3 credit B23-ECO-204 INDIAN ECONOMIC ENVIRONMENT	AEC-2 2 credit	SEC-2 3 credit	VAC-2 2 credit	22	
	Internship of (4 credit)s of 4-6 weeks duration after 2nd semester							

2nd Year Scheme C:UG Programme with Single Major (Economics)								
III	MCC-A4 (4 credit) B23-MSE-301 APPLIED MICRO ECONOMICS-II MCC-A5 (4 credit) MCC-5 B23-MSE-302 APPLIED MACRO ECONOMICS-II	CC-M3 (4 credit)	MDC-3 3 credit B23-ECO-303 CURRENT ISSUES IN GLOBAL ECONOMY	AEC-3 2 credit	SEC-3 3 credit	VAC-3 2 credit	22	Under Graduate Diploma in Economics with 94 credits

IV	MCC-A6 (4 credit) B23-MSE-401 QUANTITATIVE METHODS FOR ECONOMISTS-II MCC-A7 (4 credit) B23-MSE-402 BASIC ECONOMETRICS MCC-A8(4 credit) B23-MSE-403 ADVANCED STATISTICAL METHODS FOR ECONOMICS DSE-A1 (4 credit) B23-MSE-404 FINACIAL MARKETS & SYSTEM OR B23-MSE-405 MONEY, BANKING & FINANCE	CC-M4(V) (4 credit)	--	AEC-4 2 credit	--	VAC-4 2 credit	24	

Internship of (4 credit)s of 4-6 weeks duration after 4th semester

3rd Year Scheme C:UG Programme with Single Major(Economics)

Semester	Major Subject	Minor /Vocational	Multi Disciplinary Courses	Ability Enhancement Courses	Skill Enhancement Courses	Value Added Courses	Total Credits	Exit Option

V	MCC-A9 (4 credit) B23-MSE-501 DEVELOPMENT ECONOMICS -I MCC-A10 (4 credit) B23-MSE-502 INTERNATIONAL TRADE (4 credit) DSE-A2 (4 credit) B23-MSE-503 PUBLIC FINANCE OR B23-ECO-503 ECONOMICS OF INFRASTRUCTURE DSE-A3(4 credit) B23-MSE-504 CONTEMPORARY ISSUES IN INDIAN ECONOMY-I OR B23-ECO-506 HARYANA ECONOMY	CC-M5(V) (4 credit)	--		Internship#(4 credit)s	--	24	B.Sc. Economics (Single Major) after earning 136 credits
VI	MCC-A11 (4 credit) B23-MSE-601 DEVELOPMENT ECONOMICS-II MCC-A12 (4 credit) B23-MSE-602 INTERNATIONAL	CC-M6(V) (4 credit)	--	--	SEC-4 2 credit	--	22	

	FINANCE DSE-A4(4 credit) B23-MSE-603 ECONOMICS OF SOCIAL CHOICE OR B23-ECO-604 ECONOMICS OF INSURANCE DSE-A5(4 credit) B23-MSE-605 CONTEMPORARY ISSUES IN INDIAN ECONOMY-II OR B23-ECO-606 WELFARE ECONOMICS							

Credits	Major = 72	Min or = 24	MDC = 09	SEC = 11	AEC = 08	VAC=08	Internship = 04	Total = 136

#Four credits of internship, earned by a student during summer internship after 2nd semester or 4th semester, will be taken into account in 5th semester of a student who pursue 3 year UG Programmes without taking exit option.

Notes:

1. Subjects, DSE, DSEC, SEC, AEC, MDC and VAC courses will be offered by the Department/ College/ Institute depending upon its available faculty, infrastructure and time table.
2. A student will opt for Multidisciplinary Course from the subject which is different from the discipline of major and minor subjects. Students are not allowed to choose or repeat courses already undergone at the higher secondary level (12th class) or opted as major and minor stream under this category. Provided further that if a Multidisciplinary Course across the discipline cannot be offered by the Department/Institute/College, due to its constraints and available resources, then
   i. MDC can be opted out of MOOCs through SWAYAM
   ii. MDC can be completed out of online courses offered by the Kurukshetra University
   iii. MDC can be completed from a cluster college, i.e., from a neighboring college/institute
3. A student will opt for AEC, SEC, VAC and Minor(Vocational) courses from the respective pools of courses offered by the

Department/College/Institute duly approved by the University. A Department/Institute/College can add more courses in the pools of AEC, SEC, VAC and Vocational courses with prior approval of the university.

4. For first and second semester of UG programme (Multidisciplinary) (Scheme A and B), a student can choose a Minor Course of 2 credit from the pool of minor subjects in that semester offered by the Department/Institute/College.

5. For first and second semester of UG programme with Single Major (Scheme C), a student can choose a Minor Course of (4 credit), say Subject E, out of available Core Courses of that subject E offered in that semester.

6. From 3rd semester onwards of all three schemes, a student can choose a Minor Course, say Subject E, out of available Core Courses of that subject E offered in that semester.

7. In the subjects/courses which involve practicum, i.e. Practical/ Laboratory/ Studio/ Project/ Survey/Field work, etc., a course of 4 credits will dedicate 3 credits for lectures and one credit for practicum and in other subjects/courses, a course of 4 credits will dedicate 3 credits for lectures and 1 credit for tutorial. During 4th year, when the practicum course is offered as a separate course in that subject, then a course of 4 credits will dedicate 3 credits for lectures and 1 credit for tutorial. However, for any DSE course, a course of 4 credits will dedicate 3 credits for lectures and one credit for tutorial.

8. In case of AEC of 2 credits, the entire 2 credits will be dedicated for lectures.

9. In the SEC courses of 3 credits, 2 credits will be dedicated for lectures and 1 credit for practicum, In the SEC courses of 2 credits, 1 credits will be dedicated for lecture and 1 credit for practicum and in the DSEC courses of 4 credits, 3 credits will be dedicated for lectures and 1 credit for practicum.

10. If a student takes exit after the second semester, then Undergraduate Certificate in Discipline/subject will be awarded after earning 52/48 credits including 4 credits for the internship of 4-6 weeks during the summer vacation. The nomenclature of the Discipline will depend upon the subjects opted during the programme. For example, if a student has studied two subjects Physics and Chemistry or Physics and Mathematics or Chemistry and Zoology, the Undergraduate Certificate in Physical Science and Life Science respectively will be awarded. Similarly, if a student has studied two subjects Economics and Sociology or Economics and Mathematics or Political Science and Hindi, the Undergraduate Certificate in Arts will be awarded.

11. If a student takes exit after the 4th semester, then Undergraduate Diploma in Discipline will be awarded after earning 96 credits including 4 credits for the internship of 4-6 weeks during the summer vacation. In case, a student takes exit after 2nd year of UG Programme with Single Major, then Undergraduate Diploma in Major Subject will be awarded after 100 credits (scheme B) and 94 credits (scheme C) including 4 credits for the internship of 4-6 weeks during the summer vacation.

Fourth Year Scheme C - M. Sc. Economics (Honors) 5 Year Integrated Programme

Fourth Year: Scheme D

Semester	Major Subject			Minor Subject		
	Core Courses	Discipline SpecificCourses	Practicum Courses	Core Courses	Total credits	Degree to beawarded
VII Level-8	CC-H1 B23-MSE-701 HISTORY OF ECONOMIC TGHOUGHT CC-H2 B23- MSE -702 RESOURCE ECONOMICS CC-H3 B23- MSE -703 RESEARCH METHODOLOGY IN ECONOMICS (4+4+4 CREDITS)	DSE- H1 B23- MSE -704 ECONOMICS OF INDUSTRIES OR DSE- H1 B23- MSE -705 ECONOMICS OF FINANCE	PC-H1 4 credit B23- ECO -706 ECONOMIC DATA ANALYSIS	CC-HM1 4 credit B23-MSE-701 HISTORY OF ECONOMIC TGHOUGHT	24	B.Sc. Economics (Hons.) Bachelor (Hons) In Discipline with 184 credits
VIII Level- 8	CC-H4 B23- MSE -801 POPULATION STUDIES CC-H5 B23- MSE -802 APPLIED MATHEMATICAL ECONOMICS CC-H6	DSE- H2 4 credit B23- ECO -804 ECONOMICS OF HEALTH OR DSE- H2 B23- ECO -805	PC-H2 4 credit B23-ECO-806 APPLICATION SOFTWARE FOR ECONOMICS	CC-HM2 4 credit B23- MSE -801 POPULATION STUDIES	24	

	B23- MSE -803 AGRICULTURE & RURAL ECONOMICS (4+4+4 CREDITS)	ECONOMICS OF EDUCATION				
OR						
VII Level-8	CC-H1 B23-MSE-701 HISTORY OF ECONOMIC TGHOUGHT CC-H2 B23- MSE -702 RESOURCE ECONOMICS CC-H3 B23- MSE -703 RESEARCH METHODOLOGY IN ECONOMICS (4+4+4 CREDITS)	DSE- H1 B23- MSE -704 ECONOMICS OF INDUSTRIES OR DSE- H1 B23- MSE -705 ECONOMICS OF FINANCE	PC-H1 4 credit B23- ECO -706 ECONOMIC DATA ANALYSIS	CC-HM1 4 credit B23-MSE-701 HISTORY OF ECONOMIC TGHOUGHT	24	B.Sc. Economics (Hons. With Research) 184 credits
VIII Level- 8	CC-H4 B23- MSE -801 POPULATION STUDIES CC-H5 B23- MSE -802 APPLIED MATHEMATICAL ECONOMICS (4+4 CREDITS)		Project /Dissertation 12 Credits	CC-HM2 4 credit B23- MSE -801 POPULATION STUDIES	24	

Notes:

1. 4-year UG (Honours) or (Honours with Research) in Major Subject will be offered after completion of 3 year UG programme with one major and one minor subject to those students who have completed at least 60 credits in the concerned major subject. In addition to the above, 4- year UG (Honours with Research) in Major Subject will be offered only to those students who have obtained CGPA 7.5 or more in the 3 year UG programme.
2. Core course in Honours subject (CCH): Discipline specific elective course in Honours (DSE-H); Practicum Course in Honours subject (PC- H); Core Course in Minor Subject (CC-HM) of Honours Program.
3. Bachelor degree (Honours) or (Honours with Research) will be awarded in the Major subject after successful completion of the four year programme securing 184 credits and satisfying the minimum credit requirement as given in the Credit Table.
4. Student opting for Honours with Research will work on a Research Project or do research during the eighth semester. The dissertation work will be of 12 credits. 8 credits will be earmarked for the evaluation report of the dissertation and viva-voce examination will carry weightage of 4 credits.
5. The evaluation of the Dissertation and the conduct of viva-voce examination will be done by an external examiner.

DETAILED SYLLABI OF M.SC. ECONOMICS (HONOURS) 5-YEAR INTEGRATED PROGRAMME (SEM I,II, III & IV ONLY)

MCC-1

Session 2023-2024			
Part-A Introduction			
Subject	MSC- Economics (Honours) 5-Year Integrated Programme		
Semester	I		
Name of the Course	**APPLIED MICRO ECONOMICS-I**		
Course Code	**B23-MSE-101**		
Course Type: (CC/MCC/MDC/ CCM/ DSEC/VOC/DSE/PC/AEC/ VAC	**MCC-1**		
Level of the course (As per Annexure-I)	100-199		
Pre-requisite for the course (if any)	N.A.		
Course Learning Outcomes (CLO)	After completing this course, the learner will be able to: 1. Know the scope and breadth of Micro Economics along with understanding the core principles of demand and supply so that they are able to apply the understanding of these concepts to comprehend real world problems along with the ability to think critically and analyze economic problems. 2. Understanding the core principles of production and costs so that they are able to apply the understanding of these concepts to comprehend real world problems along with the ability to think critically and analyze economic problems. 3. Analyze given situations in a variety of markets on a microeconomic level. Understand the internal structure and assumptions of the different analytical frameworks of market conditions, their explanatory power and limitations. 4. Exhibit the ability to learn and apply relevant optimization techniques for analysis of microeconomic Behaviour of consumer, producer and firm. Simultaneously Understanding the implications and ethical as well as value part of it.		
	5*. Apply the basic concepts of scarcity and opportunity cost; manipulate the basic demand and supply model to determine an equilibrium price and quantity, changes to equilibrium price and quantity, and their impact on resource allocation.		
Credits	Theory	Practical	Total
	3	1	4
Contact Hours	3	2	5
Max. Marks: 100 **Internal Assessment Marks: 20+10*** **End Term Exam Marks: 50+20***	**Time: 3 Hours**		

Part-B Contents of the Course

Instructions for Paper Setters

1. Nine Questions will be set in all and students will be required to attempt 5 questions.
2. Question No. 1 will be compulsory and will consist of 5 short answer type questions of 2 marks spread over the entire syllabus (2*5=10 marks).
3. For the remaining four questions, students will attempt 1 out of 2 questions from each of the four units (10 marks each).

Unit	**Topics**	**Contact Hours**
I	**Introduction and Demand Analysis** Subject matter of Economics; Scarcity as basic economic problem; Analysis of basic problems through Production Possibility Frontier; Law of Demand and Elasticity of Demand (Price, Income and Cross) and their measurement	15
II	**Utility analysis** Diminishing Marginal and Equi-Marginal Utility; Ordinal utility analysis and Consumer Equilibrium; Revealed Preference and Hicks' revised Demand Theory; Consumer Surplus and Producer Surplus.	15
III	**Theory of Production** Production function-types; Law of variable proportions; Iso- quants & least-cost Combination; Laws of returns & economies of scale	15
IV	**Supply and Cost Analysis** Law of supply; Elasticity of Supply and its measurement; Economies and	15

	Diseconomies of Scale; Costs- Traditional & Modern Theory	
V*	**Practicum Syllabus:** 1. Derivation of Demand Curve 2. Computation of Demand Elasticity 3. Compensating Variation for Consumer Surplus 4. Equivalent Variation for Consumer Surplus 5. Derivation of A Production Function 6. TR, MR, AR Relationship 7. TC, MC, AC Relationship 8. TP, MP, AP Relationship 9. Computation of Elasticity of Supply 10. Derive PE=SE+IE	15

Suggested Evaluation Methods

Internal Assessment:		**End Term Examination:**
➢ **Theory**		
Class Participation	5	Theory - 50
Seminar/Presentation/Assignment/Quiz/Class Test etc.	5	viva voce* - 20
Mid Term Exam:	10	
➢ **Practicum (15 Hours)**		
Class Participation		
Seminar/Demonstration/Viva Voce/Lab Records etc.	10	
Mid Term Exam:		

Part-C Learning Resources

Recommended Books/E-Resources/LMS:

- Archibald, G.C. (Ed.) (1971). *Theory of the Firm*. Penguin, Harmondsworth.
- Baumol, W.J. (1982). *Economic Theory and Operations Analysis.* Prentice Hall of India, New Delhi.
- C. Snyder and W. Nicholson (2016), '*Microeconomic Theory- Basic Principles and Extensions*' 12th ed.
- Da Costa, G.C. (1980). *Production, Prices and Distribution*. Tata McGraw Hill, New Delhi.
- Gravelle, H., & Rees, R. (2004). Microeconomics (3rd ed). Financial Times/ Prentice Hall.
- Green, H.A.G. (1971). *Consumer Theory* .Penguin, Harmondsworth.
- Healthfields and Wibe (1987). *An Introduction to Cost and Production Functions*. Macmillan, London.
- Henderson & Quandt (1980). *Microeconomic Theory: A Mathematical Approach.* McGraw Hill, New Delhi.
- Hirshleifer, J. & Glazer, A. (1997). *Price Theory and Applications*. Prentice Hall of India, New Delhi.
- Koutsoyiannis, A. (1979). *Modern Microeconomics (2nd Edition)*. Macmillan Press, London.
- Mankiw, N. G. (2016). Principles of microeconomics (8th ed.). Cengage Learning.
- Pindyck R. & Rubinfeld, D. (2015). *Microeconomics (9th Edition)*. Pearson.
- Salvatore, D. (1974). Schaum's outline of theory and problems of microeconomic theory. New York, McGraw-Hill.
- Salvatore, D. (2009). *Microeconomics-Theory and Applications.* Oxford University Press.
- Varian, H. (2003). *Intermediate Microeconomics*. East-West Press.

* Applicable for courses having practical component.

MCC-2

Session 2023-2024			
Part-A Introduction			
Subject	MSC- Economics (Honours)5year integrated		
Semester	1st Semester		
Name of the Course	**Applied Macro Economics-I**		
Course Code	**B23- MSE-102**		
Course Type: (CC/MCC/MDC/ CCM/ DSEC/VOC/DSE/PC/AEC/ VAC	MCC-2		
Level of the course (As per Annexure-I)	100-199		
Pre-requisite for the course (if any)	N.A.		
Course Learning Outcomes (CLO)	After completing this course, the learner will be able to: 1. Have knowledge about national income and related concept. 2. Have knowledge about different approaches of measurement of national income aggregates and methodology. 3. Have knowledge about different approaches of accounting and limitations of GDP concept. 4. Have understanding about basic elements consumption and investment functions.		
	5*. Have knowledge about Computation of GDP at market price, Computation of GNP at market price, Computation of NNP at market price ,Computation of NDP at market price, Computation of GDP at factor cost, Computation of GNP at factor cost, Computation of NDP at factor cost ,Computation of NNP at factor cost ,Derivation and computation of APC, MPC, MPS, APS & Derivation and computation of MEC, Supply price.		
Credits	Theory	Practical	Total
	3	1	4
Contact Hours	3	2	5
Max. Marks:100 **Internal Assessment Marks:20+10*** **End Term Exam Marks: 50+20***	**Time:3 Hrs**		

Part-B Contents of the Course

Instructions for Paper Setters

1. Nine Questions will be set in all and students will be required to attempt 5 questions.
2. Question No. 1 will be compulsory and will consist of 5 short answer type questions of 2 marks spread over the entire syllabus (2*5=10 marks).
3. For the remaining four questions, students will attempt 1 out of 2 questions from each of the four units (10 marks each).

Unit	**Topics**	**Contact Hours**
I	**Introduction and National Income Aggregates** -Nature and Scope of Macro Economics - GDP, NDP, GNP and NNP at market price - GDP, NDP, GNP and NNP at factor cost -Private, personal and personal Disposable Income	15
II	**Measurement of National Income** -Expenditure Approach -Income Approach -Value Added Approach -Problem in the estimation of National Income	15
III	**System of Accounting** -Flow of fund Accounting -Balance of Payment Accounting -Limitations of GDP Concept	15
IV	**Consumption and Income Functions** -Concepts of APC, MPC, MPS, APS - Autonomous and Induced Investment - MEC, Supply price - Actual and Potential GDP	15
V*	**Practicum syllabus:** 1. Computation of GDP at market price	15

	2. Computation of GNP at market price 3. Computation of NNP at market price 4. Computation of NDP at market price 5. Computation of GDP at factor cost 6. Computation of GNP at factor cost 7. Computation of NDP at factor cost 8. Computation of NNP at factor cost 9. Derivation and computation of APC, MPC, MPS, APS 10. Derivation and computation of MEC, Supply price	

Suggested Evaluation Methods

Internal Assessment:		**End Term Examination:**
➢ **Theory**		**Theory 50**
Class Participation	5	**Viva Voce* 20**
Seminar/Presentation/Assignment/Quiz/Class Test etc.	5	
Mid Term Exam:	10	
➢ **Practicum (15 Hours)**		
Class Participation		
Seminar/Demonstration/Viva Voce/Lab Records etc.	10	
Mid Term Exam:		

Part-C Learning Resources

Recommended Books/E-Resources/LMS:

- N. Gregory Mankiw (2010): Macroeconomics, 7th edition, Cengage Learning India Private Limited, New Delhi
- Richard T. Froyen (2005): Macroeconomics, 2nd Edition, Pearson Education Asia, New Delhi.
- Blanchard: Macroeconomics (Pearson Education), 4th Edition.
- Branson, W.A. (1989), Macroeconomic Theory and Policy, (3rd Edition), Harper and Row, New York.
- Dernburg, T.F.and D. M.Mc Dougall, Macroeconomics, McGraw Hill International Book Company.
- Dornbusch, Fisher and Startz: Macroeconomics (Tata McGraw-Hill), 9th Edition.
- Ackley, G. (1978), Macroeconomics: Theory and Policy, Macmillan, New York.
- Bernanke and Abel: Macroeconomics, 4th Edition

* Applicable for courses having practical component.

MCC-3

Session 2023-2024			
Part-A Introduction			
Subject	MSC- Economics (Honours)5year integrated		
Semester	II		
Name of the Course	Quantitative Methods for Economists –I		
Course Code	**B23-MSE-201**		
Course Type: (CC/MCC/MDC/ CCM/ DSEC/VOC/DSE/PC/AEC/ VAC	MCC-3		
Level of the course (As per Annexure-I)	100-199		
Pre-requisite for the course (if any)	N.A.		
Course Learning Outcomes (CLO)	After completing this course, the learner will be able to: 1. Understand about fundamentals of Set theory and applications and making the students understand the concept of functions, limit and continuity. 2. To get exposure about Matrices, and operations on matrices, introducing students about applications of matrices, and higher operations on them. 3. Understanding about derivatives, partial and total, and their economic applications. It also has the objective of detailing about maxima and minima of functions, and applications of constrained and unconstrained maxima and minima. 4. Learn about the basics of Linear programming problems and solution; explaining the applications of game theory and Nash equilibrium.		
	5* Aims at introducing students about applications of Matrix Cramer rule ,Matrix inverse method, Leontief metric, Simple derivatives, Higher order derivatives, Partial and total derivatives, Maxima and minima of a function, Principle of dominance, Prisoner's dilemma, and Nash Equilibrium. .		
Credits	Theory	Practical	Total
	3	1	4
Contact Hours	3	2	5
Max. Marks:100 **Internal Assessment Marks:20+10*** **End Term Exam Marks: 50+20***	**Time: 3 Hrs**		

Part-B Contents of the Course

Instructions for Paper Setters

1. Nine Questions will be set in all and students will be required to attempt 5 questions.
2. Question No. 1 will be compulsory and will consist of 5 short answer type questions of 2 marks spread over the entire syllabus (2*5=10 marks).
3. For the remaining four questions, students will attempt 1 out of 2 questions from each of the four units (10 marks each).

Unit	Topics	Contact Hours
I	**Set Theory and Economic Applications** Concepts of set, elementary set operations, laws of set operations, Number of elements in a set, applications of sets Functions, limits & continuity: Types of functions, Factors, Substitution and rationalization Methods, continuity and discontinuity of functions;	15
II	**Matrix Algebra and Economic Applications** Matrices-types, addition, multiplication of Matrices, Inverse of matrix, Cramer's rule and matrix inverse method Applications of matrices in economics, Input-output analysis; more on matrices (vectors, quadratic forms, Eigen roots and Eigen vectors)	15
III	**Derivatives and Differentiation, Optimization of a Function** Differentiation, simple derivatives, higher order derivatives of one variable, their economic applications. Partial total derivatives, double order partial derivative, economic applications Maxima & minima of functions: necessary and sufficient conditions for functions, economic application of unconstrained & constrained maxima & Minima.	15
IV	**Linear Programming and Game Theory** Linear Programming: Graphical and Simplex method, Dual Problem in linear programming	15

	Game Theory: odd moment's method, principle of dominance & simplex method, Prisoner's dilemma in game theory, concept of Nash Equilibrium.	
V*	1. Matrix Cramer rule 2. Matrix inverse method 3. Leontief metric 4. Hawkins Simon conditions 5. Simple derivatives 6. Higher order derivatives 7. Partial and total derivatives 8. Maxima and minima of a function 9. Constraint and unconstraint maxima and minima 10. Principle of dominance 11. Prisoner's dilemma 12. Nash Equilibrium.	15

Suggested Evaluation Methods

Internal Assessment:		**End Term Examination:**
➢ **Theory**		Theory -50
Class Participation:	5	viva voce*-20
Seminar/Presentation/Assignment/Quiz/Class Test etc.	5	
Mid Term Exam:	10	
➢ **Practicum (15 Hours)**		
Class Participation		
Seminar/Demonstration/Viva Voce/Lab Records etc.	10	
Mid Term Exam:		

Part-C Learning Resources

Recommended Books/E-Resources/LMS:

- Quantitative Methods by D.R. Aggarwal ,Basic Mathematics for Economists by R.C. Joshi, New Academic Publishing.
- Operations Research by Hamdy A. Taha
- Operations Research by R. Wagnor
- Jain TR, Aggarwal SC, Rana, RK: Basic Mathematics for Economists, V Publications, New Delhi
- Bhardwaj RS: Mathematics for Economics and Business, EXCEL Books, New Delhi
- Jain TR, Aggarwal SC, Rana, RK: Basic Mathematics for Economists, V Publications, New Delhi
- Mathematics for Economics by Michael Hoy etal, PHI, New Delhi, 2004.
- Miller, R.E. and P.D. Blair (1985) Input-Output Analysis: Foundations and Extensions. Prentice-Hall, Englewood Cliffs, New Jersey.
- Quantitative Methods for Business and Economics by Adil H. Mouhammed, PHI, New Delhi, 2003.
- Quantitative Techniques in Management by N.D. Vohra, TMH.
- Sydsaeter K, Hammond. P. J(2002): Mathematics for economic analysis, Pearson Education Asia, Delhi Taro Yamane, Mathematics for Economists, PHI, 1973
- Quantitative Methods by D.R. Aggarwal, Basic Mathematics for Economists by R.C. Joshi, New Academic Publishing.
- Jain TR, Aggarwal SC, Rana, RK: Basic Mathematics for Economists, V Publications, New Delhi
- Leontief, W. (1936) Quantitative input-output relations in the economic systems of the United States. Review of Economics and Statistics, Vol 15, pp.105-125.
- AC Chaing, K Wainwright: Fundamental Methods of mathematical economics, McGraw-Hill Proops, J., Faber, M. and Wagenhals, G. (1993) Reducing CO2 Emissions: A Comparative Input-Output Study for Germany and the UK, Springer-Verlag, Heidelberg.
- Aggarwal, H.S. : Modren Micro -Economics, Konark, New Delhi, 1998.

* Applicable for courses having practical component.

DSEC-1

Session 2023-2024	
Part-A Introduction	
Subject	MSC- Economics (Honours)5year integrated

Semester	II		
Name of the Course	**STATISTICAL TECHNIQUES FOR ECONOMICS**		
Course Code	**B23-MSE-203**		
Course Type: (CC/MCC/MDC/ CCM/ DSEC/VOC/DSE/PC/AEC/ VAC	DSEC-1		
Level of the course (As per Annexure-I)	200-299		
Pre-requisite for the course (if any)	N.A.		
Course Learning Outcomes (CLO)	After completing this course, the learner will be able to: 1. Know the scope and breadth of Statistics along with understanding the core principles of measurement and scaling of variables, methods of data collection, editing and presentation so that they are able to apply the understanding of these concepts to comprehend real world problems along with the ability to think critically and analyze statistical problems. 2. Understanding the core principles of correlation and regression so that they are able to apply the understanding of interrelationships for forecasting among variables to comprehend real world problems along with the ability to think critically and analyze economic problems. 3. Analyze given situations on prices and quantities in a variety of cases on Index numbers relating to price and quantities. Helping the students understand the basic structure and assumptions of the different kinds of index numbers , their adequacy and limitations. 4. Exhibit the ability to learn and apply techniques for analysis of seasonal and long term variations of time series data. Simultaneously make the students understanding the significance of trend determination and deseasonalisation of data.		
	5*Develop a practical knowledge of data presentation, relationship between variables and understanding of the time series and Index Number methods.		
Credits	Theory	Practical	Total
	3	1	4
Contact Hours	3	2	5
Max. Marks:100 **Internal Assessment Marks:20+10*** **End Term Exam Marks: 50+20***	**Time: 3 Hrs**		

Part-B Contents of the Course

Instructions for Paper Setters

1. Nine Questions will be set in all and students will be required to attempt 5 questions.
2. Question No. 1 will be compulsory and will consist of 5 short answer type questions of 2 marks spread over the entire syllabus (2*5=10 marks).
3. For the remaining four questions, students will attempt 1 out of 2 questions from each of the four units (10 marks each).

Unit	Topics	Contact Hours
I	**Introduction of Data** -Subject matter of statistics - functions and limitations Measurement of data: Nominal, Ordinal, Interval and Ratio scale -Collection, Editing and presentation of data: Primary data collection methods, Editing, Classification, Tabulation and presentation: One-way, Two-way, classification, frequency graphs, histograms, Pi-graphs, stem-and-leaf diagrams	15
II	**Correlation and Regression Analysis** -Correlation: meaning, types. Observation of correlation-Scatter diagram method, Product moment formula, Bivariate data, Basic idea about multiple correlations. Properties of correlation coefficient, Probable error -Regression Analysis: meaning, types, regression lines and regression coefficients, Least square method, Explained and unexplained variation, Standard error of estimate.	15
III	**Index numbers** -meaning, types, unweighted and unweighted Price	15

	index numbers and Quantity Index numbers, Fixed base and Chain base, Splicing and Base-shifting, Tests on adequacy of Index numbers - Problems in the construction of index numbers, Importance of Index numbers	
IV	**Time Series Analysis** - Components of time series-Regular, Seasonal, Cyclical and Secular variations. Models-additive and multiplicative. -Measurement of trend: semi-average method, moving average method, Least square method- Linear, Parabolic and Exponential trend -Measurement of seasonal variation: Method of simple Averages, Method of moving averages, Ratio-to-moving average method, Ratio-to-trend method, Link Relatives method	15
V*	**Practicum syllabus:** 1. Processing of raw data into tables and graphs 2. Correlation for bivariate table 3. Regression for bivariate table 4. Standard error of estimate of trend values 5. Construction of Chain based index numbers 6. Construction of Fixed base index numbers. 7. Base-shifting and Splicing of Index number series. 8. Calculation of long term trend in Time series 9. Calculation of seasonal trend in Time series 10. De-seasonalisation of data	15

Suggested Evaluation Methods

Internal Assessment:		**End Term Examination:**
➢ **Theory**		Theory -50
Class Participation:	5	viva voce*-20
Seminar/Presentation/Assignment/Quiz/Class Test etc.	5	
Mid Term Exam:	10	
➢ **Practicum (15 Hours)**		
Class Participation		
Seminar/Demonstration/Viva Voce/Lab Records etc.	10	
Mid Term Exam:		

Part-C Learning Resources

Recommended Books/E-Resources/LMS:

- ***Stephen Bernstein & Ruth Bernstein: Schaum's Outline-Theory and Problems of Elements of Statistics(McGraw Hill Professional)***
- ***BL Aggarwal: Basic Statistics(New Age International Publications)***
- Gupta, SC and Kapoor,VK: Fundamental of Mathematical Statistics(Sultan Chand and sons,Delhi)
- Joseph H Healey-Statistics(Thomson Wadsworth)
- Gupta,SC and Kapoor,VK- Fundamentals of Applied Statistics(Sultan Chand&sons,Delhi)
- *Gupta,SP -Statistical Methods(Sultan Chand,Delhi)

* Applicable for courses having practical component.

MCC-4

Session 2023-2024			
Part-A Introduction			
Subject	MSC- Economics (Honours)5year integrated		
Semester	**III**		
Name of the Course	**APPLIED MICRO ECONOMICS-II**		
Course Code	**B23-MSE-301**		
Course Type: (CC/MCC/MDC/ CCM/ DSEC/VOC/DSE/PC/AEC/ VAC	**MCC-4**		
Level of the course (As per Annexure-I)	200-299		
Pre-requisite for the course (if any)	N.A.		
Course Learning Outcomes (CLO)	After completing this course, the learner will be able to: 1. Have insight about basics of perfect completion and determination of market equilibrium 2. Have knowledge about imperfect markets and determination of market equilibrium 3. Exhibit the ability to learn and apply relevant optimization techniques of pricing strategy involves the processes and methodologies that can be used to set prices for products and services. 4. Learn the concepts of factor prices and understanding the concept of wage, rent profit and interest determination theory		
	5*. Critically evaluate the usage of policy in microeconomic markets, explain the theory of the firm; model and explain the theoretical market structures of perfect competition and imperfect competition.		
Credits	Theory	Practical	Total
	3	1	4
Contact Hours	3	2	5
Max. Marks: 100 **Internal Assessment Marks: 20+10*** **End Term Exam Marks: 50+20***	**Time: 3 Hours**		

Part-B Contents of the Course

Instructions for Paper Setters

1. Nine Questions will be set in all and students will be required to attempt 5 questions.
2. Question No. 1 will be compulsory and will consist of 5 short answer type questions of 2 marks spread over the entire syllabus (2*5=10 marks).
3. For the remaining four questions, students will attempt 1 out of 2 questions from each of the four units (10 marks each).

Unit	**Topics**	**Contact Hours**
I	**Market Structure-I** Structure of markets, perfect competition- characteristics, Equilibrium of firm and Industry, price determination under perfect competition. Monopoly-Characteristics, equilibrium, price or output determination under monopoly. Price discrimination and its degrees.	15
II	**Market Structure-II** Monopolistic Competition-Characteristics, equilibrium, price and non-price competition; Features of Oligopoly markets and Kinked demand curve.	15
III	**Pricing Strategies** Pricing Practices: Cost Plus Pricing, Marginal Cost Pricing, Rate of Return Pricing, Product Life Pricing, Price Skimming, Penetration Pricing, Markup Pricing. State Intervention and Administered Prices.	15
IV	**Theory of Distribution** Theory of Factor Pricing: Marginal Productivity theory of Distribution, Modern Theories of Wage, Rent, Interest & Profit.	15
V*	**Practicum Syllabus:** 1. Equilibrium of the firm under Perfect competition market 2. Equilibrium of the Industry under Perfect competition market 3. Short run equilibrium of the firm under Monopoly market 4. Long run equilibrium of the firm under Monopoly market 5. Short run equilibrium of the firm under monopolistic market	15

	6. Long run equilibrium of the firm under monopolistic market 7. Derivation of Kinked Demand curve 8. Pricing Practices 9. Computation and relationship of MPP, MRP, and VMP 10. Derivation and computation of Quasi rent	

Suggested Evaluation Methods

Internal Assessment:		**End Term Examination:**
➢ **Theory**		
Class Participation	5	Theory - 50
Seminar/Presentation/Assignment/Quiz/Class Test etc.	5	viva voce* - 20
Mid Term Exam:	10	
➢ **Practicum (15 Hours)**		
Class Participation		
Seminar/Demonstration/Viva Voce/Lab Records etc.	10	
Mid Term Exam:		

Part-C Learning Resources

Recommended Books/E-Resources/LMS:

- Archibald, G.C. (Ed.) (1971). *Theory of the Firm*. Penguin, Harmondsworth.
- Baumol, W.J. (1982). *Economic Theory and Operations Analysis.* Prentice Hall of India, New Delhi.
- C. Snyder and W. Nicholson (2016), '*Microeconomic Theory- Basic Principles and Extensions*' 12th ed.
- Da Costa, G.C. (1980). *Production, Prices and Distribution*. Tata McGraw Hill, New Delhi.
- E.K. Browning and M.A. Zupan (2014), '*Microeconomics- Theory and Applications'* 12th ed.
- Gravelle, H., & Rees, R. (2004). Microeconomics (3rd ed). Financial Times/ Prentice Hall.
- Green, H.A.G. (1971). *Consumer Theory* .Penguin, Harmondsworth.
- Healthfields and Wibe (1987). *An Introduction to Cost and Production Functions*. Macmillan, London.
- Henderson & Quandt (1980). *Microeconomic Theory: A Mathematical Approach.* McGraw Hill, New Delhi.
- Hirshleifer, J. & Glazer, A. (1997). *Price Theory and Applications*. Prentice Hall of India, New Delhi.
- Koutsoyiannis, A. (1979). *Modern Microeconomics (2nd Edition).*Macmillan Press, London.
- N. Mankiw (2023), '*Principles of Economics'* 10th ed.
- Pindyck R. & Rubinfeld, D. (2015). *Microeconomics (9th Edition)*. Pearson.
- Salvatore, D. (1974). Schaum's outline of theory and problems of microeconomic theory. New York, McGraw-Hill.
- Salvatore, D. (2009). *Microeconomics-Theory and Applications.* Oxford University Press.
- Varian, H. (2014). *Intermediate Microeconomics*. East-West Press. 9th ed.

* Applicable for courses having practical component.

MCC-5

Session 2023-2024			
Part-A Introduction			
Subject	MSC- Economics (Honours)5year integrated		
Semester	III		
Name of the Course	**APPLIED MACRO ECONOMICS-II**		
Course Code	**B23- MSE-302**		
Course Type: (CC/MCC/MDC/ CCM/ DSEC/VOC/DSE/PC/AEC/ VAC	MCC-5		
Level of the course (As per Annexure-I)	200-299		
Pre-requisite for the course (if any)	N.A.		
Course Learning Outcomes (CLO)	After completing this course, the learner will be able to: 1. Have knowledge about flow of income**,** Classical and Keynesian Theory of income and employment. 2. Have knowledge about hypothesis of income and consumption relationship. 3. Have understanding about the concept of multiplier and theory of money. 4. Have further understanding the implications of monetary and fiscal policies.		
	5*. Have understanding about the presentation of circular flow of income, derivation of IS-LM and derivation of Philips curve.		
Credits	Theory	Practical	Total
	3	1	4
Contact Hours	3	2	5
Max. Marks:100 **Internal Assessment Marks:20+10*** **End Term Exam Marks: 50+20***	**Time:3 Hrs**		

Part-B Contents of the Course

Instructions for Paper Setters

1. Nine Questions will be set in all and students will be required to attempt 5 questions.
2. Question No. 1 will be compulsory and will consist of 5 short answer type questions of 2 marks spread over the entire syllabus (2*5=10 marks).
3. For the remaining four questions, students will attempt 1 out of 2 questions from each of the four units (10 marks each).

Unit	**Topics**	**Contact Hours**
I	**Flow of Income and Employment Equilibrium** -Circular flow of income -Say's Law of Market -Classical Theory of Income and Employment -Keynesian theory	15
II	**Income and Consumption Relationship** -Absolute income hypothesis -Relative Income hypothesis -Life cycle hypothesis - Permanent income hypothesis	15
III	**Demand for Money and supply of Money** -Classical, Keynesian and Friedman approach -Money supply determination, aggregates	15
IV	**Concept Multiplier, Inflation and Policies** -Investment, Tax, Foreign trade multiplier and Accelerator Principle - Philips curve analysis -External and Internal balance through IS-LM approach -Fiscal and Monetary policy	15
V*	**Practicum syllabus:** 1. Presentation of Circular flow of Income 2. Derivation, presentation and formulation of income multiplier 3. Derivation and presentation and formulation of foreign trade multiplier 4. Graphical presentation and derivation of aggregate demand and aggregate supply 5. (AD-AS) 6. Graphical presentation and derivation of Invest and saving (IS-LM)	15

	7. Graphical presentation and derivation of IS-LM in closed and open economy 8. Derivation and computation of money supply aggregates measures 9. Graphical presentation and derivation of Philips Curve analysis 10. Derivation of liquidity preference theory	

Suggested Evaluation Methods	
Internal Assessment: ➢ **Theory** Class Participation 5 Seminar/Presentation/Assignment/Quiz/Class Test etc. 5 Mid Term Exam: 10 ➢ **Practicum (15 Hours)** Class Participation Seminar/Demonstration/Viva Voce/Lab Records etc. 10 Mid Term Exam:	**End Term Examination:** **Theory 50** **Viva Voce* 20**

Part-C Learning Resources

Recommended Books/E-Resources/LMS:

- N. Gregory Mankiw (2010): Macroeconomics, 7th edition, Cengage Learning India Private Limited, New Delhi
- Richard T. Froyen (2005): Macroeconomics, 2nd Edition, Pearson Education Asia, New Delhi.
- Blanchard: Macroeconomics (Pearson Education), 4th Edition.
- Branson, W.A. (1989), Macroeconomic Theory and Policy, (3rd Edition), Harper and Row, New York.
- Dernburg, T.F.and D. M.Mc Dougall, Macroeconomics, McGraw Hill International Book Company.
- Dornbusch, Fisher and Startz: Macroeconomics (Tata McGraw-Hill), 9th Edition.
- Ackley, G. (1978), Macroeconomics: Theory and Policy, Macmillan, New York.
- Bernanke and Abel: Macroeconomics, 4th Edition

* Applicable for courses having practical component.

MCC-6

Session 2023-2024			
Part-A Introduction			
Subject	MSC- Economics (Honours)5year integrated		
Semester	IV		
Name of the Course	QUANTITATIVE METHODS FOR ECONOMISTS-II		
Course Code	B23-MSE-401		
Course Type: (CC/MCC/MDC/ CCM/ DSEC/VOC/DSE/PC/AEC/ VAC	MCC-6		
Level of the course (As per Annexure-I)	200-299		
Pre-requisite for the course (if any)	N.A.		
Course Learning Outcomes (CLO)	After completing this course, the learner will be able to: 1. Understand about fundamentals of straight line equation and its parameters; and also making the students understand the point slope formula, and derivation in case of circle, conic sections, and applications in economics 2. to get exposure about Integration, and its methods ;and introducing students about integration of logarithmic and exponential functions; definite integral; economic applications 3understanding about differential equations, solution, and its economic applications and also detailing about difference equations, solution and their economic applications 4. Describe and explain the basics of Linear and quadratic equations; and their applications and explaining the applications of linear and quadratic equations in present value of assets and fixed regular inflows.		
	5*Aims at introducing students about applications of Equation of straight line ,Consumer surplus, Producer surplus, differential equation, General and particular solution of non homogeneous equations, Compounded annual growth rate, Annuity, Present value.		
Credits	Theory	Practical	Total
	3	1	4
Contact Hours	3	2	5
Max. Marks:100 **Internal Assessment Marks:20+10*** **End Term Exam Marks: 50+20***	**Time: 3 Hrs**		

Part-B Contents of the Course

Instructions for Paper Setters

1. Nine Questions will be set in all and students will be required to attempt 5 questions.
2. Question No. 1 will be compulsory and will consist of 5 short answer type questions of 2 marks spread over the entire syllabus (2*5=10 marks).
3. For the remaining four questions, students will attempt 1 out of 2 questions from each of the four units (10 marks each).

Unit	**Topics**	**Contact Hours**
I	**Analytical Geometry and its Economic Applications** Analytical geometry- Equation of straight line Slope: Positive & Negative slope, Zero slope, Undefined Slope The point slope formula; circle, conic sections, parabola, rectangular hyperbola; Applications in economics	15
II	**Integration Methods and its Economic Applications** Integration-rules of integration, by parts, and by substitution, by partial fractions Integration of logarithmic & exponential functions, evaluation of areas, Definite Integral, Economic applications.	15
III	**Differential Equations and its Economic Applications** Differential equations-solution; homogeneous & non-homogeneous differential equations, Exact differential equation, Economic applications Difference equations-Solution, general & particular; Homogeneous & General linear difference equations with constant co-efficient, economic applications.	15
IV	**Linear and Quadratic Equations and Applications in Economics** Linear and quadratic equation and its economic applications, Rate of growth (Compound Annual Growth Rate) and its measurement Present value (Or capital value) and its application; Annuities: types, amount and	15

	Present value	
V*	1. Equation of straight line Slope 2. Circle, parabola and rectangular hyperbola 3. Consumer surplus 4. Producer surplus 5. homogeneous & non-homogeneous differential 6. Exact differential equation 7. General and particular solution of non homogeneous equations 8. Compounded annual growth rate 9. Annuity 10. Present value	15

Suggested Evaluation Methods

Internal Assessment:	**End Term Examination:**
➢ **Theory** Class Participation: 5 Seminar/Presentation/Assignment/Quiz/Class Test etc. 5 Mid Term Exam: 10 ➢ **Practicum (15 Hours)** Class Participation Seminar/Demonstration/Viva Voce/Lab Records etc 10 Mid Term Exam:	Theory-50 Viva voce*-20

Part-C Learning Resources

Recommended Books/E-Resources/LMS:

- Quantitative Methods by D.R. Aggarwal ,Basic Mathematics for Economists by R.C. Joshi, New Academic Publishing.
- Operations Research by Hamdy A. Taha
- Operations Research by R. Wagnor
- Jain TR, Aggarwal SC, Rana, RK: Basic Mathematics for Economists, V Publications, New Delhi
- Bhardwaj RS: Mathematics for Economics and Business, EXCEL Books, New Delhi
- Jain TR, Aggarwal SC, Rana, RK: Basic Mathematics for Economists, V Publications, New Delhi
- Mathematics for Economics by Michael Hoy etal, PHI, New Delhi, 2004.
- Miller, R.E. and P.D. Blair (1985) Input-Output Analysis: Foundations and Extensions. Prentice-Hall, Englewood Cliffs, New Jersey.
- Quantitative Methods for Business and Economics by Adil H. Mouhammed, PHI, New Delhi, 2003.
- Quantitative Techniques in Management by N.D. Vohra, TMH.
- Sydsaeter K, Hammond. P. J(2002): Mathematics for economic analysis, Pearson Education Asia, Delhi Taro Yamane, Mathematics for Economists, PHI, 1973
- Quantitative Methods by D.R. Aggarwal, Basic Mathematics for Economists by R.C. Joshi, New Academic Publishing.
- Jain TR, Aggarwal SC, Rana, RK: Basic Mathematics for Economists, V Publications, New Delhi
- Leontief, W. (1936) Quantitative input-output relations in the economic systems of the United States. Review of Economics and Statistics, Vol 15, pp.105-125.
- AC Chaing, K Wainwright: Fundamental Methods of mathematical economics, McGraw-Hill Proops, J., Faber, M. and Wagenhals, G. (1993) Reducing CO2 Emissions: A Comparative Input-Output Study for Germany and the UK, Springer-Verlag, Heidelberg.
- Aggarwal, H.S. : Modren Micro -Economics, Konark, New Delhi, 1998.

* Applicable for courses having practical component.

MCC-7

Session 2023-2024			
Part-A Introduction			
Subject	MSC- Economics (Honours)5year integrated		
Semester	IV		
Name of the Course	**BASIC ECONOMETRICS**		
Course Code	**B23-MSE-402**		
Course Type: (CC/MCC/MDC/ CCM/ DSEC/VOC/DSE/PC/AEC/ VAC	MCC		
Level of the course (As per Annexure-I)	200-299		
Pre-requisite for the course (if any)	N.A.		
Course Learning Outcomes (CLO)	After completing this course, the learner will be able to: 1. Have knowledge about the basics of econometrics, econometric models. 2. Have understanding of nature of regression analysis, with regard to its assumptions, and least square method. 3. Have knowledge about tests of significance of parameter Estimates, and sampling distribution of the estimates, tests. 4. Have understanding about basic elements of Best Linear Unbiased efficient estimates, problems of autocorrelation, Multi-collinearity and heteroscedasticity.		
	5*Have knowledge about Covariance and variance, two variable regression model, Least square criterion, tests, probem.		
Credits	Theory	Practical	Total
	3	1	4
Contact Hours	3	2	5
Max. Marks:100 **Internal Assessment Marks:20+10*** **End Term Exam Marks:50+20***	**Time:3 Hrs**		

Part-B Contents of the Course

Instructions for Paper Setters

1. Nine Questions will be set in all and students will be required to attempt 5 questions.
2. Question No. 1 will be compulsory and will consist of 5 short answer type questions of 2 marks spread over the entire syllabus (2*5=10 marks).
3. For the remaining four questions, students will attempt 1 out of 2 questions from each of the four units (10 marks each).

Unit	**Topics**	**Contact Hours**
I	**Introduction** Nature and scope of econometrics; Methodology of econometric research; Desirable properties of an econometric model, Random variables and sampling theory (only review); Covariance, variance, and correlation.	15
II	**Regression Analysis** Nature of the regression analysis; Two variable regression analysis: Some basic ideas; Assumptions of the linear stochastic regression model; Distribution of the dependent variable Y; Problem of estimation: The least square criterion and normal equations.	15
III	**Tests of the significance** Test of the goodness of fit with R^2; Tests of the significance of parameter estimates: Mean and variance of the OLS estimates; Variance of the random variable, Sampling distribution of the OLS estimates (standard error test, Z test and student's t test); Confidence intervals for OLS estimates; Test of significance for sample correlation coefficient.	15
IV	**OLS Properties and problems**	15

	Desirable properties of estimators; Properties of OLS estimators; Second order tests of the assumptions of linear regression model: The assumption of the randomness of u, The assumption of zero mean of u, The assumption of normality of u, the problem of Heteroscedasticity, Autocorrelation and Multicollinearity (Nature, causes and consequences).	
V*	Practicum syllabus: 1. Covariance and variance 2. Estimation of two variable regression model 3. Least square criterion 4. Formulation of Z test 5. Formulation of student's T test 6. Heteroscedasticity with example 7. Autocorrelation with example 8. Multicollinearity with example	15

Suggested Evaluation Methods

Internal Assessment:	**End Term Examination:**
➢ **Theory** Class Participation 5 Seminar/Presentation/Assignment/Quiz/Class Test etc. 5 Mid Term Exam: 10 ➢ **Practicum (15 Hours)** Class Participation Seminar/Demonstration/Viva Voce/Lab Records etc. 10 Mid Term Exam:	**Theory 50** **Viva Voce *20**

Part-C Learning Resources

Recommended Books/E-Resources/LMS:

- Amemiya, T. (1985), Advanced Econometrics, Harvard University Press, Cambridge, Mass.
- Baltagi, B.H. (1988), Econometrics, Springer, New York.
- Goldberger, A.S. (1998), Introductory Econometrics, Oxford University Press, New York.
- Gujarati, D.N. (1995), Basic Econometrics (2nd Edition) MC Graw Hill New Delhi.
- Intrilligator, M.D. (1978), Econometric Methods, Techniques and Applications, Prentice Hall Englewood Cliffs, New Jersey.
- Johnson J. (1991), Econometric Methods, MCGraw Hall Book Co. London
- Kmenta J. (1998), Elements of Econometrics, University of Michigan Press, NewYork
- Koutsoyiannis, A. (1977), Theory of Econometrics, The Macmillan Press Ltd. London
- Maddala G.S.(Ed) (1993), Econometric Methods and application, Aldershot U.K.
- Pindyck R.S. and D.L. Rubinfield (1976), Econometric Models and Economic Forecasts, MCGraw Hill Kogakusha Tokyo
- Theil H. (1981), Introduction to Econometrics, Prentice Hall of India, New Delhi

* Applicable for courses having practical component.

MCC-8

Session 2023-2024			
Part-A Introduction			
Subject	MSC- Economics (Honours)5year integrated		
Semester	IV		
Name of the Course	**ADVANCED STATISTICAL METODS FOR ECONOMISTS**		
Course Code	B23-MSE-403		
Course Type: (CC/MCC/MDC/ CCM/ DSEC/VOC/DSE/PC/AEC/ VAC	MCC		
Level of the course (As per Annexure-I)	200-299		
Pre-requisite for the course (if any)			
Course Learning Outcomes (CLO)	After completing this course, the learner will be able to: 1. Knowledge about the Probability along with understanding the Binomial, Poisson and Normal distributions so that they are able to apply the understanding of these concepts to comprehend real world problems along with the ability to think critically and analyze statistical problems. 2. Understanding the core principles of sampling and sampling distributions so that they are able to apply the understanding and comprehend real world problems along with the ability to testing of hypotheses and analyze economic problems relating to large samples and small samples and non-parametric tests. 3. Analyze choice making among situations involving risk and uncertainty. Helping the students understand the basic criteria of decision problems. 4. Exhibit the ability to learn and apply statistical techniques for quality control. Simultaneously make the students understanding the buyer's risk and producer's risk.		
	5* Develop a practical knowledge of different sampling methods and their techniques and different test of analysis.		
Credits	Theory	Practical	Total
	3	1	4
Contact Hours	3	2	5
Max. Marks:100 **Internal Assessment Marks:20+10*** **End Term Exam Marks: 50+20***	**Time: 3 Hrs**		

Part-B Contents of the Course

Instructions for Paper Setters

1. Nine Questions will be set in all and students will be required to attempt 5 questions.
2. Question No. 1 will be compulsory and will consist of 5 short answer type questions of 2 marks spread over the entire syllabus (2*5=10 marks).
3. For the remaining four questions, students will attempt 1 out of 2 questions from each of the four units (10 marks each).

Unit	**Topics**	**Contact Hours**
I	**Probability and Probability Distributions** -Probability: definition, basic concepts, Addition & multiplication theorem, Bernoulli's rule, Conditional probability and Bay's rule - functions and limitations -Binomial, Poisson and Normal distributions, Fitting of the distributions to the observed data	15
II	**Sampling theory and Testing of hypotheses** - Sampling methods, sampling errors, Central Limit theorem (without proof). - Testing of hypotheses- large and small sample tests- z test, t-test and F test, p-values. Non-parametric tests- Chi-square and others-Wilcoxon, Mann-Whiney only - Interval estimation and properties of good estimators, Confidence intervals, Determination of sample size	15
III	**Statistical Decision theory** -meaning, different criteria of decision making uncertainty and risk. Expected money value and Expected Opportunity Loss(with and without payoff matrix given),Expected Value of Perfect Information	15
IV	**Statistical Quality Control**	15

	- Meaning, basic concepts, Making control charts for variables and Attributes, Acceptance Sampling and Sampling plans, Operating Characteristic Curve	
V*	**Practicum syllabus:** 1. Fitting of Binomial, Poisson and Normal distributions. 2. Sampling distributions- finding mean 3. Sampling distributions- finding variance of sampling distribution 4. Non-parametric tests-applications and limitations. 5. Interval estimation- confidence Intervals 6. p-values 7. Decision criteria under risk and uncertainty. 8. Acceptance sampling 9. Sampling plans. 10.OC curve	15
Suggested Evaluation Methods		
Internal Assessment: ➢ **Theory** Class Participation: 5 Seminar/Presentation/Assignment/Quiz/Class Test etc. 5 Mid Term Exam: 10 ➢ **Practicum (15 Hours)** Class Participation Seminar/Demonstration/Viva Voce/Lab Records etc. 10 Mid Term Exam:		**End Term Examination:** Theory -50 viva voce*-20

* Applicable for courses having practical component.

Part-C Learning Resources
Recommended Books/E-Resources/LMS: • ***Stephen Bernstein & Ruth Bernstein: Schaum's Outline-Theory and Problems of Elements of Statistics(McGraw Hill Professional)*** • ***BL Aggarwal: Basic Statistics(New Age International Publications)*** • Gupta,SC and Kapoor,VK: Fundamental of Mathematical Statistics(Sultan Chand and sons,Delhi) • Joseph H Healey-Statistics(Thomson Wadsworth) • Gupta,SC and Kapoor,VK- Fundamentals of Applied Statistics(Sultan Chand&sons,Delhi) • *Gupta,SP -Statistical Methods(Sultan Chand, Delhi)

DSE-1

Session 2023-2024	
Part-A Introduction	
Subject	MSC- Economics (Honours)5year integrated
Semester	IV
Name of the Course	**FINACIAL MARKETS & SYSTEM**
Course Code	**B23-MSE-404**
Course Type: (CC/MCC/MDC/ CCM/ DSEC/VOC/DSE/PC/AEC/ VAC	DSE-1
Level of the course (As per Annexure-I)	200-299
Pre-requisite for the course (if any)	N.A.
Course Learning Outcomes (CLO)	After completing this course, the learner will be able to: 1. Have understanding of money and capital market instruments. 2. Have understanding about development banking, refinancing and EXIM bank operations for trade financing. 3. Have knowledge about exchange rate mechanism, and foreign

	exchange market operations. 4. Have understanding the mechanism of stock markets and leading stock exchanges.		
	5*Have the practical understanding of the different money, capital and foreign market operations.		
Credits	Theory	Practical	Total
	3	1	4
Contact Hours	3	2	5
Max. Marks:100 **Internal Assessment Marks:20+10*** **End Term Exam Marks:50+20***	**Time:3 Hrs**		

Part-B Contents of the Course

Instructions for Paper Setters

4. Nine Questions will be set in all and students will be required to attempt 5 questions.
5. Question No. 1 will be compulsory and will consist of 5 short answer type questions of 2 marks spread over the entire syllabus (2*5=10 marks).
6. For the remaining four questions, students will attempt 1 out of 2 questions from each of the four units (10 marks each).

Unit+-+	Topics	Contact Hours
I	**Money and Capital markets**: Call Money Operations: Inter-Bank Call Money Market; Bill market operations: Treasury Bill, Commercial Bill; Bonds and mutual funds.	15
II	**Financial System**: Role, Nature and Functions, Non-Banking Financial intermediaries, Merchant Banking, Investment Banking, Refinancing institutions; Export-Import Bank(EXIM): Role and Functions.	15
III	**Foreign Exchange Rate System**: Fixed and Flexible Exchange Rate ; Meaning, merits and demerits; determination, Multiple Exchange Rates; Speculation, Hedging, Swapping and arbitrage operations in foreign currency.	15
IV	**Equity/Stock markets**: Mechanism, Instruments and Operations; National Stock Exchange; Bombay Stock Exchange. SEBI – Powers and functions.	15
V*	Practicum syllabus: 1. Call money market operation with example 2. Bill market operation with example 3. Treasury bill market operation with example 4. Bond market operation with example 5. Mutual fund operation with example 6. Speculation operation with example 7. Hedging operation with example 8. Swapping operation with example 9. Arbitrage operation with example	15

Suggested Evaluation Methods

Internal Assessment:	**End Term Examination:**
➢ **Theory** Class Participation 5 Seminar/Presentation/Assignment/Quiz/Class Test etc. 5 Mid Term Exam: 10 ➢ **Practicum (15 Hours)** Class Participation Seminar/Demonstration/Viva Voce/Lab Records etc. 10 Mid Term Exam:	**Theory 50** **Viva Voce *20**

Part-C Learning Resources

Recommended Books/E-Resources/LMS:

- A.D. Bain (1992) Economics of the Financial System
- Committee Report II) Summary in RBI Bulletin, July, 1998.
- DM Mithani:Money, Banking and Public Finance
- Goodhart, C.A.E (1978), Money. Information and Uncertainty, The Macmillan Press Ltd., London.
- Johnson, H.G (1972), Further Essays in Monetary Economics, George Allen and Unwin, London.
- Johnson, H.G and Nobay A.R. (1974), Issues in Monetary Economics, Oxford University Press, Delhi.
- Khan, MY: Indian Financial System; Tata-McGrawhill
- Krishna, K.L (1999), Econometric Applications in India, Oxford University Press, New Delhi.
- Laidler, D.E.W. (1977), Demand for Money: Theory and Evidence, Dum-Don Valley, New York.
- Narendra Jadhav (1993), Monetary Economics for India, Macmillan India Ltd., Madras.
- Pierce, David G and Shaw, David M (1974), Monetary Economics: Theories, Evidence and Policy, Butterworths, London.
- R.B.I - Report of the Working Group : Money Supply Analytics and Methodology ofCompilation, 1998.
- R.B.I. - Report of the Committee on Banking Sector Reforms (Narasimham
- Roy Bailey (2005) The Economics of Financial Markets
- Suraj.B.Gupta: Monetary Economics - Institutions, Theory & Policy; S Chand publications
- Suraj.B.Gupta:Monetary Planning for India
- Venugopal Reddy, Y (2000), Monetary and Financial Sector Reforms in India, UBS Publishers' Distributors Ltd., Chennai.
- Wrightsman, Dwayne (1971), An Introduction to Monetary Theory and Policy, The Free Press, New York. Gibson, Williamson E and Kaufman, George G (1971), Monetary Economics: Readings on Current Issues, TATA McGraw-Hill Publishing Company Ltd., New Delhi.

Y.V. Reddy (2000), Monetary and Financial Sector Reforms in India UBSPD, New Delhi.

* Applicable for courses having practical component.

DSE-1

Session 2023-2024			
Part-A Introduction			
Subject	MSC- Economics (Honours)5year integrated		
Semester	IV		
Name of the Course	**MONEY, BANKING & FINANCE**		
Course Code	**B23-MSE-405**		
Course Type: (CC/MCC/MDC/ CCM/ DSEC/VOC/DSE/PC/AEC/ VAC	DSE-1		
Level of the course (As per Annexure-I)	200-299		
Pre-requisite for the course (if any)	N.A.		
Course Learning Outcomes (CLO)	After completing this course, the learner will be able to: 1.Have insight about the Money, Money supply, Money & Capital Markets- Organisation, Structure and Working. 2. Have further understanding of Banking, Commercial banks-functions & Credit Creation, RBI and Credit Control measures. 3. Have knowledge about nature of financial sector-money and capital market of India, Non-bank financial intermediaries . 4. Have understanding about the banking and financial reforms 1990's		
	5*Have the understanding of the monetary measures, instruments of financial markets, and case study of two banks.		
Credits	Theory	Practical	Total
	3	1	4
Contact Hours	3	2	5
Max. Marks:100 **Internal Assessment Marks:20+10*** **End Term Exam Marks:50+20***	**Time:3 Hrs**		

Part-B Contents of the Course

Instructions for Paper Setters

10. Nine Questions will be set in all and students will be required to attempt 5 questions.
11. Question No. 1 will be compulsory and will consist of 5 short answer type questions of 2 marks spread over the entire syllabus (2*5=10 marks).
12. For the remaining four questions, students will attempt 1 out of 2 questions from each of the four units (10 marks each).

Unit	Topics	Contact Hours
I	Money: Barter system – Characteristics and difficulties; Money-Definition, functions, classification, and significance; Money supply determinants, High-powered money and money multiplier; RBI measures of monetary aggregates.	15
II	**Banking:** Commercial Banks- Functions and Importance, Process of Credit Creation; The Reserve Banking of India: Functions and Instruments of credit control, Recent Monetary Policy of RBI.	15
III	**Financial sector:** Money and Capital Markets in India: Structure, Functions and Significance; SEBI: Powers and Functions; Non-Bank Financial Intermediaries- Role and Significance, Merchant Banking, Investment Banking,	15
IV	**Banking and financial Reforms**:Need of Reform in Banking and Financial System, The Narasimham Committee Report: Report of Committee to Review the Financial System 1991, Narsimham Committee Report on Banking Sector Reforms 1998.	15
V*	Practicum syllabus: 1. Money supply determinants 2. High powered money	15

	3. Measures of monetary aggregates 4. Process of credit creation 5. Examples of Lender's instruments 6. Examples of Borrower's instruments 7. Case study of ICICI bank 8. Case study of HDFC bank	
Suggested Evaluation Methods		
Internal Assessment: ➢ **Theory** Class Participation 5 Seminar/Presentation/Assignment/Quiz/Class Test etc. 5 Mid Term Exam: 10 ➢ **Practicum (15 Hours)** Class Participation Seminar/Demonstration/Viva Voce/Lab Records etc. 10 Mid Term Exam:		**End Term Examination:** **Theory 50** **Viva Voce *20**

Part-C Learning Resources
Recommended Books/E-Resources/LMS: • *M.K. Lewis (2000), Monetary Economics, Oxford University Press.* • *Bailey Roy (2005) The Economics of Financial Markets* • *R.R. Paul "Money, Banking and International Trade" Kalyani Publishers.* • *R.B.I. Bulletin, Annual Report; Report on Currency and Finance.*

* Applicable for courses having practical component.

Note: All Syllabi with Paper Code B23-ECO-NUM have been taken from UG Programme in Subject of Economics with Schemes A and B. All Syllabi with Paper Code B23-MSE-NUM are only for M.Sc. Economics (Hons.) 5-Year Integrated Programme : Scheme- C

PROPOSED BY
DEPARTMENT OF ECONOMICS
KURUKSHETRA UNIVERSITY KURUKSHETRA

For inclusion in pool of SEC Courses at UG Programme Level under NEP-2020 Guidelines

Course Objective of B23-SEC-107, B23-SEC-227 and Course Objective of B23-SEC-327

The objective of this course is to provide students with a comprehensive understanding of the economics of ignoring and negligent behavior. The students should be able to identify and understand the impact of negligent behavior in diverse situations, and develop effective communication and conflict resolution skills to address it. They should also be able to proactively prevent and mitigate negligent behavior, and apply these skills to real life diverse situations by developing a personal plan of action. These learning outcomes will help students develop the soft skills necessary for success in the workplace and in their personal lives. The courses give clear actionable takeaways in terms of conceptual, analytical, behavioural skills making the students more creative and responsible citizens.

DEPARTMENT OF ECONOMICS
KURUKSHETRA UNIVERSITY, KURUKSHETRA
(Established by the state Legislature Act –XII of 1956)

Structure, Syllabus of the Courses of Reading and Scheme of Examination

Skill Enhancement Courses (SEC)

Proposed by Department of Economics and approved by UGBOS held on 12.07.2023

(According to the Curriculum Framework of U.G. Programmes under NEP-2020)

To be implemented w.e.f. the Session 2023-24

(in Phased Manner)

Scheme of the U.G. (SEC) Courses :

Semester	Course Type	Course Code	Name of Course	Credits	Contact Hours per Week	Internal Assessment Marks	End Term Exam Marks	Total Marks	Duration of Exam (Hrs.)
I	SEC	B23-SEC-107	Soft Skills for Addressing Negligent Behaviour-I	3	4	20	55	75	3
II	SEC	B23-SEC-227	Soft Skills for Addressing Negligent Behaviour-II	3	4	20	55	75	3
III	SEC	B23-SEC-327	Soft Skills for Addressing Negligent Behaviour-III	3	4	20	55	75	3

SEC

Session 2023-2024			
Part-A Introduction			
Subject	For All UG Programmes		
Semester	I		
Name of the Course	**Soft Skills for Addressing Negligent Behaviour-I**		
Course Code	**B23-SEC-107**		
Course Type: (CC/MCC/MDC/ CCM/ DSEC/VOC/DSE/PC/AEC/ VAC	SEC		
Level of the course (As per Annexure-I)	100-199		
Pre-requisite for the course (if any)	None		
Course Learning Outcomes (CLO)	After completing this course, the learner will be able to: 1. Identify and analyze types of negligent behavior in various situations, and understand their impact on individuals, organizations and society at large. 2. Develop effective communication and conflict resolution skills to address negligent behavior in a professional manner. 3. Understand the importance of Early Warning Systems and Standard Operating Procedures. 4. Develop a personal plan for addressing negligent behavior in a hypothetical scenario.		
	5*. Learn to understand negligent & ignoring behavior of others and suggest remedies at personal level		
Credits	Theory	Practical	Total
	2	1	3
Contact Hours	2	2	4
Internal Assessment Marks	15	5	20
End Term Exam Marks	35	20	55
Max. Marks: 75 **Internal Assessment Marks: 20** **End Term Exam Marks: 55**	**Time: 3 Hrs**		

Part-B Contents of the Course

Instructions for Paper Setters

1. Nine Questions will be set in all and students will be required to attempt 5 questions.
2. Question No. 1 will be compulsory and will consist of 7 short answer type questions of 1 mark each spread over the entire syllabus (1*7=7 marks).
3. For the remaining four questions, students will attempt 1 out of 2 questions from each of the four units (7 marks each).

Unit	**Topics**	**Contact Hours**

I	**Introduction to Negligent Behavior:** Definition of negligent behavior; Difference between Ignorance and Ignoring; Responsible Behaviour vs Ignoring Behavior; Identifying types of negligent behavior; Psychology of Ignoring Behaviour; Meaning, Types and Factors affecting Ignoring/Negligent Behavior.	09
II	**Communication Skills for Addressing Negligent Behavior** Active listening and empathetic communication; Developing empathy and emotional intelligence to identify and address negligent behavior; Role-playing exercises to practice pro-active stands in situations of urgency: threat to human life; threat to environment	09
III	**Technical Skills and Strategies for Addressing Negligent Behavior:** Meaning, Importance and Consequences of Ignoring Early Warning Systems and Standard Operating Procedures; Costs of Ignoring Fundamental Duties; Understanding the impact of negligent behavior on individuals, organizations and society.	09
IV	**Understanding the Costs of Negligent Behavior:** Costs of Neglecting Personal Health and Well-Being; Implications of Ignoring Environmental Issues and Sustainability. Analyzing the Costs of Ignoring Social and Economic Inequalities. Costs of Ignoring Skills, Abilities and Good Ideas.	09
V*	**Practical exercises:** 1. Identify and analyze examples of negligent behavior 2. Identify and analyze examples of negligent behavior 3. Workshop on economic costs of Neglecting Personal Health and Well-Being. 4. Workshop on economic implications of Ignoring Environmental Issues and Sustainability. 5. Analyzing the Costs of Ignoring Social and Economic Inequalities.	09

	6. Analyzing Costs of Ignoring Skills, Abilities and Good Ideas	
Suggested Evaluation Methods		
Internal Assessment: ➢ **Theory** **:15** Class Participation :4 Seminar/Presentation/Assignment/Quiz/Class Test etc.:11 (Assignment : The students will create a plan as a Final Project* for addressing negligent behavior in a hypothetical workplace scenario.) Mid Term Exam : ➢ **Practicum** **: 5** Class Participation Seminar/Demonstration/Viva Voce/Lab Records etc. Mid Term Exam:		**End Term Examination** Theory **:35** **End Term Examination** Practicum Viva Voce on Project* **:20**

Part-C Learning Resources

Recommended Books/E-Resources/LMS:

Reading List:

1. *The Importance of Emotional Intelligence in the Workplace* by Daniel Goleman
2. *The Cost of Negligent Behavior in the Workplace* by David Michaels
3. *The Impact of Negligent Behavior on Employee Morale and Productivity* by John Smith
4. *The Consequences of Negligence in Professional Settings* by Mary Jo Asmus
5. *Crucial Conversations: Tools for Talking When Stakes Are High* by Kerry Patterson, Joseph Grenny, Ron McMillan, and Al Switzler
6. *The Art of Communicating* by Thich Nhat Hanh
7. *Getting to Yes: Negotiating Agreement Without Giving In* by Roger Fisher and William Ury
8. *Difficult Conversations: How to Discuss What Matters Most* by Douglas Stone, Bruce Patton, and Sheila Heen
9. *The Power of Positive Confrontation: The Skills You Need to Handle Conflicts at Work, at Home, Online, and In Life* by Barbara Pachter and Susan Magee
10. *Creating a Culture of Accountability: Strategies and Tools for Bringing Best Practices to Life* by Mark Samuel
11. *The Five Dysfunctions of a Team: A Leadership Fable* by Patrick Lencioni
12. *The No Asshole Rule: Building a Civilized Workplace and Surviving One That Isn't* by Robert I. Sutton
13. *The Ethical Imperative: Why Moral Leadership Is Good Business* by John Dalla Costa
14. *Predictably Irrational: The Hidden Forces That Shape Our Decisions* by Dan Ariely
15. *The Willpower Instinct: How Self-Control Works, Why It Matters, and What You Can Do to Get More of It* by Kelly McGonigal
16. *Basu, Durga Das (2013). Introduction to the Constitution of India (21st ed.). Lexis Nexis.*
17. *Thinking, Fast and Slow* by Daniel Kahneman
18. *Better Than Before: Mastering the Habits of Our Everyday Lives* by Gretchen Rubin
19. *Early Warning Practices can Save Many Lives: Good Practices and Lessons Learned* Published by the United Nations Secretariat of the International Strategy for Disaster Reduction (UNISDR) Platform for the Promotion of Early Warning Bonn, Germany, August 2010 https://www.unisdr.org/files/15254_EWSBBLLfinalweb.pdf
20. Cutler, D. M., & Lleras-Muney, A. (2010). Understanding differences in health behaviors by

education. Journal of Health Economics, 29(1), 1-28.
20. Marcal, Katrine. Mother of Invention -How Good Ideas Get Ignored in an Economy Built for Men, Abram Press, New York, 2021.
21. Suttie Jill, Why your Creative Ideas Get Ignored, Greater Good Magazine , March 3, 2017

* Applicable for courses having practical component

DETAILED SYLLABI FOR B23-SEC-227

SEC

<table>
<tr><td colspan="4">Session 2023-2024</td></tr>
<tr><td colspan="4">Part-A Introduction</td></tr>
<tr><td>Subject</td><td colspan="3">For all UG Programmes</td></tr>
<tr><td>Semester</td><td colspan="3">II</td></tr>
<tr><td>Name of the Course</td><td colspan="3">Soft Skills for Addressing Negligent Behaviour-II</td></tr>
<tr><td>Course Code</td><td colspan="3">B23-SEC-227</td></tr>
<tr><td>Course Type: (CC/MCC/MDC/ CCM/ DSEC/VOC/DSE/PC/AEC/ VAC</td><td colspan="3">SEC</td></tr>
<tr><td>Level of the course (As per Annexure-I)</td><td colspan="3">100-199</td></tr>
<tr><td>Pre-requisite for the course (if any)</td><td colspan="3">B23-SEC-107</td></tr>
<tr><td rowspan="2">Course Learning Outcomes (CLO)</td><td colspan="3">After completing this course, the learner will be able to:
1. Analyze case studies and real-world examples of ignoring and negligent behavior
2. Develop critical thinking and decision-making skills
3. Evaluate the role of incentives for not Ignoring or Neglecting
4. Develop a personal plan for addressing negligent behavior</td></tr>
<tr><td colspan="3">5*. Learn to understand negligent & ignoring behavior of others and suggest remedies at personal level</td></tr>
<tr><td rowspan="2">Credits</td><td>Theory</td><td>Practical</td><td>Total</td></tr>
<tr><td>2</td><td>1</td><td>3</td></tr>
<tr><td>Contact Hours</td><td>2</td><td>2</td><td>4</td></tr>
<tr><td>Internal Assessment Marks</td><td>15</td><td>5</td><td>20</td></tr>
<tr><td>End Term Exam Marks</td><td>35</td><td>20</td><td>55</td></tr>
<tr><td>Max. Marks: 75
Internal Assessment Marks: 20
End Term Exam Marks: 55</td><td colspan="3">Time: 3 Hrs</td></tr>
<tr><td colspan="4">Part-B Contents of the Course</td></tr>
<tr><td colspan="4">Instructions for Paper Setters
4. Nine Questions will be set in all and students will be required to attempt 5 questions.
5. Question No. 1 will be compulsory and will consist of 7 short answer type questions of 1 mark each spread over the entire syllabus (1*7=7 marks).
6. For the remaining four questions, students will attempt 1 out of 2 questions from each of the four units (7 marks each).</td></tr>
</table>

Unit	Topics	Contact Hours
I	**Analyzing Real Life Case Studies of Negligent Behavior:** Causes, Costs and Consequences of Ignoring Individual and Collective Responsibilities; Impact of DDT on Human Life and Environment; The Bhopal Gas Tragedy; The Kedarnath Tragedy	09
II	**Analyzing Real Life Case Studies of Negligent Behavior:** The Financial Crisis of 2007-2008; The 2014 Beas River Tragedy; Morbidity And Mortality Due to Deceptive Endorsements	09
III	**Identifying the Returns on Addressing Ignoring/negligent Behaviour:** Private and Social Returns of Investing in Preventive Measures and Early Interventions; Analyzing the Role of Innovation and Technological Advancements in Generating Economic Returns in India; Evaluating the Economic Benefits of Promoting Responsible Consumption and Production in India.	09
IV	**Application of Skills:** Returns of Addressing Health and Wellness Issues Proactively; Returns of Adopting Sustainable Practices and Environmental Conservation; Returns Of Encouraging Skills, Abilities And Good Ideas; Returns Of Compliance Of Standard Operating Procedures.	09
V*	Practical exercises: 1. Identify and analyze real life case studies of negligent behavior 2. Workshop on returns of not ignoring Personal Health and Well-Being. 3. Workshop on returns of not ignoring Environmental Issues and Sustainability. 4. Workshop on returns of not ignoring Social and Economic Inequalities. 5. Workshop on returns of not ignoring Skills, Abilities and Good Ideas	09
Suggested Evaluation Methods		
Internal Assessment: ➢ **Theory :15** Class Participation :4 Seminar/Presentation/Assignment/Quiz/Class Test etc.:11 (Assignment : The students will create a plan as a Final Project* for addressing negligent behavior in a hypothetical workplace scenario.)		**End Term Examination** Theory **:35** **End Term**

Mid Term Exam : ➢ **Practicum : 5** Class Participation Seminar/Demonstration/Viva Voce/Lab Records etc. Mid Term Exam:	**Examination** Practicum Viva Voce on Project* **:20**

Part-C Learning Resources

Recommended Books/E-Resources/LMS:

Reading List:

1. Bouwman Henk, Bornman Riana, van den Berg Henk and Kylin Henrik, DDT: Fifty years since Silent Spring, in Late lessons from early warnings: science, precaution, innovation, EEA Report, Summary, no1/2013
2. Oregon State University, What is DDT? Why Was DDT Usrd? Is DDT Still Used?, http://npic.orst.edu/factsheets/ddtgen.pdf,1999.
3. Broughton, Edward ,The Bhopal disaster and its aftermath: a review *Environmental Health:A Global Health Science Source*, volume 4,Article number: 6 (2005) . https://ehjournal.biomedcentral.com/articles/10.1186/1476-069X-4-6
4. Anand, V. (2019). The Bhopal gas tragedy revisited. The Lancet Public Health, 4(4), e178.
5. Shrivastava, P. Managing Industrial Crisis. 1987, New Delhi , Vision Books, 196.
6. Rhyddhi, Chakraborty. Case Study: Bhopal Gas Tragedy (1983-84)Posted by WMM1942 on September 4, 2018 at 5:34pm
7. ICJB, COMPENSATION & THE INJUSTICE OF THE 1989 SETTLEMENT, https://www.bhopal.net/what-happened/the-immediate-aftermath-1984-1989/compensation-injustice-1989-settlement/#:~:text=Compensation%20of%20just%20Rs%201,people%20who%20suffered%20lifelong%20injuries
8. VENKAT,VIDAYA. 30 Years After The Bhopal Gas Tragedy- Lessons from India's greatest industrial disaster with serious consequences for environment remain unlearnt , November 02, 2014 12:20 am | Updated November 28, 2021 09:04 pm IST
9. Patel, U. (2020). Uttarakhand Tragedy. International Journal Of Scientific Research And Education, 8(2), 926
10. Kala, Chandra Prakash,https://indianexpress.com/article/research/here-is-what-happened-in-kedarnath-and-rest-of-uttarakhand-in-2013-5482050/
11. Varghese, Bindi & Paul Neha Itty Jose, Disaster Management: A Case Study of Uttarakhand, ENVIS Centre on Himalayan Ecology. http://gbpihedenvis.nic.in/PDFs/Disaster%20Data/Disaster%20Data%20Uttarakhand/Papers/Disaster_Management_A_Case_Study_of_Uttakhand.pdf
12. Bisht, A. (2013). Uttarakhand tourism: Recipe for disaster. Hardnews. Retrieved from http://www.hardnewsmedia.com/2013/06/5955 .
13. Singh, Manoj, The 2007-2008 Financial Crisis in Review-Investopedia, https://www.investopedia.com/articles/economics/09/financial-crisis-review.asp#:~:text=The%202008%20financial%20crisis%20began,worthless%20investments%20in%20subprime%20mortgages.
14. Upadhyay, Ayushi, Financial Crisis 2008 : Causes, Cost and the after Effect, Insider > Macro Moves, Created on 05 Oct 2020, Updated on 24 Dec 2022
15. Sharma, Ashwani, the Indian express, Shimla,January 2, 2016. https://indianexpress.com/article/india/india-news-india/mandi-beas-tragedy
16. "India Unbound: The Social and Economic Revolution from Independence to the Global

Information Age" by Gurcharan Das

17. "The Indian Renaissance: India's Rise after a Thousand Years of Decline" by Sanjeev Sanyal
18. "Behavioural Economics: A Beginner's Guide" by Dharani Ranjan
19. "The Triple Bottom Line: How Today's Best-Run Companies Are Achieving Social, and Environmental Success -- And How You Can Too" by Andrew W. Savitz and Karl Weber
20. "The Economics of Climate Change: The Stern Review" by Nicholas Stern
21. "The Idea of India" by Sunil Khilnani
22. "Climate Change and India: Adaptation and Vulnerability" edited by Shashikant Chopde and K.V. Raju
23. "Inclusive Growth and Development in India: Challenges and Strategies" edited by Shashanka Bhide and R.R. Kulkarni
24. Tripathi, Manoj. Change the way you think and decide -Power of Ignored Skills, Notion Press, 2020

* Applicable for courses having practical component

SEC

Session 2023-2024			
Part-A Introduction			
Subject	For All UG Programmes		
Semester	III		
Name of the Course	**Soft Skills for Addressing Negligent Behaviour-III**		
Course Code	**B23-SEC-327**		
Course Type: (CC/MCC/MDC/ CCM/ DSEC/VOC/DSE/PC/AEC/ VAC	SEC		
Level of the course (As per Annexure-I)	200-299		
Pre-requisite for the course (if any)	**B23-SEC-227**		
Course Learning Outcomes (CLO)	After completing this course, the learner will be able to: 1. Understand the Returns of Responsible behaviour. 2. Collaborate and engage in actively in group discussions, debates 3. Recognize the interdisciplinary nature of studying ignoring and negligent behavior and integrate insights from related fields such as psychology, sociology, and ethics to enhance understanding and analysis 4. Develop a personal plan for addressing negligent behavior in a hypothetical workplace scenario.		
	5*. Learn to understand negligent & ignoring behavior of others and suggest remedies at personal level		
Credits	Theory	Practical	Total
	2	1	3
Contact Hours	2	2	4
Internal Assessment Marks	15	5	20
End Term Exam Marks	35	20	55
Max. Marks: 75 **Internal Assessment Marks: 20** **End Term Exam Marks: 55**	**Time: 3 Hrs**		
Part-B Contents of the Course			
Instructions for Paper Setters 7. Nine Questions will be set in all and students will be required to attempt 5 questions. **8.** Question No. 1 will be compulsory and will consist of 7 short answer type questions of 1 mark each spread over the entire syllabus (1*7=7 marks). **9.** For the remaining four questions, students will attempt 1 out of 2 questions from each of the four			

units (7 marks each).		
Unit	**Topics**	**Contact Hours**
I	**Analysing Returns of Responsible Behaviour:** Real Life Case Studies: Refractions of not Ignoring; Bernad Sadow ' Luggage That Glides'; Theory of Gravity; Fake Endorsements. The US Chemical Giant Dupont Company Vs People of Goa	09
II	**Understanding the Framework for Mitigating the costs:** Strategies for Reducing Economic Costs Associated with Ignoring Behavior; Exploring the Role of Families; Role of NGO's; Role of Governments.	09
III	**Understanding the Framework for Mitigating the costs:** Role of Educational Institutions, and Awareness Campaigns in Minimizing Economic Consequences. Role of Appeals- Social Platforms in Encouraging an Attitude of Belongingness.	09
IV	**Analysing the Tools for Mitigating the costs:** Role of Legal Framework in Enforcement and Accountability, Designing Economic disincentives and punishments for irresponsible and Ignoring Behavior; Designing Economic Incentives to Encourage Responsible Behavior	09
V*	Practical exercises: 6. Identify and analyze real life examples of responsible behavior 2. Workshop on Strategies for Reducing Economic Costs Associated with Ignoring Behavior 3. Workshop on Role of Families; 4. Workshop on Role of NGO's; 5. Workshop on Role of Government 6. Workshop on Role of Educational Institutions, and Awareness Campaigns 7. Workshop on Role of Legal Framework in Enforcement and Accountability	09
Suggested Evaluation Methods		
Internal Assessment: ➢ **Theory :15** Class Participation :4 Seminar/Presentation/Assignment/Quiz/Class Test etc.: 11 (Assignment : The students will create a plan as a final project for addressing negligent behavior in a hypothetical workplace scenario.)		**End Term Examination** Theory **:35** **End Term**

Mid Term Exam : ➢ **Practicum : 5** Class Participation Seminar/Demonstration/Viva Voce/Lab Records etc. Mid Term Exam:	**Examination** Practicum Viva-Voce on the Project **:20**

Part-C Learning Resources
Recommended Books/E-Resources/LMS: **Reading List:** 1. Suttie Jill, Why your Creative Ideas Get Ignored, Greater Good Magazine , March 3, 2017. 2. Tripathi, Manoj. Change the way you think and decide -Power of Ignored Skills, Notion Press, 2020 3. Marcal, Katrine. Mother of Invention -How Good Ideas Get Ignored in an Economy Built for Men, Abram Press, New York, 2021. 4. Mishra, S.N, "India's Economic Development: Strategies for the 21st Century" 5. Kapur, Devesh. Mehta, Pratap .Bhanu, "Public Policy in India: New Challenges and Opportunities" 6. Harrison,D.M, Shepanski,R.L, "Behavioral Economics for Cost-Benefit Analysis: Benefits, Costs, and Case Studies" 7. Sen, Amartya, "The Argumentative Indian: Writings on Indian History, Culture, and Identity" 8. Rajan, Raghuram.G, "Fault Lines: How Hidden Fractures Still Threaten the World Economy"

* Applicable for courses having practical component

DEPARTMENT OF ECONOMICS
KURUKSHETRA UNIVERSITY, KURUKSHETRA
(Established by the state Legislature Act –XII of 1956)

Structure, Syllabus of the Courses of Reading and Scheme of Examination

Value Aided Courses

Allocated to Department of Economics by Core Syllabus Committee of the University and approved by the UGBOS on 12.07.2023.

(According to the Curriculum Framework of U.G. Programmes under NEP-2020)

To be implemented w.e.f. the Session 2023-24

(in Phased Manner)

Scheme of the U.G. (VAC) Courses:

Semester	Course Type	Course Code	Name of Course	Credits	Contact Hours per Week	Internal Assessment Marks	End Term Exam Marks	Total Marks	Duration of Exam (Hrs.)
3	VAC-3	B23-VAC-322	Sustainable Development Goals	2	2	15	35	50	3
4	VAC-4	B-23-VAC-421	Digital Empowerment	2	2	15	35	50	3

COURSE TYPE: VAC

Session 2023-2024			
Part-A Introduction			
Subject	Economics		
Semester	Semester- III		
Name of the Course	SUSTAINABLE DEVELOPMENT GOALS		
Course Code	**B23-VAC- 322**		
Course Type: (CC/MCC/MDC/ CCM/ DSEC/VOC/DSE/PC/AEC/ VAC	VAC		
Level of the course (As per Annexure-I)	200-299		
Pre-requisite for the course (if any)	None		
Course Learning Outcomes (CLO)	1. Understand the SDG I; SDG II; SDG II ; SDG-IV 2. Understanding the significance of SDG V; SDG VI; SDG VII- ; SDG-VIII 3. Understanding the significance of the SDG IX; SDG X; SDG XI; SDG-XII 4. Understanding the significance of the SDG XII; SDG XIV; SDG XV; SDG-XVI; SDG-XVII		
Credits	Theory	Tutorial	Total
	2	-	2
Contact Hours	2	-	2
Max. Marks: 50 **Internal Assessment Marks: 15** **End Term Exam Marks: 35**	**Time: 3 Hours**		

Part-B Contents of the Course

Instructions for Paper Setters

1. Nine Questions will be set in all and students will be required to attempt 5 questions.
2. Question No. 1 will be compulsory and will consist of 7 short answer type questions of 1 marks each spread over the entire syllabus (1*7=7 marks).
3. For the remaining four questions, students will attempt 1 out of 2 questions from each of the four units (7 marks each).

Unit	**Topics**	**Contact Hours**
I	Understanding the significance of the following SDGs and their sub goals: SDG I-No Poverty: How Much, How Far; SDG II-Sustainable Agriculture, Poverty, Food Security and Improved Nutrition; SDG III- Good Health and well being ; SDG-IV- Quality Education	8
II	Understanding the significance of the following SDGs and their sub goals: SDG V-Gender equality; SDG VI-Clean water and sanitation; SDG VII-Affordable and clean energy ; SDG-VIII- Decent work and economic growth	7
III	Understanding the significance of the following SDGs and their sub goals: SDG IX-Industry, innovation and infrastructure; SDG X-Reduced inequalities; SDG XI- Sustainable cities and communities; SDG-XII-Responsible consumption and production	8
IV	Understanding the significance of the following SDGs and their sub goals: SDG XIII- Climate action; SDG XIV- Life below water; SDG XV- Life on land;; SDG-XVI- Peace, Justice and Strong institutions; SDG-XVII-	7

	Partnership for the goals	
V*		

Suggested Evaluation Methods	
Internal Assessment:15 ➢ **Theory (All these activities will be covered under Tutorials. Approximate contact Hours =15)** Class Participation:4 Seminar/Presentation/Assignment/Quiz/Class Test etc.:4 Mid Term Exam: 7 ➢ **Practicum** Class Participation Seminar/Demonstration/Viva Voce/Lab Records etc. Mid Term Exam:	**End Term Examination: 35**

Part-C Learning Resources

Recommended Books/E-Resources/LMS:

- *https://www.un.org/sustainabledevelopment/sdgbookclub/*
- *Sustainable Development Goals Series- Somnath Hazra and Anindya Bhukta*
- *TOWARDS SUSTAINABLE DEVELOPMENT: William M. Lafferty and Oluf Langhelle*
- *Reid, D. (1995). Sustainable Development. An Introductory Guide, London: Earthscan Publications.*
- *Pearce, D.W. and Warford, J.J. (1993). World without End: Economics, Environment, and Sustainable Development. Oxford: Oxford University Press. Pezzey, J. (1989). 'Economic Analysis of Sustainable Growth and Sustainable Development'. Environment Department Working paper No. 15, The World Bank.*

* Applicable for courses having practical component.

COURSE TYPE: VAC

Session 2023-2024			
Part-A Introduction			
Subject	Economics		
Semester	Semester- IV		
Name of the Course	DIGITAL EMPOWERMENT		
Course Code	**B23-VAC- 421**		
Course Type: (CC/MCC/MDC/ CCM/ DSEC/VOC/DSE/PC/AEC/ VAC	VAC		
Level of the course (As per Annexure-I)	200-299		
Pre-requisite for the course (if any)	None		
Course Learning Outcomes (CLO)	1. Understand the digital world and need for digital empowerment 2. Realization of importance of digital technology, digital financial tools, e-commerce. 3. Develop skills to communicate and collaborate in cyberspace using social platforms, teaching/learning tools. 4. Understand the significance of security and privacy in the digital world.		
Credits	Theory	Tutorial	Total
	2	0	2
Contact Hours	2	0	2
Max. Marks: 50 **Internal Assessment Marks: 15** **End Term Exam Marks: 35**	**Time: 3 Hours**		

Part-B Contents of the Course

Instructions for Paper Setters

4. Nine Questions will be set in all and students will be required to attempt 5 questions.
5. Question No. 1 will be compulsory and will consist of 7 short answer type questions of 1 mark each spread over the entire syllabus (1*7=7 marks).
6. For the remaining four questions, students will attempt 1 out of 2 questions from each of the four units (7 marks each).

Unit	**Topics**	**Contact Hours**
I	Role & Significance of Digital Technology; Information & Communication Technology & Tools; Vision of Digital India: Digi Locker, E-Hospitals, e-Pathshala, BHIM, e-Kranti (Electronic Delivery of Services}, e-Health Campaigns	8
II	Digital Financial Tools: Unified Payment Interface, Aadhar Enabled Payment System, USSD, Credit / Debit Cards, e-Wallets; Public utility portals of Govt. of India such as RTI, Health, Finance, Income Tax filing, Education – Academic Bank of Credit.	7
III	Electronic Communication: electronic mail, blogs, social media; Collaborative Digital platforms; Tools/platforms for online learning; Collaboration using file sharing, messaging, video conferencing	8
IV	Online security and privacy; Threats in the digital world: Data breach and Cyber Attacks; Blockchain Technology; Security Initiatives by the Govt of India; Ethics in digital communication; Ethics in Cyberspace	7
V*		

Suggested Evaluation Methods

Internal Assessment:15	**End Term Examination: 35**
➢ **Theory (All these activities will be covered under Tutorials. Approximate contact Hours =8)** Class Participation:4 Seminar/Presentation/Assignment/Quiz/Class Test etc.:4 Mid Term Exam: 7 ➢ **Practicum** Class Participation Seminar/Demonstration/Viva Voce/Lab Records etc. Mid Term Exam:	

Part-C Learning Resources
Recommended Books/E-Resources/LMS: ● Rodney Jones and Christoph Hafner. "Understanding digital literacies: A practical Introduction". Routledge Books, 2nd edition, 2021. ● https://www.digitalindia.gov.in ● https://www.digilocker.gov.in ● https://www.cybercrime.gov.in ● https://www.cybersafeindia.in ● https://www.meity.gov. in/cyber-surakshit-bharat-programme

* Applicable for courses having practical component.

KURUKSHETRA UNIVERSITY KURUKSHETRA

(Established by the State Legislature Act XII of 1956)
("A+" Grade NAAC Accredited)

Scheme of Examination and Syllabus for

Under-Graduate Programme

Subject: Library & Information Science

Under Multiple Entry-Exit, Internship and

CBCS-LOCF in accordance to NEP-2020,

w.e.f. the session 2023-24 (in phased manner)

Scheme-A- **Multidisciplinary UG Programme**

Scheme-B- **Single Major Subject (for student shifting from Scheme A to scheme-B after 1st year)**

Scheme-C- **UG Programme with Single Major Subject (for students taking admission in UG programme with single major subject-Library & Information Science in the 1st year)**

Scheme of Examination and Syllabus for **UG Programme (Multidisciplinary): Scheme A**

Library & Information Science as a subject with multiple Entry Exit, Internship in accordance to NEP-2020 w.e.f. the session 2023-24.

Semester	Course	Course Code	Nomenclature of Course	Theory/ Practicum	Credits	Contact Hours	Internal Marks	External Marks	Total	Duration in Hours
1	CC-A1/ MCC-1	B23-LIS-101	Introduction to Library	Theory	3	3	20	50	70	3
				Practicum	1	2	10	20	30	2
	CC-M1	B23-LIS-103	Libraries in Society	Theory	2	2	15	35	50	3
	MDC-1	B23-LIS-104	Introduction To Library And Information Centres	Theory	2	2	15	35	50	3
				Practicum	1	2	05	20	25	2
2	CC-A2/ MCC-3	B23-LIS-201	Introduction to Information Sources	Theory	3	3	20	50	70	3
				Practicum	1	2	10	20	30	2
	CC-M2	B23-LIS-203	Introduction to Library Operations	Theory	2	2	15	35	50	3
	MDC-2	B23-LIS-204	Introduction To Information Sources (Print & Electronic)	Theory	2	2	15	35	50	3
				Practicum	1	2	05	20	25	2
3	CC-A3/ MCC-4/ CC-M3	B23-LIS-301	Library Automation: An overview	Theory	3	3	20	50	70	3
				Practicum	1	2	10	20	30	2
	MDC-3	B23-LIS-303	Introduction to Library Services	Theory	2	2	15	35	50	3
				Practicum	1	2	05	20	25	2

4	CC-A4/ MCC-6	B23-LIS-401	Library Classification	Theory	3	3	20	50	70	3
				Practicum	1	2	10	20	30	2
5	CC-A5	B23-LIS-501	Management of Library & Information Centre(s)	Theory	3	3	20	50	70	3
				Practicum	1	2	10	20	30	2
6	CC-A6/ MCC-11/ CC-M6	B23-LIS-601	Information Retrieval	Theory	3	3	20	50	70	3
				Practicum	1	2	10	20	30	2

UG programme with Major and Minor in Library & Information Science

Scheme-B

Semester	Course	Course Code	Nomenclature of Course		Credits	Contact Hours	Internal Marks	External Marks	Total	Duration in Hours
1	CC-A1/ MCC-1	B23-LIS-101	Introduction to Library	Theory	3	3	20	50	70	3
				Practicum	1	2	10	20	30	2
	CC-M1	B23-LIS-103	Libraries in Society	Theory	2	2	15	35	50	3
	MDC-1	B23-LIS-104	Introduction To Library And Information Centres	Theory	2	2	15	35	50	3
				Practicum	1	2	05	20	25	2
2	CC-A2/ MCC-A3	B23-LIS-201	Introduction to Information Sources	Theory	3	3	20	50	70	3
				Practicum	1	2	10	20	30	2
	CC-M2	B23-LIS-203	Introduction to Library Operations	Theory	2	2	15	35	50	3
	MDC-2	B23-LIS-204	Introduction To Information Sources (Print & Electronic)	Theory	2	2	15	35	50	3
				Practicum	1	2	05	20	25	2
3	MCC-A2	B23-LIS-102	Basics of Library Operations	Theory	3	3	20	50	70	3
				Practicum	1	2	10	20	30	2
	MCC-A4/ CC-M3	B23-LIS-301	Library Automation: An overview	Theory	3	3	20	50	70	3
				Practicum	1	2	10	20	30	2
	MCC-A5	B23-LIS-302	Library and Information Services	Theory	3	3	20	50	70	3
				Practicum	1	2	10	20	30	2
	MDC-3	B23-LIS-303	Introduction to Library Services	Theory	2	2	15	35	50	3
				Practicum	1	2	05	20	25	2
4	MCC-A6	B23-LIS-401	Library Classification	Theory	3	3	20	50	70	3
				Practicum	1	2	10	20	30	2
	MCC-A7	B23-LIS-402	Introduction to Digital Library	Theory	3	3	20	50	70	3
				Practicum	1	2	10	20	30	2
	MCC-A8	B23-	Library	Theory	3	3	20	50	70	3

		LIS-403	Cataloguing	Practicum	1	2	10	20	30	2
	DSE-A1 **Either of the two**	B23-LIS-404	Introduction to Information Sources in Social Sciences	Theory	3	3	20	50	70	3
				Practicum	1	2	10	20	30	2
		B23-LIS-405	Introduction to Information Sources in Science & Technology	Theory	3	3	20	50	70	3
				Practicum	1	2	10	20	30	2
5	MCC-A9	B23-LIS-501	Management of Library & Information Centre(s)	Theory	3	20	50	70	3	3
				Practicum	2	10	20	30	2	2
	MCC-A10	B23-LIS-502	Introduction to Open Access Resources	Theory	3	20	50	70	3	3
				Practicum	2	10	20	30	2	1
	DSE-A2	B23-LIS-503	Academic Library System	Theory	3	3	20	50	70	3
				Practicum	1	2	10	20	30	2
		B23-LIS-504	Public Library System	Theory	3	3	20	50	70	3
				Practicum	1	2	10	20	30	2
	DSE-A3	B23-LIS-506	Introduction to Databases	Theory	3	3	20	50	70	3
				Practicum	1	2	10	20	30	2
		B23-LIS-507	Information Search Techniques	Theory	3	3	20	50	70	3
				Practicum	1	2	10	20	30	2
6	MCC-A11	B23-LIS-601	Information Retrieval	Theory	3	3	20	50	70	3
				Practicum	1	2	10	20	30	2
	MCC-A12	B23-LIS-602	Electronic Resources Management (ERM)	Theory	3	3	20	50	70	3
				Practicum	1	2	10	20	30	2
	DSE-A4	B23-LIS-603	Library Maintenance	Theory	3	3	20	50	70	3
				Practicum	1	2	10	20	30	2
		B23-LIS-604	Preservation and Conservation of Library Material	Theory	3	3	20	50	70	3
				Practicum	1	2	10	20	30	2

	DSE-A5	B23-LIS-605	Introduction to Library Technologies	Theory	3	3	20	50	70	3
				Practicum	1	2	10	20	30	2
		B23-LIS-606	Research and Technical Library System	Theory	3	3	20	50	70	3
				Practicum	1	2	10	20	30	2
	Honors in Library and Information Science									
7	CC-H1/ CC-HM1	B23-LIS-701	Information Communication & Society	Theory	4	4	30	70	100	3
	CC-H2	B23-LIS-702	Research Tools	Theory	4	4	30	70	100	3
	CC-H3	B23-LIS-703	Research Methods in Library & Information Science	Theory	4	4	30	70	100	3
	DSE-H1 **Either of the two**	B23-LIS-704	Entrepreneurship in Library and Information Services	Theory	4	4	30	70	100	3
		B23-LIS-705	Consultancy Services in Libraries	Theory	4	4	30	70	100	3
	PC-H1	B23-LIS-706	Digital Library and Content Management Systems	Practicum	4	8	30	70	100	3
8	CC-H4/ CC-HM2	B23-LIS-801	Research Data Management & Emerging Trends in LIS	Theory	4	4	30	70	100	3
	CC-H5	B23-LIS-802	Knowledge Organisation (Advance)	Theory	4	4	30	70	100	3
	CC-H6	B23-LIS-803	Information Retrieval (Advance)	Theory	4	4	30	70	100	3
	DSE-H2 **Either of**	B23-LIS-804	Intellectual Property Rights and	Theory	4	4	30	70	100	3

	the two		Libraries							
		B23-LIS-805	Knowledge Management	Theory	4	4	30	70	100	3
	PC-H2	B23-LIS-80	Information Services and Products Preparation	Practicum	4	8	30	70	100	3
OR **Honors with Research in Library and Information Science**										
7	CC-H1/ CC-HM1	B23-LIS-701	Information Communication & Society	Theory	4	4	30	70	100	3
	CC-H2	B23-LIS-702	Research Tools	Theory	4	4	30	70	100	3
	CC-H3	B23-LIS-703	Research Methods in Library & Information Science	Theory	4	4	30	70	100	3
	DSE-H1 **Either of the two**	B23-LIS-704	Entrepreneurship in Library and Information Services	Theory	4	4	30	70	100	3
		B23-LIS-705	Consultancy Services in Libraries	Theory	4	4	30	70	100	3
	PC-H1	B23-LIS-706	Digital Library and Content Management Systems	Practicum	4	8	30	70	100	3
8	CC-H4/ CC-HM2	B23-LIS-801	Research Data Management & Emerging Trends in LIS	Theory	4	4	30	70	100	3
	CC-H5	B23-LIS-802	Knowledge Organisation (Advance)	Theory	4	4	30	70	100	3
			Project/ Dissertation	--	12				100	

UG programme with Single Major-Library & Information Science, in the first year

Scheme-C

Semester	Course	Course Code	Nomenclature of Course		Credits	Contact Hours	Internal Marks	External Marks	Total	Duration
1	MCC-A1/ CC-A1	B23-LIS-101	Introduction to Library	Theory	3	3	20	50	70	3
				Practicum	1	2	10	20	30	2
	MCC-A2	B23-LIS-102	Basics of Library Operations	Theory	3	3	20	50	70	3
				Practicum	1	2	10	20	30	2
2	MCC-A3/ CC-A2	B23-LIS-201	Introduction to Information Sources	Theory	3	3	20	50	70	3
				Practicum	1	2	10	20	30	2
	DSEC-A1	B23-LIS-202	Basic of Information Literacy	Theory	3	3	20	50	70	3
				Practicum	1	2	10	20	30	2
3	MCC-A4/ CC-A3/ CC-M3	B23-LIS-301	Library Automation: An overview	Theory	3	3	20	50	70	3
				Practicum	1	2	10	20	30	2
	MCC-A5	B23-LIS-302	Library and Information Services	Theory	3	3	20	50	70	3
				Practicum	1	2	10	20	30	2
4	MCC-A6/ CC-A4	B23-LIS-401	Library Classification	Theory	3	3	20	50	70	3
				Practicum	1	2	10	20	30	2
	MCC-A7	B23-LIS-402	Introduction to Digital Library	Theory	3	3	20	50	70	3
				Practicum	1	2	10	20	30	2
	MCC-A8	B23-LIS-403	Library Cataloguing	Theory	3	3	20	50	70	3
				Practicum	1	2	10	20	30	2
	DSE-A1 **Either of the**	B23-LIS-404	Introduction to Information Sources in Social	Theory	3	3	20	50	70	3
				Practicum	1	2	10	20	30	2

	two		Sciences							
		B23-LIS-405	Introduction to Information Sources in Science & Technology	Theory	3	3	20	50	70	3
				Practicum	1	2	10	20	30	2
5	MCC-A9/ CC-A5	B23-LIS-501	Management of Library & Information Centre(s)	Theory	3	3	20	50	70	3
				Practicum	1	2	10	20	30	2
	MCC-A10	B23-LIS-502	Introduction to Open Access Resources	Theory	3	3	20	50	70	3
				Practicum	1	2	10	20	30	2
	DSE-A2 **Either of the two**	B23-LIS-503	Academic Library System	Theory	3	3	20	50	70	3
				Practicum	1	2	10	20	30	2
		B23-LIS-504	Public Library System	Theory	3	3	20	50	70	3
				Practicum	1	2	10	20	30	2
	DSE-A3 **Either of the two**	B23-LIS-505	Introduction to Databases	Theory	3	3	20	50	70	3
				Practicum	1	2	10	20	30	2
		B23-LIS-506	Information Search Techniques	Theory	3	3	20	50	70	3
				Practicum	1	2	10	20	30	2
6	MCC-A11/ CC-A6	B23-LIS-601	Information Retrieval	Theory	3	3	20	50	70	3
				Practicum	1	2	10	20	30	2
	MCC-A12	B23-LIS-602	Electronic Resources Management (ERM)	Theory	3	3	20	50	70	3
				Practicum	1	2	10	20	30	2
	DSE-A4 **Either**	B23-LIS-603	Library Maintenance	Theory	3	3	20	50	70	3
				Practicum	1	2	10	20	30	2

	of the two	B23-LIS-604	Preservation and Conservation of Library Material	Theory	3	3	20	50	70	3
				Practicum	1	2	10	20	30	2
	DSE-A5 **Either of the two**	B23-LIS-605	Introduction to Library Technologies	Theory	3	3	20	50	70	3
				Practicum	1	2	10	20	30	2
		B23-LIS-606	Research and Technical Library System	Theory	3	3	20	50	70	3
				Practicum	1	2	10	20	30	2
	Honors in Library and Information Science									
7	CC-H1/ CC-HM1	B23-LIS-701	Information Communication & Society	Theory	4	4	30	70	100	3
	CC-H2	B23-LIS-702	Research Tools	Theory	4	4	30	70	100	3
	CC-H3	B23-LIS-703	Research Methods in Library & Information Science	Theory	4	4	30	70	100	3
	DSE-H1 **Either of the two**	B23-LIS-704	Entrepreneurship in Library and Information Services	Theory	4	4	30	70	100	3
		B23-LIS-705	Consultancy Services in Libraries	Theory	4	4	30	70	100	3
	PC-H1	B23-LIS-706	Digital Library and Content Management Systems	Practicum	4	8	30	70	100	3

8	CC-H4/ CC-HM2	B23-LIS-801	Research Data Management & Emerging Trends in LIS	Theory	4	4	30	70	100	3
	CC-H5	B23-LIS-802	Knowledge Organisation (Advance)	Theory	4	4	30	70	100	3
	DSE-H2 **Either of the two**	B23-LIS-804	Intellectual Property Rights and Libraries	Theory	4	4	30	70	100	3
		B23-LIS-805	Knowledge Management	Theory	4	4	30	70	100	3
	PC-H2	B23-LIS-806	Information Services and Products Preparation	Practicum	4	8	30	70	100	3
OR **Honors with Research in Library and Information Science**										
7	CC-H1/ CC-HMI	B23-LIS-701	Information Communication & Society	Theory	4	4	30	70	100	3
	CC-H2	B23-LIS-702	Research Tools	Theory	4	4	30	70	100	3
	CC-H3	B23-LIS-703	Research Methods in Library & Information Science	Theory	4	4	30	70	100	3
	DSE-H1 **Either of the two**	B23-LIS-704	Entrepreneurship in Library and Information Services	Theory	4	4	30	70	100	3

		B23-LIS-705	Consultancy Services in Libraries	Theory	4	4	30	70	100	3
	PC-H1	B23-LIS-706	Digital Library and Content Management Systems	Practicum	4	4	30	70	100	3
8	CC-H4/ CC-HM2	B23-LIS-801	Research Data Management & Emerging Trends in LIS	Theory	4	4	30	70	100	3
	CC-H5	B23-LIS-802	Knowledge Organisation (Advance)	Theory	4	4	30	70	100	3
		B23-LIS-807	Project/ Dissertation		12				300	

First Year

<table>
<tr><td colspan="4">Session: 2023-24</td></tr>
<tr><td colspan="4">Part A - Introduction</td></tr>
<tr><td>Subject</td><td colspan="3">Library & Information Science</td></tr>
<tr><td>Semester</td><td colspan="3">1st</td></tr>
<tr><td>Name of the Course</td><td colspan="3">INTRODUCTION TO LIBRARY</td></tr>
<tr><td>Course Code</td><td colspan="3">B23-LIS-101</td></tr>
<tr><td>Course Type: (CC/MCC /MDC/CC-M/DSEC/VOC/ DSE/PC/AEC/VAC)</td><td colspan="3">CC/MCC</td></tr>
<tr><td>Level of the course</td><td colspan="3">140</td></tr>
<tr><td>Pre-requisite for the course (ifany)</td><td colspan="3"></td></tr>
<tr><td>Course Learning Outcomes (CLO):</td><td colspan="3">After completing this course, the learner will be able to:
1. Distinguish, library from other similar institutions and among different types of libraries.
2. Understand the theoretical foundations of different libraries and their activities.
3. Know the Five Laws of Library Science and their implications.
4. Appreciate and understand the concept of Library legislation and status of its implementation in India. Understand role of Library Associations.
5*. Practical understanding of Library collection and services.</td></tr>
<tr><td rowspan="2">Credits</td><td>Theory</td><td>Practical</td><td>Total</td></tr>
<tr><td>03</td><td>01</td><td>04</td></tr>
<tr><td>Contact Hours</td><td>03</td><td>02</td><td>05</td></tr>
<tr><td colspan="2">Max. Marks: 100
Internal Assessment Marks:30
End Term Exam Marks: 70</td><td colspan="2">Time: 03 Hours (Theory) and 02 Hours (Practical)</td></tr>
<tr><td colspan="4">Part B- Contents of the Course</td></tr>
<tr><td colspan="4"><u>Instructions for Paper- Setter</u></td></tr>
</table>

The paper is divided into **4** Units. The examinees will be required to attempt ***Five*** questions in all, including Question 1, which is compulsory and selecting ***One*** question from each Unit (I – IV). Question 1 will consist of **5** short Answer (2 marks each) questions (having no internal choice) spread over the whole syllabi. The Examiner will set ***Two*** questions from each Unit.

Unit	**Topics**	**Contact Hours**
I	**Introduction to Libraries** - Introduction to libraries, museums and archives. - Library: Definitions, aims, objective, functions and services - Role of Libraries in society - Historical development of Libraries in India	12
II	**Types of Libraries** - Types of libraries: Objectives and functions of: - Public Library, - Academic Library, - Special Library - National Library of India: Definition, Need, Purpose and Services	11
III	**Five Laws of Library Science** - Five Laws of Library Science - Implications of Five Laws of Library Science	11
IV	**Library Legislation and Association** - Need and purpose of Library Legislation - Model Library Act - Introduction to Library Legislation in India - Library Associations- ILA, IASLIC, IFLA, ALA	11
V Practicum	**Visit of Libraries** - Submit Report of Two Libraries' Collection and Services.	30
	Instructions for Practicum Examination - Evaluation of Reports: 10 Marks - Viva-voce : 10 Marks	
	Suggested Evaluation Methods	
	Theory Class Participation: 05 Seminar/presentation/assignment/quiz/class test etc: 05	**End Term Examination:** Theory: 50 Practicum: 20

	Mid-Term Exam: 15	
	Practicum	
	Class Participation: With theory	
	Seminar/Demonstration/Viva-voce/Lab Records etc: 05	
	Mid-Term Exam: N.A.	

Part-C-Learning Resources

Recommended Books/e-resources/LMS:

- Husain, Shabahat. (2004). Library Classification: Facets and Analysis. Delhi: B.R. Publishing.
- Khanna, J.K. (2009). Library & society. India: Neha Publishers & Distributors.
- Krishan Kumar (1987). Library Administration and Management. Delhi: Vikas
- Krishan Kumar (2007). Library management in electronic environment. Har- Anand Publications.
- Mittal, R.L. (1987). Library administration. Ed 5. New Delhi: Ess Ess Publications.
- Ranganathan, S.R. (1988). The Five Laws of Library Science. New Delhi: Sarada Ranganathan Endowment for Library Science.
- Saini (O.P.) Pustakalaya aura Samaja. (Hindi Medium).
- Singh. G. (2013). Information sources, services and systems. India: Prentice Hall India Learning Private Limited.
- Taylor, A.G.(2007). Introduction to cataloguing and classification (10^{th} ed.). New Delhi: Atlantic.
- Usha Pawan and Gupta (Pawan Kumar). Sandarbh Sewa: Saidhantik avom Kriyatmak. 1994. RBSA, Jaipur. (Hindi Medium)

Session: 2023-24			
Part A - Introduction			
Subject	Library & Information Science		
Semester	1st		
Name of the Course	**BASICS OF LIBRARY OPERATIONS**		
Course Code	**B23-LIS-102**		
Course Type: (CC/MCC/ MDC/CC- M/DSEC/VOC/ DSE/PC/AEC/VAC)	**MCC**		
Level of the course	140		
Pre-requisite for the course (ifany)	---		
Course Learning Outcomes (CLO):	After completing this course, the learner will be able to: 1. Understand the concept of Acquisition of library materials and its functions. 2. Know the steps involved in technical processing sections. 3. Understand the concept of Circulation of library materials and its functions. 4. Understand the concept of Serial control and its functions. 5*. Understand how the work is done in the Library.		
Credits	Theory	Practical	Total
	03	01	04
Contact Hours	03	02	05
Max. Marks: 100 **Internal Assessment Marks:** 30 **End Term Exam Marks: 70**		**Time: 03 Hours (Theory) and 02 Hours (Practical)**	
Part B- Contents of the Course			

Instructions for Paper- Setter

The paper is divided into **4** Units. The examinees will be required to attempt ***Five*** questions in all, including Question 1, which is compulsory and selecting ***One*** question from each Unit (I – IV). Question 1 will consist of **5** short Answer (2 marks each) questions (having no internal choice) spread over the whole syllabi. The Examiner will set ***Two*** questions from each Unit.

Unit	Topics	Contact Hours
I	**Library Acquisition** - Acquisition: Meaning, Processes, Functions - Book Selection, Procurement, - Problems in procurement - Introduction to Automated Acquisition	11
II	**Technical Processing and Maintenance** - Technical processing: Meaning, Processes, Functions - Physical processing - Technical processing: Accessioning, Classification and Cataloguing - Labeling, shelving and display - Introduction to Library Maintenance: Shelf Rectification, Weeding of Books and Stock verification	11
III	**Circulation** - Circulation: Meaning, Processes, Functions - Membership: new and old, updation, deletion - Circulation system: Issue, Return, Reservation and Recall - Introduction to Automated circulation - Introduction to OPAC & Web-OPAC	11
IV	**Serial Control** - Serials: Meaning (differentiate between magazine, periodical, journal and serial) Processes, Functions - Periodical: selection and procurement- planning, ordering, problems and issues - Organizing and arranging of Current periodical and their back volumes - Serial control Problems - Introduction to Automated Serial Control	12

V Practicum	**Practice of Library Operations** - Library Correspondence, Book Preparation, Preparation of OPAC entries, etc.	30
	Instructions for Practicum Examination - Library Correspondence: 10 Marks - Viva-voce : 10 Marks	
	Suggested Evaluation Methods	
	Theory Class Participation: 05 Seminar/presentation/assignment/quiz/class test etc: 05 Mid-Term Exam: 15	**End Term Examination:** Theory: 50 Practicum: 20
	Practicum	
	Class Participation: With theory	
	Seminar/Demonstration/Viva-voce/Lab Records etc: 05	
	Mid-Term Exam: N.A.	
Part-C-Learning Resources		
Recommended Books/e-resources/LMS: List will be provided by the concerned Teacher.		

Session: 2023-24			
Part A - Introduction			
Subject	Library & Information Science		
Semester	1st		
Name of the Course	**LIBRARIES IN SOCIETY**		
Course Code	**B23-LIS-103**		
Course Type: (CC/MCC/ MDC/ CC- M/DSEC/VOC/ DSE/PC/AEC/VAC)	**CC-M**		
Level of the course	100		
Pre-requisite for the course (ifany)			
Course Learning Outcomes (CLO):	After completing this course, the learner will be able to: 1. Distinguish, library from other similar institutions and among different types of libraries. 2. Understand the theoretical foundations of different libraries and their activities. 3. Know the Five Laws of Library Science and their implications. 4. Appreciate and understand the concept of Library legislation and status of its implementation in India.		
Credits	Theory	Practical	Total
	02	--	02
Contact Hours	02	--	02
Max. Marks: 50 **Internal Assessment Marks: 15** **End Term Exam Marks: 35**		**Time: 03 Hours (Theory)**	
Part B- Contents of the Course			

Instructions for Paper- Setter

The paper is divided into 4 Units. The examinees will be required to attempt ***Five*** questions in all, including Question 1, which is compulsory and selecting ***One*** question from each Unit (I – IV). Question 1 will consist of **7** short Answer (1 marks each) questions (having no internal choice) spread over the whole syllabi. The Examiner will set ***Two*** questions from each Unit.

Unit	Topics	Contact Hours
I	**Introduction to Libraries** - Introduction to libraries, museums and archives. - Library: Definitions and functions - Role of Libraries in society - Basic Library Services	8
II	**Types of Libraries** - Types of libraries: Objectives and functions of: - Public Library, - Academic Library, - Special Library	7
III	**Five Laws of Library Science** - Five Laws of Library Science - Implications of Five Laws of Library Science	7
IV	**Library Associations** - Role of Library Associations - Study of the activities of following Library Associations: ILA, IASLIC, IFLA, ALA	8
	Suggested Evaluation Methods	
	Theory Class Participation: 04 Seminar/presentation/assignment/quiz/class test etc: 04 Mid-Term Exam: 07	**End Term Examination:** Theory: 35
	Practicum	
	Class Participation: With theory	N.A.
	Seminar/Demonstration/Viva-voce/Lab Records etc.	N.A.
	Mid-Term Exam	N.A.

Part-C-Learning Resources

Recommended Books/e-resources/LMS:

- Husain, Shabahat. (2004). Library Classification: Facets and Analysis. Delhi: B.R. Publishing.
- Khanna, J.K. (2009). Library & society. India: Neha Publishers & Distributors.
- Krishan Kumar (1987). Library Administration and Management. Delhi: Vikas
- Krishan Kumar (2007). Library management in electronic environment. Har- Anand Publications.
- Mittal, R.L. (1987). Library administration. Ed 5. New Delhi: Ess Ess Publications.

- Ranganathan, S.R. (1988). The Five Laws of Library Science. New Delhi: Sarada Ranganathan Endowment for Library Science.
- Saini (O.P.) Pustakalaya aura Samaja. (Hindi Medium).
- Singh. G. (2013). Information sources, services and systems. India: Prentice Hall India Learning Private Limited.
- Taylor, A.G.(2007). Introduction to cataloguing and classification (10th ed.). New Delhi: Atlantic.
- Usha Pawan and Gupta (Pawan Kumar). Sandarbh Sewa: Saidhantik avom Kriyatmak. 1994. RBSA, Jaipur. (Hindi Medium)

Session: 2023-24			
Part A - Introduction			
Subject	**Library and Information Science**		
Semester			
Name of the Course	**INTRODUCTION TO LIBRARY AND INFORMATION CENTRES**		
Course Code	**B23-LIS-104**		
Course Type: (CC/MCC/MDC/CC-M/DSEC/VOC/DSE/PC/AEC/VAC)	**MDC**		
Level of the course	100		
Pre-requisite for the course (if any)			
Course Learning Outcomes (CLO):	After completing this course, the learner will be able to: 1. Know the Library and similar Institutions, and their role in society; 2. Know different types of libraries and functions of Public and National Libraries; 3. Know the different types of Academic and Research Libraries; 4. Know the Theoretical Foundations of Libraries as expressed by Laws of Library Science and their Implications on Libraries; and 5*. Understand the functioning of different types of Library and Information Institutions.		
Credits	Theory	Practical	Total
	2	1	3
Contact Hours	2	2	4
Max. Marks: Internal Assessment Marks:25 End Term Exam Marks: 50		Time: Theory Exam.: 3 Hrs. Practical: 2 Hrs.	
Part B- Contents of the Course			
Instructions for Paper- Setter			

The paper is divided into **4** Units. The examinees will be required to attempt ***Five*** questions in all, including Question 1, which is compulsory and selecting ***One*** question from each Unit (I – IV). Question 1 will consist of **7** questions of 1 mark each (very short answer, fill in the blanks, etc.) spread over the whole syllabi. The Examiner will set ***Two*** questions from each Unit.

Unit	Topics	Contact Hours
I	**Introduction to Libraries** - Introduction to libraries, museums and archives. - Library: Definitions, aims, objective, functions and services - Role of Libraries in society	8
II	**Types of Libraries** - Other Information Institutions- Information Centres, Documentation Centres - Types of libraries - Objectives and functions of public library, - National Library of India: Definition, Need, Purpose and Services	7
III	**Types of Libraries-2** - Objectives and functions of academic library-School Library, College Library and University Library - Objectives and functions of special library- Libraries of Research Institutions, Medical Libraries, Government Department Libraries, Law Libraries	8
IV	**Five Laws of Library Science** - Five Laws of Library Science and their implications on libraries	7
V Practicum	**Practice of the functioning of Libraries** - The students will visit different Libraries and Information Centres, Museums, Archives situated nearby and prepare report of their functioning (Two Libraries, etc.).	30
	Instructions for Practicum Examination - Evaluation of Reports: 10 Marks - Viva-voce : 10 Marks	
Suggested Evaluation Methods		

Internal Assessment: ➢ **Theory** Class Participation:4 Seminar/presentation/assignment/quiz/class test etc.:4 Mid-Term Exam:7 ➢ **Practicum** Class Participation: With theory part Seminar/Demonstration/Viva-voce/Lab records etc.:5 Mid-Term Exam:0	**End Term Examination:** **Theory: 35** **Practicum: 20**
Part C-Learning Resources	
Recommended Books/e-resources/LMS: List will be provided by the concerned Teacher.	

Session: 2023-24			
Part A - Introduction			
Subject	Library & Information Science		
Semester	2nd		
Name of the Course	**INTRODUCTION TO INFORMATION SOURCES**		
Course Code	**B23-LIS-201**		
Course Type: (CC/MCC/ MDC/CC- M/DSEC/ VOC/DSE/PC/AEC/VAC)	**CC/MCC**		
Level of the course	140		
Pre-requisite for the course (ifany)	---		
Course Learning Outcomes (CLO):	After completing this course, the learner will be able to: 1. Understand the different types of information resources. 2. Know the different types of reference resources. 3. Understand the different types of types of resources. 4. Understand the different types of institutional and human resources. 5*. Understand how to evaluate reference Books and answering reference queries.		
Credits	Theory	Practical	Total
	03	01	04
Contact Hours	03	02	05
Max. Marks: 100 **Internal Assessment Marks: 30** **End Term Exam Marks: 70**		**Time: 03 Hours (Theory) and 02 Hours (Practical)**	
Part B- Contents of the Course			

Instructions for Paper- Setter

The paper is divided into **4** Units. The examinees will be required to attempt ***Five*** questions in all, including Question 1, which is compulsory and selecting ***One*** question from each Unit (I – IV). Question 1 will consist of **5** short Answer (2 marks each) questions (having no internal choice) spread over the whole syllabi. The Examiner will set ***Two*** questions from each Unit.

Unit	Topics	Contact Hours
I	**Information Sources** - Information Sources: Definition, Need & Purpose - Information Sources: Types - Reference Sources – Definition, Characteristics & Types	12
II	**Types of Reference Sources** - Introduction to Reference Sources - Types of Reference Sources – Dictionaries, Encyclopedias, Yearbooks, Bibliographies, Directories, Almanacs, Statistical Sources, Geographical Sources, Biographical sources	11
III	**Types of Resources** - Introduction to Types of Resources - Print & Electronic Resources - Types of Print Resources: Primary, Secondary & Tertiary Sources - Types of Electronic Resources- Born Digital and Digitized	11
IV	**Institutional & Human Resources** - Institutional & Human Resources - Definition & Types - Invisible College - Human Library	11
V Practicum	**Practice in the Use of Information Sources** - Use of different types of Information Sources for queries of diverse nature	30
	Instructions for Practicum Examination - Finding answer to 10 Reference Queries: 15 Marks - Viva-voce : 05 Marks	
	Suggested Evaluation Methods	
	Theory Class Participation: 05 Seminar/presentation/assignment/quiz/class test etc: 05 Mid-Term Exam: 15	**End Term Examination:** Theory: 50 Practicum: 20
	Practicum	
	Class Participation: With theory	
	Seminar/Demonstration/Viva-voce/Lab Records etc: 05	
	Mid-Term Exam: N.A.	
Part-C-Learning Resources		
Recommended Books/e-resources/LMS: List will be provided by the concerned teacher.		

<table>
<tr><td colspan="4">Session: 2023-24</td></tr>
<tr><td colspan="4">Part A - Introduction</td></tr>
<tr><td>Subject</td><td colspan="3">Library & Information Science</td></tr>
<tr><td>Semester</td><td colspan="3">2nd</td></tr>
<tr><td>Name of the Course</td><td colspan="3">BASICS OF INFORMATION LITERACY</td></tr>
<tr><td>Course Code</td><td colspan="3">B23-LIS-202</td></tr>
<tr><td>Course Type: (CC/MCC/ MDC/CC- M/DSEC/VOC/ DSE/PC/AEC/VAC)</td><td colspan="3">DSEC</td></tr>
<tr><td>Level of the course</td><td colspan="3">140</td></tr>
<tr><td>Pre-requisite for the course (ifany)</td><td colspan="3">---</td></tr>
<tr><td>Course Learning Outcomes (CLO):</td><td colspan="3">After completing this course, the learner will be able to:
1. Understand the concept of Information Literacy and its different Types.
2. Know the different Types of Information Sources for finding Information.
3. Know how Information is Searched in the Sources.
4. Understand the importance of Information Evaluation and Ethical Use.
5*. Use different Information Resources for Finding Information.</td></tr>
<tr><td rowspan="2">Credits</td><td>Theory</td><td>Practical</td><td>Total</td></tr>
<tr><td>03</td><td>01</td><td>04</td></tr>
<tr><td>Contact Hours</td><td>03</td><td>02</td><td>05</td></tr>
<tr><td colspan="2">Max. Marks: 100
Internal Assessment Marks: 30
End Term Exam Marks: 70</td><td colspan="2">Time: 03 Hours (Theory) and 02 Hours (Practical)</td></tr>
<tr><td colspan="4">Part B- Contents of the Course</td></tr>
<tr><td colspan="4"><u>Instructions for Paper- Setter</u>
The paper is divided into 4 Units. The examinees will be required to attempt Five questions in all, including Question 1, which is compulsory and selecting One question from each Unit (I – IV). Question 1 will consist of 5 short Answer (2 marks each) questions (having no internal choice) spread over the whole syllabi. The Examiner will set Two questions from each Unit.</td></tr>
</table>

Unit	Topics	Contact Hours
I	**Information Literacy and Information Needs** - Information and its Need, Importance - Information Needs of Users - Information Literacy: Concept, Definition - Types of Information Literacy: Media Literacy, Computer Literacy, Digital Literacy	12
II	**Information Sources** - Information Sources- Documentary and Non-documentary - Human and Institutional Information Sources - Primary, Secondary and Tertiary Information Sources - E-resources- e-books, e-journals, databases Full text and Bibliographic.	11
III	**Information Search Process and Technique** - Literature Search Process and Search Statement. - Search in Electronic Sources - Literature Search Techniques: Boolean search, Truncation, Phrase search, etc. - Google Search, Library OPAC Search	11
IV	**Information Evaluation and Information Ethics** - Evaluation of information sources- - Ethical use of information - Plagiarism- Concept and Types, Plagiarism detection Tools	11
V Practicum	**Practice of Finding Information Sources and Searching Databases** - Sahitya Academi, IGNCA - DOAJ, DOAB, OpenDOAR - Google Search, Library OPAC Search	30
	Instructions for Practicum Examination - Selection of and Search in Appropriate Information Source/Database of Five Queries with stated Parameters: 15 Marks - Viva-voce : 05 Marks	
	Suggested Evaluation Methods	
	Theory Class Participation: 05 Seminar/presentation/assignment/quiz/class test etc: 05 Mid-Term Exam: 15	**End Term Examination:** Theory: 50 Practicum: 20
	Practicum	
	Class Participation: With theory	
	Seminar/Demonstration/Viva-voce/Lab Records etc: 05	

	Mid-Term Exam: N.A.	

Part-C-Learning Resources

Recommended Books/e-resources/LMS:

1. ANDRETTA (S).Ways of experiencing information literacy: Making the case for a relational approach. 2012. Oxford, Chandos.
2. GODWIN(P) and PARKER(J). Information literacy meets library 2.0.2009. Santa Barbara, Facet.
3. MACKEY(TP) and JACOBSON(TE). (2011). Teaching information literacy online. 2011. London, Neal- Schuman.
4. ASSOCIATION OF COLLEGE AND RESEARCH LIBRARIES (ACRL). Information Literacy Competency Standards for Higher Education. 2000. Chicago, American Library Association.http://www.ala.org/ala/acrl/acrlstandards/informationliteracycompetency.htm
5. BAWDEN (David). Information and Digital Literacy: a review of concepts. *Journal of Documentation* 57, 2; 2001; 218-259.
6. BRUCE (Christine).The Seven Faces of Information Literacy. 1997. Adelaide,Auslib Press.
7. COUNCIL OF AUSTRALIAN UNIVERSITY LIBRARIANS. Information Literacy Standards. 2001. Canberra ,Council of Australian University Librarians.
8. PRESIDENTIAL COMMITTEE ON INFORMATION LITERACY, AMERICAN LIBRARY ASSOCIATION. Final Report. 1989. Chicago: American Library Association.http://www.ala.org/ala/acrl/acrlpubs/whitepapers/presidential.htm
9. SOCIETY OF COLLEGE, NATIONAL AND UNIVERSITY LIBRARIES (SCONUL). Information skills in higher education: a SCONUL Position Paper.1999. London, SCONUL. http://www.sconul.ac.uk/activities/inf_lit/papers/Seven_pillars.html
10. TORRAS (MC)and SAETRE (T P). (2009). Information Literacy Education. 2009. Oxford, Chandos Publishing.
11. CARDIFF UNIVERSITY LIBRARY SERVICES.2016. Handbook for Information Literacy Teaching. http://sites.cardiff.ac.uk/ilrb/handbook/

Session: 2023-24			
Part A - Introduction			
Subject	Library & Information Science		
Semester	2nd		
Name of the Course	**INTRODUCTION TO LIBRARY OPERATIONS**		
Course Code	**B23-LIS-203**		
Course Type: (CC/MCC/ MDC/CC- M/DSEC/VOC/ DSE/PC/AEC/VAC)	**MI**		
Level of the course	100		
Pre-requisite for the course (ifany)	---		
Course Learning Outcomes (CLO):	After completing this course, the learner will be able to: 1. Understand the concept of Acquisition of library materials and its functions. 2. Know the steps involved in technical processing sections. 3. Understand the concept of Circulation of library materials and its functions. 4. Understand the concept of Serial control and its functions.		
Credits	Theory	Practical	Total
	02	00	02
Contact Hours	02	00	02
Max. Marks: 50 **Internal Assessment Marks: 15** **End Term Exam Marks: 35**		**Time: 03 Hours (Theory) and 02 Hours (Practical)**	

Part B- Contents of the Course

Instructions for Paper- Setter

The paper is divided into **4** Units. The examinees will be required to attempt ***Five*** questions in all, including Question 1, which is compulsory and selecting ***One*** question from each Unit (I – IV). Question 1 will consist of **7** short Answer (1 mark each) questions (very short answer, fill in the blanks, etc) spread over the whole syllabi. The Examiner will set ***Two*** questions from each Unit.

Unit	Topics	Contact Hours
I	**Library Acquisition** - Acquisition: Meaning, Processes, Functions - Book Selection, Procurement, - Introduction to Automated Acquisition	8
II	**Technical Processing and Maintenance** - Technical processing: Meaning, Processes, Functions - Physical processing - Technical processing: Accessioning, Classification and Cataloguing - Labeling, shelving and display	7
III	**Circulation & Maintenance** - Circulation: Meaning, Processes, Functions - Membership: new and old, updation, deletion - Circulation system: Issue, Return, Reservation and Recall - Introduction to Library Maintenance: Shelf Rectification, Weeding of Books and Stock verification	8
IV	**Introduction to Periodicals Collection** - Periodicals: Difference between Magazine, Periodicals, serials etc. - Types of Periodicals: Fulltext, Index, Abstracting - Databases & their types	7
	Suggested Evaluation Methods	
	Theory Class Participation: 04 Seminar/presentation/assignment/quiz/class test etc: 04 Mid-Term Exam: 07	**End Term Examination:** Theory: 35 Practicum: 00
	Practicum	
	Class Participation: With theory NA	
	Seminar/Demonstration/Viva-voce/Lab Records etc: NA	
	Mid-Term Exam: N.A.	
Part-C-Learning Resources		
Recommended Books/e-resources/LMS: List will be provided by the concerned Teacher.		

Session: 2023-24			
Part A - Introduction			
Subject	**Library and Information Science**		
Semester	1,2 & 3		
Name of the Course	**INTRODUCTION TO INFORMATION SOURCES (PRINT & ELECTRONIC)**		
Course Code	**B23-LIS-204**		
Course Type: (CC/MCC/MDC/CC-M/DSEC/VOC/DSE/PC/AEC/ VAC)	**MDC**		
Level of the course	100		
Pre-requisite for the course (if any)			
Course Learning Outcomes(CLO):	After completing this course, the learner will be able to: 1. Know different types of Reference & information Sources. 2. Understand the role of Dictionaries, Encyclopedias, Geographical Sources, Biographical sources 3. Understand the role of Yearbooks, Directories, Almanacs, Statistical Sources. 4. Know different types of Biblographies and databases. 5*. Use select available information sources.		
Credits	Theory	Practical	Total
	2	1	3
Contact Hours	2	2	4
Max. Marks: Internal Assessment Marks:25 End Term Exam Marks: 50		Time: Theory Exam.: 3 Hrs. Practical: 2 Hrs.	
Part B- Contents of the Course			
Instructions for Paper- Setter The paper is divided into **4** Units. The examinees will be required to attempt ***Five*** questions in all, including Question 1, which is compulsory and selecting ***One*** question from each Unit (I – IV). Question 1 will consist of **7** questions of 1 mark each(very short answer, fill in the blanks, etc.) spread over the whole syllabi. The Examiner will set ***Two*** questions from each Unit.			
Unit	**Topics**		**Contact Hours**

I	**Information Sources** - Information Sources: Definition and Types - Reference Sources – Definition, Characteristics & Types - Open Educational Resources	8
II	**Types of Reference Sources** - Introduction to Reference Sources (Print and Electronic)- Dictionaries, Encyclopedias, Geographical Sources, Biographical sources	7
III	**Types of Reference Sources** - Introduction to Reference Sources (Print and Electronic)- Yearbooks, Directories, Almanacs, Statistical Sources	7
IV	**Bibliographical Sources** - Bibliographies and their Types, Functions - Databases, Search Engines, Portals	8
V Practicum	**Practice in the use of Print and Electronic Information Sources** - Practice of available printed information sources and online open access sources - N-List, ePG Pathshala - Wikipedia, Encyclopedia Britannica (https://www.britannica.com/) - Statistical Yearbook India, India: A Reference Annual, Integrated Government Online Directory (https://igod.gov.in/), Google, Google Scholar, National Portal of India (https://www.india.gov.in/), Open Government Data Platform (https://data.gov.in/)	30
	Instructions for Practicum Examination - Finding answer to 10 Reference Queries: 15 Marks - Viva-voce : 05 Marks	
Suggested Evaluation Methods		
Internal Assessment: ➢ **Theory** Class Participation:4 Seminar/presentation/assignment/quiz/class test etc.:4 Mid-Term Exam:7 ➢ **Practicum** Class Participation: With theory part Seminar/Demonstration/Viva-voce/Lab records etc.:5 Mid-Term Exam:0		**End Term Examination:** **Theory: 35** **Practicum: 20**
Part C-Learning Resources		
Recommended Books/e-resources/LMS: List will be provided by the concerned Teacher.		

Session: 2023-24			
Part A - Introduction			
Subject	Library & Information Science		
Semester	3rd		
Name of the Course	**LIBRARY AUTOMATION: AN OVERVIEW**		
Course Code	**B23-LIS-301**		
Course Type: (CC/MCC/ MDC/CC- M/DSEC/VOC/ DSE/PC/AEC/VAC)	**CC/MCC**		
Level of the course	240		
Pre-requisite for the course (ifany)	---		
Course Learning Outcomes(CLO):	After completing this course, the learner will be able to: 1. Understand the concept of Library Automation and differentiate between manual and automated operations in a library. 2. Know the different modules of Integrated Library Management System. 3. Understand the different Housekeeping operations performed in a library. 4. Plan Automation in a Library. 5*. Use one Library Automation Software		
Credits	Theory	Practical	Total
	03	01	04
Contact Hours	03	02	05
Max. Marks: 100 **Internal Assessment Marks:30** **End Term Exam Marks: 70**		**Time: 03 Hours (Theory) and 02 Hours (Practical)**	
Part B- Contents of the Course			

Instructions for Paper- Setter

The paper is divided into **4** Units. The examinees will be required to attempt ***Five*** questions in all, including Question 1, which is compulsory and selecting ***One*** question from each Unit (I – IV). Question 1 will consist of **5** short Answer (2 marks each) questions (having no internal choice) spread over the whole syllabi. The Examiner will set ***Two*** questions from each Unit.

Unit	Topics	Contact Hours
I	**Introduction to Library Automation** - Library Automation: Definition, Need & Purpose. - History of Library Automation - Comparation between manual and automated operations in a library	12
II	**Integrated Library Management System** - Introduction to Integrated Library Management System (ILMS) - ILMS: Definition & Functions - Types of ILMS – Proprietary & Open Source	11
III	**Automated Housekeeping Operations** - Introduction to Housekeeping operations and Library Services - Acquisition - Cataloguing - Circulation - Serial Control	11
IV	**Planning of Library Automation** - Steps in Planning of Library Automation - Selection of Software and Hardware - Training of Library Staff - Retrospective Conversion	11
V Practicum	**Practice of one Library Automation Software** - Performing different Library Housekeeping Operations and generating Reports and Services	30
	Instructions for Practicum Examination - Preparing Entries of Five Documents and Performing Search: 15 Marks - Viva-voce : 05 Marks	
	Suggested Evaluation Methods	
	Theory Class Participation: 05 Seminar/presentation/assignment/quiz/class test etc: 05 Mid-Term Exam: 15	**End Term Examination:** Theory: 50 Practicum: 20
	Practicum	
	Class Participation: With theory	

	Seminar/Demonstration/Viva-voce/Lab Records etc: 05	
	Mid-Term Exam: N.A.	
Part-C-Learning Resources		
Recommended Books/e-resources/LMS: List will be provided by the concerned Teacher.		

<table>
<tr><td colspan="4">Session: 2023-24</td></tr>
<tr><td colspan="4">Part A - Introduction</td></tr>
<tr><td>Subject</td><td colspan="3">Library & Information Science</td></tr>
<tr><td>Semester</td><td colspan="3">3rd</td></tr>
<tr><td>Name of the Course</td><td colspan="3">LIBRARY AND INFORMATION SERVICES</td></tr>
<tr><td>Course Code</td><td colspan="3">B23-LIS-302</td></tr>
<tr><td>Course Type: (CC/MCC/ MDC/CC- M/DSEC/VOC/ DSE/PC/AEC/VAC)</td><td colspan="3">MCC</td></tr>
<tr><td>Level of the course</td><td colspan="3">240</td></tr>
<tr><td>Pre-requisite for the course (ifany)</td><td colspan="3">---</td></tr>
<tr><td>Course Learning Outcomes (CLO):</td><td colspan="3">After completing this course, the learner will be able to:
1. Understand various Library Services;
2. Know the different types of Reference Service;
3. Understand various types of Responsive Library Services;
4. Understand various types of Anticipatory Library Services; and
5*. Compile Bibliography and prepare Press Clippings.</td></tr>
<tr><td rowspan="2">Credits</td><td>Theory</td><td>Practical</td><td>Total</td></tr>
<tr><td>03</td><td>01</td><td>04</td></tr>
<tr><td>Contact Hours</td><td>03</td><td>02</td><td>05</td></tr>
<tr><td colspan="2">Max. Marks: 100
Internal Assessment Marks:30
End Term Exam Marks: 70</td><td colspan="2">Time: 03 Hours (Theory) and 02 Hours (Practical)</td></tr>
<tr><td colspan="4">Part B- Contents of the Course</td></tr>
<tr><td colspan="4"><u>Instructions for Paper- Setter</u>
The paper is divided into 4 Units. The examinees will be required to attempt Five questions in all, including Question 1, which is compulsory and selecting One question from each Unit (I – IV). Question 1 will consist of 5 short Answer (2 marks each) questions (having no internal choice) spread over the whole syllabi. The Examiner will set Two questions from each Unit.</td></tr>
</table>

Unit	Topics	Contact Hours
I	**Library Services** - Introduction to Library Services: Definition, Need and Purpose - Types of Library Services: Anticipatory & Responsive - Comparison between Anticipatory & Responsive Services	11
II	**Reference Services** - Reference Services- Definition, Need & Purpose - Types of Reference Service: Ready Reference Services and Long Range Service - Referral Service - Information Literacy Instructions	12
III	**Responsive Library Services** - Circulation - Inter Library Loan - Document Delivery - Photocopying - Literature Search Service	11
IV	**Anticipatory Library Services** - Current Awareness Services (CAS) - Selective Dissemination of Information (SDI) - Virtual Reference Service - Web-based Services	11
V Practicum	**Unit-5: Practice of Information Services** - Preparation of Bibliographies, Newspaper Clippings, etc.	30
	Instructions for Practicum Examination - Preparation of a Bibliography of 10 Documents/ Press Clipping: 15 Marks - Viva-voce : 05 Marks	
	Suggested Evaluation Methods	
	Theory Class Participation: 05 Seminar/presentation/assignment/quiz/class test etc: 05 Mid-Term Exam: 15	**End Term Examination:** Theory: 50 Practicum: 20
	Practicum	

	Class Participation: With theory	
	Seminar/Demonstration/Viva-voce/Lab Records etc: 05	
	Mid-Term Exam: N.A.	
Part-C-Learning Resources		
Recommended Books/e-resources/LMS: List will be provided by the concerned Teacher.		

Session: 2023-24			
Part A - Introduction			
Subject	Library and Information Science		
Semester	1,2 & 3		
Name of the Course	**INTRODUCTION TO LIBRARY SERVICES**		
Course Code	**B23-LIS-303**		
Course Type: (CC/MCC/ MDC/CC-M/DSEC/VOC/DSE/PC/AEC/VAC)	**MDC**		
Level of the course	100		
Pre-requisite for the course (ifany)			
Course Learning Outcomes (CLO):	After completing this course, the learner will be able to: 1. Know various Facilities within Library Premises; 2. Understand Reference Type of Services; 3. Know the various Literature Search and Access Services; 4. Know the Current Awareness, Extension and Network based Services; and 5*. Compile Bibliography and prepare Press Clippings.		
Credits	Theory	Practical	Total
	2	1	3
Contact Hours	2	2	4
Max. Marks: Internal Assessment Marks: 25 End Term Exam Marks: 50		Time: Theory Exam.: 3 Hrs. Practical: 2 Hrs.	
Part B- Contents of the Course			

Instructions for Paper- Setter

The paper is divided into **4** Units. The examinees will be required to attempt ***Five*** questions in all, including Question 1, which is compulsory and selecting ***One*** question from each Unit (I – IV). Question 1 will consist of **7** questions of 1 mark each (very short answer, fill in the blanks, etc.) spread over the whole syllabi. The Examiner will set ***Two*** questions from each Unit.

Unit	Topics	Contact Hours
I	**Library and its Facilities** - Library and Information Services-Definition and Types - Library facilities- Reading area facility, Research Cell, Stack Area, Discussion/committee rooms, Collaborative study area - Open Access System	7
II	**Reference Services** - Reference Process, and Reference Service-Definition and Types - Referral Service - Orientation Programmes - Library Tour (Physical/Virtual)	7
III	**Library & Information Services-I** - Literature search process and service - OPAC Search - Databases search and Bibliography compilation - Online services-remote access	7
IV	**Library & Information Services-II** - Current Awareness Services, SDI, CS, Press clipping service - Library Extension Services, Mobile Library - Network based services, Document delivery service	8
V Practicum	**Practice of providing Library Services** - Compilation of Bibliography and Press clippings - Library visits for observing provision of Library Services	30
	Instructions for Practicum Examination - Preparation of a Bibliography of 10 Documents/ Press Clipping: 15 Marks - Viva-voce : 05 Marks	
Suggested Evaluation Methods		
Internal Assessment: ➢ **Theory** Class Participation:4 Seminar/presentation/assignment/quiz/class test etc.:4 Mid-Term Exam:7 ➢ **Practicum** Class Participation: With theory part Seminar/Demonstration/Viva-voce/Lab records etc.:5 Mid-Term Exam:0		**End Term Examination:** **Theory: 35** **Practicum: 20**
Part C-Learning Resources		
Recommended Books/e-resources/LMS: List will be provided by the concerned Teach		

<table>
<tr><td colspan="4">Session: 2023-24</td></tr>
<tr><td colspan="4">Part A - Introduction</td></tr>
<tr><td>Subject</td><td colspan="3">Library & Information Science</td></tr>
<tr><td>Semester</td><td colspan="3">4th</td></tr>
<tr><td>Name of the Course</td><td colspan="3">LIBRARY CLASSIFICATION</td></tr>
<tr><td>Course Code</td><td colspan="3">B23-LIS-401</td></tr>
<tr><td>Course Type: (CC/MCC/ MDC/CC- M/DSEC/VOC/ DSE/PC/AEC/VAC)</td><td colspan="3">CC-4/MCC-6</td></tr>
<tr><td>Level of the course</td><td colspan="3">240</td></tr>
<tr><td>Pre-requisite for the course (ifany)</td><td colspan="3">---</td></tr>
<tr><td>Course Learning Outcomes (CLO):</td><td colspan="3">After completing this course, the learner will be able to:
1. Understand the concepts of Library Classification and Universe of Subjects;
2. Understand the different Modes of formation of Subjects historical development of Library Classification Schemes;
3. Know the main features of Colon Classification, Dewey Decimal Classification and Universal Decimal Classification;
4. Acquaint with the recent trends in library classification; and
5*. Build Class Numbers using latest available edition of Dewey Decimal Classification.</td></tr>
<tr><td rowspan="2">Credits</td><td>Theory</td><td>Practical</td><td>Total</td></tr>
<tr><td>03</td><td>01</td><td>04</td></tr>
<tr><td>Contact Hours</td><td>03</td><td>02</td><td>05</td></tr>
<tr><td colspan="2">Max. Marks: 100
Internal Assessment Marks:30
End Term Exam Marks: 70</td><td colspan="2">Time: 03 Hours (Theory) and 02 Hours (Practical)</td></tr>
<tr><td colspan="4">Part B- Contents of the Course</td></tr>
<tr><td colspan="4"><u>Instructions for Paper- Setter</u></td></tr>
</table>

The paper is divided into **4** Units. The examinees will be required to attempt ***Five*** questions in all, including Question 1, which is compulsory and selecting ***One*** question from each Unit (I – IV). Question 1 will consist of **5** short Answer (2 marks each) questions (having no internal choice) spread over the whole syllabi. The Examiner will set ***Two*** questions from each Unit.

Unit	Topics	Contact Hours
I	**Library Classification** – Introduction to Library Classification: Concept, Objectives & Functions – Universe of subjects – Concept, Definitions, Structure and Attributes – Call Number: Class number, Book Number and Collection Number	12
II	**Schemes of Classification and recent trends in classification** – Modes of Formation of Subjects – History and development of Library Classification Schemes – Mapping of Universe of subjects in Colon Classification (CC) and Dewey Decimal Classification (DDC)	11
III	**Classification Schemes** – Colon Classification (CC) – Dewey Decimal Classification (DDC) – Universal Decimal Classification (UDC)	11
IV	**Advances in Library Classification** – Ontologies, Taxonomies, Folksonomies, Clustering, Categories; Automatic classification research at OCLC – Semantic Web: SKOS and OWL, Reclassification – Knowledge Organizations: ISKO, CRG and EDUG etc.	11
V Practicum	**Library Classification (Practicum)-DDC available edition** – Simple Subject (Summaries) – Introduction to Schedules – Use of Tables – Relative Index	30
	Instructions for Practicum Examination - Classification of any Two Compound/Complex Titles out of Four: 10 Marks - Classification of any Five Simple Titles out of Seven: 10 Marks	

	Suggested Evaluation Methods	
	Theory Class Participation: 05 Seminar/presentation/assignment/quiz/class test etc: 05 Mid-Term Exam: 15	**End Term Examination:** Theory: 50 Practicum: 20
	Practicum	
	Class Participation: With theory	
	Seminar/Demonstration/Viva-voce/Lab Records etc: 05	
	Mid-Term Exam: N.A.	

Part-C-Learning Resources

Recommended Books/e-resources/LMS:

1. Batley, S. (2014). Ed. 2nd. Classification in theory and practice. Oxford: Chandos.
2. British Standards Institution. (2005). UDC: Universal Decimal Classification. London: British Standards Institution.
3. Broughton, Vanda (2015). Essential classification. 2nd ed. London: Facet.
4. Dewey, M. (2003). Dewey Decimal classification (22nd ed., Vols. 1-4). Ohio: OCLC.
5. Dewey, M. (2011). Dewey decimal classification and relative index (23rd ed., Vols. 1-4). Ohio: OCLC.
6. Dhyani, P. (2008). Library classification: Theory and principles. New Delhi: New Age International (P) Ltd, New Delhi.
7. Krishan, K. (1979). Theory of classification (4th Ed.). New Delhi: Vikas publication.
8. Kumbhar, R. (2011). Library classification trends in the 21st century. Elsevier.
9. Oggier, D. (2010). Harnessing Folksonomies with a Web Crawler. Germany: Verlag
10. Peters, I. (2009). Folksanomies, Indexing and Retrieval in Web 2.0. Germany: Saur
11. Ranganathan, S R. (1963). Colon Classification (6th ed.).(With amendments). Bombay: Asia.
12. Ranganathan, S. R. (1962). Elements of Library Classification. (3rd ed). Bombay: Asia
13. Ranganathan, S. R. (1987). Colon Classification (7th ed.). Revised and edited by M.A. Gopinath. Bangalore: Sarada Ranganathan Endowment for Library Science.
14. Ranganathan, S. R. (1989). Prolegomena to Library Classification. (3rd ed.) Bangalore: SRELS.
15. Ranganathan, S. R. (2006). Colon classification (6th ed.). New Delhi: EssEss Publications.
16. Satija, M. P. (2011). A guide to the theory and practice of colon classification. New Delhi: EssEss Publications
17. Satija, M. P. (2012). Exercises in the 23rd edition of Dewey Decimal Classification. New Delhi: EssEss pub.
18. Satija, M. P. (2013). The theory and practice of the Dewey Decimal Classification system (2ndEd.). Oxford: Chandos Pub.
19. Satija, M. P. and Singh K. P. (2010). Colon Classification (Hindi). EssEss Publications: New Delhi. P 241. ISBN: 978-81-7000-611-4.
20. Singh K. P. (2012). UDC: A Manual for Classification Practical and Information Resources. Today and Tomorrow's Printers and Publishers: New Delhi. P.389. ISBN- 81-7019-468-7

21. UDC Consortium. (n.d.). Universal Decimal Classification. UDC summary. https://udcsummary.info/php/index.php
22. UDC Consortium . (n.d.). English UDC Online Free Trial. UDC Online - English. https://udc-hub.com/en/trial.php
23. Wali, M. L., & Baba A. M. (1982). Manual of library classification practice for Dewey Decimal and Colon classification schemes. Srinagar: the auths.

Stuart, David (2016). Practical ontologies for information professionals. London: Facet.

Session: 2023-24			
Part A - Introduction			
Subject	Library & Information Science		
Semester	4th		
Name of the Course	**INTRODUCTION TO DIGITAL LIBRARY**		
Course Code	**B23-LIS-402**		
Course Type: (CC/MCC/MDC/CC-M/DSEC/VOC/DSE/PC/AEC/ VAC)	**MCC**		
Level of the course (As perAnnexure-I	240		
Pre-requisite for the course (ifany)	---		
Course Learning Outcomes (CLO):	After completing this course, the learner will be able to: 1. Familiarize with the concept of digital library and its features; 2. Understand the different Types and Standards of Metadata; 3. Know the Processes of Installation and Customization of Digital Library Software; 4. Understand the issues related to Building of Digital Libraries; and 5*. Learn the Process of Building Digital Library		
Credits	Theory	Practical	Total
	03	01	04
Contact Hours	03	02	05
Max. Marks: 100 **Internal Assessment Marks:30** **End Term Exam Marks: 70**		**Time: 03 Hours (Theory) and 02 Hours (Practical)**	
Part B- Contents of the Course			

Instructions for Paper- Setter

The paper is divided into **4** Units. The examinees will be required to attempt ***Five*** questions in all, including Question 1, which is compulsory and selecting ***One***

question from each Unit (I – IV). Question 1 will consist of **5** short Answer (2 marks each) questions (having no internal choice) spread over the whole syllabi. The Examiner will set ***Two*** questions from each Unit.		
Unit	**Topics**	**Contact Hours**
I	**Introduction to Digital Library** – Need, Concept and Features of Digital Library – Structure and Format of Digital Objects – Infrastructure Requirement – Hardware & Software – Digital Library Software – Digital Libraries – National & International	11
II	**Metadata Creation & Harvesting** - Metadata and its role in digital library - Types of Metadata - Metadata Standards – Dublin Core, METS, MODS etc. - Metadata Harvesting – OAI-PMH	12
III	**Implementation Process** – Installation of Operating System – Installation of Digital Library Software i.e. DSpace / GSDL – Customization	11
IV	**Archiving Digital Objects** – Structure of the Collection – Document Submission Agreement – Submission of the Items (Metadata + Digital Object + License Agreement) – Retrieval of the resources	11
V Practicum	– **Practice of Building Digital Library (DSpace / GSDL)** - Digitization, Metadata preparation, Submission of Items in Digital Library	30
	Instructions for Practicum Examination - Creation of Library of Five Documents with related Metadata: 15 Marks - Viva-voce: 05	
	Suggested Evaluation Methods	
	Theory Class Participation: 05 Seminar/presentation/assignment/quiz/class test etc: 05	**End Term Examination:** Theory: 50 Practicum: 20

	Mid-Term Exam: 15	
	Practicum	
	Class Participation: With theory	
	Seminar/Demonstration/Viva-voce/Lab Records etc: 05	
	Mid-Term Exam: N.A.	

Part-C-Learning Resources

Recommended Books/e-resources/LMS:

1. Bishop A. P. Van House N. A. &Buttenfield B. P. (2003). *Digital library use: social practice in design and evaluation*. MIT Press. Retrieved May 17 2023 from http://site.ebrary.com/id/10225273
2. Todaro, J. B. (2014). Library management for the digital age: A new paradigm. Lanham: Rowman & Littlefield.
3. Witten, I. H., Bainbridge, D., & Nichols, D. M. (2010). How to build a digital library. Burlington, MA: Morgan Kaufmann Publishers.
4. Zhang, A. &Gourley, D. (2009). Creating Digital Collections: A Practical Guide. Oxford: Chandos Publishing.
5. King M. A. (2008). *Implementation of dspace at the intercontinental hotels group: implementation of dspace at the intercontinental hotels group*. Idea Group. Retrieved May 17 2023 from http://public.ebookcentral.proquest.com/choice/publicfullrecord.aspx?p=3309437
6. Massachusetts Institute of Technology & Hewlett-Packard Company. (2002). *Dspace : durable digital depository*. MIT Libraries. Retrieved May 17 2023 from http://dspace.org/
7. Witten I. H. & University of Waikato. (2005). *Stoned: a bridge between greenstone and dspace*. Dept. of Computer Science University of Waikato.
   Kruk S. R. & McDaniel W. D. (2009). *Semantic digital libraries*. Springer. https://doi.org/10.1007/978-3-540-85434-0

<table>
<tr><td colspan="4">Session: 2023-24</td></tr>
<tr><td colspan="4">Part A - Introduction</td></tr>
<tr><td>Subject</td><td colspan="3">Library & Information Science</td></tr>
<tr><td>Semester</td><td colspan="3">4th</td></tr>
<tr><td>Name of the Course</td><td colspan="3">LIBRARY CATALOGUING</td></tr>
<tr><td>Course Code</td><td colspan="3">B23-LIS-403</td></tr>
<tr><td>Course Type: (CC/MCC/ MDC/CC- M/DSEC/VOC/ DSE/PC/AEC/VAC)</td><td colspan="3">MCC-8</td></tr>
<tr><td>Level of the course</td><td colspan="3">240</td></tr>
<tr><td>Pre-requisite for the course (ifany)</td><td colspan="3">---</td></tr>
<tr><td>Course Learning Outcomes (CLO):</td><td colspan="3">After completing this course, the learner will be able to:
1. Understand the Concept of Library Catalogue and its Types and Forms;
2. Know the different Types of Entries prepared in CCC and AACR-II;
3. Understand the Concept, Principles and Methods of Subject Cataloguing;
4. Acquaint with the Current Trends in Library Cataloguing; and
_____
5*. Prepare Catalogue Entries of Books, Composite Books, and Periodicals</td></tr>
<tr><td rowspan="2">Credits</td><td>Theory</td><td>Practical</td><td>Tot al</td></tr>
<tr><td>03</td><td>01</td><td>04</td></tr>
<tr><td>Contact Hours</td><td>03</td><td>02</td><td>05</td></tr>
<tr><td colspan="2">Max. Marks: 100
Internal Assessment Marks:30
End Term Exam Marks: 70</td><td colspan="2">Time: 03 Hours (Theory) and 02 Hours (Practical)</td></tr>
<tr><td colspan="4">Part B- Contents of the Course</td></tr>
<tr><td colspan="4"><u>Instructions for Paper- Setter</u>
The paper is divided into 4 Units. The examinees will be required to attempt Five questions in all, including Question 1, which is compulsory and selecting One question from each Unit (I – IV). Question 1 will consist of 5 short Answer (2 marks</td></tr>
</table>

each) questions (having no internal choice) spread over the whole syllabi. The Examiner will set ***Two*** questions from each Unit.

Unit	Topics	Contact Hours
I	**Bibliographic Description** - Catalogue: Definition, Need and purpose - Types of Library Catalogue - Forms of Library Catalogue	11
II	**Structure of Library Catalogue/ Cataloguing Codes** - Introduction to CCC and kinds of entries - Introduction to ACCR-II and kinds of entries	12
III	**Subject Cataloguing** - Definition, Need and Purpose - Principles of Subject Cataloguing - Methods: Chain Procedure and SLSH	11
IV	**Trends in Library Cataloguing** - OPAC, MARC, ISBD, CCF, RDA	11
V Practicum	**Preparation of Entries in AACR-II/RDA** - Preparation of Entries of Simple Books, Composite Books, and Periodicals	30
	Instructions for Practicum Examination - Preparation of Catalogue Entry of Two Documents out of Three in AACR-II/RDA: 15 Marks - Viva-voce : 05 Marks	
	Suggested Evaluation Methods	
	Theory Class Participation: 05 Seminar/presentation/assignment/quiz/class test etc: 05 Mid-Term Exam: 15	**End Term Examination:** Theory: 50 Practicum: 20
	Practicum	
	Class Participation: With theory	
	Seminar/Demonstration/Viva-voce/Lab Records etc: 05	
	Mid-Term Exam: N.A.	
Part-C-Learning Resources		
Recommended Books/e-resources/LMS: List will be provided by the concerned Teacher.		

Session: 2023-24			
Part A - Introduction			
Subject	Library & Information Science		
Semester	4th		
Name of the Course	**INTRODUCTION TO INFORMATION SOURCES IN SOCIAL SCIENCES**		
Course Code	**B23-LIS-404**		
Course Type: (CC/MCC/ MDC/CC- M/DSEC/VOC/ DSE/PC/AEC/VAC)	**DSE**		
Level of the course	240		
Pre-requisite for the course (ifany)	---		
Course Learning Outcomes (CLO):	After completing this course, the learner will be able to: 1. Understand the different types of social science literature; 2. Know the different types of ready reference sources of social sciences; 3. Understand the various types of statistical, bibliographical sources and databases; and 4. Understand the different types of institutional resources. 5*. Use select information sources in social sciences.		
Credits	Theory	Practical	Total
	03	01	04
Contact Hours	03	02	05
Max. Marks: 100 **Internal Assessment Marks:30** **End Term Exam Marks: 70**		**Time: 03 Hours (Theory) and 02 Hours (Practical)**	
Part B- Contents of the Course			

Instructions for Paper- Setter

The paper is divided into **4** Units. The examinees will be required to attempt ***Five*** questions in all, including Question 1, which is compulsory and selecting ***One*** question from each Unit (I – IV). Question 1 will consist of **5** short Answer (2 marks each) questions (having no internal choice) spread over the whole syllabi. The Examiner will set ***Two*** questions from each Unit.

Unit	Topics	Contact Hours
I	**Social Science Literature** - Scholarly and Popular Literature/ Derived Literature - Print, Non-print and Web-based - Encyclopaedia: Types, International Encyclopaedia of the Social and Behavioral Sciences - Dictionaries: Types, Dictionary of the social sciences, The New Palgrave Dictionary of Economics - Geographical Sources: Types, Gazetteer of India - Biographical Sources: Types, India Who's who	12
II	**Ready Reference Sources** - Yearbooks- India: A Reference Annual, Limca Book of Records, Guinness World Records - Almanac, Directories, Guides, Manual - Source of Current Events- Professional, Trade& Industry Journals, Newsletter/Magazines, Newspapers- Keesing's Record of World Events, Asian News Digest	11
III	**Statistical, Bibliographical Sources and Databases** - Open Government Data Platform (OGD) India, RBI Reports, Statistical Year Book India, UN Statistical Year Book, Census Reports - Bibliographical Sources: INB, IBSS - Databases: Scopus, Web of Science, Proquest	11
IV	**Institutional Sources** - Study of the following Social Science Institutions engaged in information generation and dissemination. ICSSR-NASSDOC. ICWA. Indian Institute of Public Administration, National Council for Applied Economic Research. Tata Institute of Social Sciences. UNESCO. Indian Council of Historical Research. NIMSME-SENDOC	11
V Practicum	**Practice of Information Sources** - Practice of accessing and using select Open Access Documentary and Institutional Information Sources	30
	Instructions for Practicum Examination - Answering Five Reference Queries: 10 Marks - Evaluation of One Institutional Source: 05 Marks - Viva-voce : 05 Marks	
	Suggested Evaluation Methods	

	Theory Class Participation: 05 Seminar/presentation/assignment/quiz/class test etc: 05 Mid-Term Exam: 15	**End Term Examination:** Theory: 50 Practicum: 20
	Practicum	
	Class Participation: With theory	
	Seminar/Demonstration/Viva-voce/Lab Records etc: 05	
	Mid-Term Exam: N.A.	
Part-C-Learning Resources		
Recommended Books/e-resources/LMS: List will be provided the concerned Teacher.		

<table>
<tr><td colspan="4">Session: 2023-24</td></tr>
<tr><td colspan="4">Part A - Introduction</td></tr>
<tr><td>Subject</td><td colspan="3">Library & Information Science</td></tr>
<tr><td>Semester</td><td colspan="3">4th</td></tr>
<tr><td>Name of the Course</td><td colspan="3">INTRODUCTION TO INFORMATION SOURCES IN SCIENCE AND TECHNOLOGY</td></tr>
<tr><td>Course Code</td><td colspan="3">B23-LIS-405</td></tr>
<tr><td>Course Type: (CC/MCC/ MDC/CC- M/DSEC/VOC/ DSE/PC/AEC/VAC)</td><td colspan="3">DSE</td></tr>
<tr><td>Level of the course</td><td colspan="3">240</td></tr>
<tr><td>Pre-requisite for the course (ifany)</td><td colspan="3">---</td></tr>
<tr><td>Course Learning Outcomes (CLO):</td><td colspan="3">After completing this course, the learner will be able to:
1. Understand the different types of primary sources of information and their importance in science and technology;
2. Know the different types of secondary sources and their importance in science and technology;
3. Understand the role of various institutional information sources in science and technology; and
4. Know the different types of databases in science and technology.
5*. Use select information sources in science and technology.</td></tr>
<tr><td rowspan="2">Credits</td><td>Theory</td><td>Practical</td><td>Total</td></tr>
<tr><td>03</td><td>01</td><td>04</td></tr>
<tr><td>Contact Hours</td><td>03</td><td>02</td><td>05</td></tr>
<tr><td colspan="2">Max. Marks: 100
Internal Assessment Marks:30
End Term Exam Marks: 70</td><td colspan="2">Time: 03 Hours (Theory) and 02 Hours (Practical)</td></tr>
<tr><td colspan="4">Part B- Contents of the Course</td></tr>
<tr><td colspan="4"><u>Instructions for Paper- Setter</u></td></tr>
</table>

The paper is divided into **4** Units. The examinees will be required to attempt ***Five*** questions in all, including Question 1, which is compulsory and selecting ***One*** question from each Unit (I – IV). Question 1 will consist of **5** short Answer (2 marks each) questions (having no internal choice) spread over the whole syllabi. The Examiner will set ***Two*** questions from each Unit.

Unit	Topics	Contact Hours
I	**Primary Sources and their role** - Periodicals, Research and Technical Reports, Conference Proceedings, Patents, Standards, Theses and Dissertation	11
II	**Secondary Sources** - Books- Monographs, Treatises, Textbooks; Encyclopaedias; Handbooks; Dictionaries; Reviews, etc.	11
III	**Institutional Sources** - Department of Science and Technology(DST)-Vigyan Prasar, Council of Scientific & Industrial Research (CSIR), Defence Research and Development Organisation (DRDO), Indian Council of Agricultural Research (ICAR), Indian Council of Medical - Research (ICMR), CSIR-NIScPR	12
IV	**Databases** - Web of Science, Scopus, Scifinder, Pubmed, Sodhganga, Sodhgangotri, DOAJ, PLOS, Google Scholar, ArXiv	11
V Practicum	**Practice of Information Sources** - Practice of accessing and using select Open Access Documentary and Institutional Information Sources	30
	Instructions for Practicum Examination - Answering Five Reference Queries: 10 Marks - Evaluation of One Institutional Source: 05 Marks - Viva-voce : 05 Marks	
	Suggested Evaluation Methods	
	Theory Class Participation: 05 Seminar/presentation/assignment/quiz/class test etc: 05 Mid-Term Exam: 15	**End Term Examination:** Theory: 50 Practicum: 20

	Practicum	
	Class Participation: With theory	
	Seminar/Demonstration/Viva-voce/Lab Records etc: 05	
	Mid-Term Exam: N.A.	
Part-C-Learning Resources		
Recommended Books/e-resources/LMS: List will be provided by the concerned Teacher.		

KURUKSHETRA UNIVERSITY
KURUKSHETRA

Scheme of Examination and Syllabus for
Under-Graduate Programmes—
(Subject : Social Work)

Under Multiple Entry-Exit, Internship and CBCS- LOCF in accordance to NEP-2020 w.e.f. 2023-24
(in phased manner)

DEPARTMENT OF SOCIAL WORK
KURUKSHETRA UNIVERSITY, KURUKSHETRA
(Established by the State Legislature Act XII of 1956)
('A+' Grade NAAC Accredited)

Curriculum and Credit Framework under UG Programme
As per NEP 2020 (w.e.f. 2023-24)
Scheme and Syllabus (Multi Disciplinary and Single Major)
Subject: Social Work

Semester	Course	Course Code	Nomenclature of course		Credits	Contact Hours	Internal Marks	External Marks	Total	Duration of Exam (Hrs)
I	CC-1 MCC-1	B23-SWK-101	Basics of Social Work	Theory	3	3	20	50	70	3
				Field Work	1	2	10	20	30	
	MCC-2	B23-SWK-102	Introduction to Society For Social Work	Theory	4	4	30	70	100	3
	MDC-1	B23-SWK-103	Foundations of Social Work	Theory	3	3	25	50	75	3
	CC-M1	B23-SWK-104	Understanding Society For Social Work	Theory	2	2	15	35	50	3
II	CC-2 MCC-3	B23-SWK-201	History and Fields of Social Work	Theory	3	3	20	50	70	3
				Field work	1	2	10	20	30	
	DSEC-1	B23-SWK-202	Skills and Techniques of Social Work	Theory	4	4	30	70	100	3
	MDC-2	B23-SWK-203	Direct Methods of Social Work Practice	Theory	3	3	25	50	75	3
	CC-M2	B23-SWK-204	Social Problems & Social Work Intervention	Theory	2	2	15	35	50	3
III	CC-3 MCC-4	B23-SWK-301	Working with Individuals and Groups	Theory	3	3	20	50	70	3
				Fieldwork	1	2	10	20	30	
	MCC-5	B23-SWK-302	Human Growth & Development	Theory	4	4	30	70	100	3

	MDC-3	B23-SWK-303	Indirect Methods of Social Work Practice	Theory	3	3	25	50	75	3
Semester	**Course**	**Paper**	**Nomenclature**		**Credits**	**Contact Hours**	**Internal Marks**	**External Marks**	**Total**	**Duration of Exam (Hrs)**
IV	CC-4 MCC-6	B23-SWK-401	Working With Communities	Theory	3	3	20	50	70	3
				Field work	1	2	10	20	30	
	MCC-7	B23-SWK-402	Social Justice & Social Legislations	Theory	4	4	30	70	100	3
	MCC-8	B23-SWK-403	Emerging Areas of Social Work Practice	Theory	4	4	30	70	100	3
	DSE-1	B23-SWK-404	Gender & Social Work	Theory	4	4	30	70	100	3
		OR								
		B23-SWK-405	Social Work With Youth	Theory	4	4	30	70	100	3
V	CC-5 MCC-9	B23-SWK-501	Social Action & Social Welfare Administration	Theory	3	3	20	50	70	3
				Field Work	1	2	10	20	30	
	MCC-10	B23-SWK-502	Dynamics of Social Development	Theory	4	4	30	70	100	3
	DSE-2	B23-SWK-503	Social Work with Children	Theory	4	4	30	70	100	3
			OR							
		B23-SWK-504	Social Work With Women	Theory	4	4	30	70	100	3
	DSE-3	B23-SWK-505	Social work with elderly	Theory	4	4	30	70	100	3
			OR							
		B23-SWK-506	Social Work with disabled	Theory	4	4	30	70	100	3
VI	CC-6 MCC-11	B23-SWK-601	Social Work Research	Theory	3	3	20	50	70	3
				Field work	1	2	10	20	30	
	MCC-12	B23-SWK-602	NGO Management	Theory	4	4	30	70	100	3
	DSE-4	B23-SWK-	Counselling with Drug	Theory	4	4	30	70	100	3

		603	Addicts							
			OR							
		B23-SWK-604	Counselling with HIV/AIDS	Theory	4	4	30	70	100	3
	DSE-5	B23-SWK-605	Health Care Needs & Services	Theory	4	4	30	70	100	3
			OR							
		B23-SWK-606	Occupational Health	Theory	4	4	30	70	100	3

FOURTH YEAR

Semester	Course	Paper	Nomenclature		Credits	Contact Hours	Internal Marks	External Marks	Total	Duration of Exam (Hrs)
VII	CC-H1	B23-SWK-701	Research Methodology in Social Work-I	Theory	4	4	30	70	100	3
	CC-H2	B23-SWK-702	Statistics in Social Work Research-I	Theory	4	4	30	70	100	3
	CC-H3	B23-SWK-703	Project Planning and Management	Theory	4	4	30	70	100	3
	DSE-H1	B23-SWK-704	Human Resource Management and Labour Laws-I	Theory	4	4	30	70	100	3
		OR								
		B23-SWK-705	Family, Child and Youth Welfare-I	Theory	4	4	30	70	100	3
	PC-H1	B23-SWK-706	Seminar Presentation on Research Proposal		4	4	30	70	100	3
VIII	CC-H4	B23-SWK-801	Research Methodology in Social Work-II	Theory	4	4	30	70	100	3

	CC-H5	B23-SWK-802	Statistics in Social Work Research-II	Theory	4	4	30	70	100	3
	CC-H6	B23-SWK-803	Data Processing and Report Writing	Theory	4	4	30	70	100	3
	DSE-H2	B23-SWK-804	Human Resource Management and Labour Laws-II	Theory	4	4	30	70	100	3
			OR							
		B23-SWK-805	Family, Child and Youth Welfare-II	Theory	4	4	30	70	100	3
	PC-H2	B23-SWK-806	Seminar Presentation on Review of Literature		4	4	30	70	100	3

For Honors with Research

Semester	Course	Paper	Nomenclature		Credits	Contact Hours	Internal Marks	External Marks	Total	Duration of Exam (Hrs)
VIII	CC-H4	B23-SWK-801	Research Methodology in Social Work-II	Theory	4	4	30	70	100	3
	CC-H5	B23-SWK-802	Statistics in Social Work Research-II	Theory	4	4	30	70	100	3
		B23-SWK-807	Dissertation		12			300	300	

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Curriculum and Credit Framework under UG Programme
As per NEP 2020 (w.e.f. 2023-24)
(Multi Disciplinary and Single Major)

Syllabus
Subject: Social Work

1st Semester

CC-1/MCC-1

Session: 2023-24	
Part A – Introduction	
Subject	Social Work
Semester	First
Name of the Course	Basics of Social Work
Course Code	B23-SWK-101
Course Type: (CC/MCC/MDC/CC-M/DSEC/VOC/DSE/PC/AEC/VAC)	CC/MCC
Level of the course (As per Annexure-I	100-199
Pre-requisite for the course (if any)	Senior Secondary (10+2) or Equivalent in any stream
Course Learning Outcomes (CLO):	After completing this course, the learner will be able to: 1.Understand the conceptual framework of social work practice 2. Aware about the relationship of social work with other social sciences. 3. Understand and inculcate the philosophical base of social work practice. 4. Develop necessary skills to practice social work in

	an ethical & professional manner.		
Credits	Theory	Practical	Total
	3	1	4
Contact Hours	3	2	5
Internal Assessment Marks	20	10	30
End Term Exam Marks:	50	20	70

Part B- Contents of the Course

Instructions for Paper- Setter

(a) Nine questions shall be set in all, two questions from each unit I-IV and Q. No. 1 shall be compulsory question.
(b) The compulsory question shall consist of five short answer type questions which shall be set from Unit I-IV.
(c) The Candidate shall be required to attempt five questions in all selecting one question each from Unit I-IV and the compulsory question.
(d) All questions carry equal marks.

Unit	Topics	Contact Hours
I	• Social work: Meaning, nature and its scope, • Relationship of Social Work with other Social Sciences. Sociology, Psychology, Public administration, Economics, History, Political Science, Jurisprudence	12
II	• Social work and related concepts: social service, social services, social reform, social welfare, social development and Social Security	12
III	• Philosophical values of social work • Assumptions of social work • Goals of Social Work. • Methods of social work.	12
IV	• Principles of Social Work • Profession: meaning and component • Social Work as a profession	12

V*	**Under Field Practicum Component the college concern, under the supervision of a teacher will arrange agency visits. Students will undertake minimum five visits to different Government agencies in the field of social welfare. The students will be required to submit their observation reports about the functioning, organizational structure, sources of funds and the programmes services undertaken by the agencies and lesson learnt out of Field visits.**	12
Suggested Evaluation Methods		
Internal Assessment: ➢ **Theory** • Class Participation: 05 • Seminar/presentation/assignment/quiz/class test etc.:05 • Mid-Term Exam: 10		**End Term Examination:** **50**
➢ **Practicum** • Field Survey : 05 • Field Report: 05		**20 (Viva Voce)**
Part C-Learning Resources		
Recommended Books/e-resources/LMS: 1. Dasgupta, S Ed. (1967) Towards a Philosophy of Social Works in India, Popular Book service, New Delhi. 2. Desai, Murli, (2006) Ideologies and social Work: Historical and Contemporary analyses, Rawat Publication, New Delhi 3. Friedlander, W.A. (1964) Concepts and Methods of Social Work, Prentice-Hall. of India Pvt, Ltd. New Delhi. 4. Gore, M.S. (1965) Social Work and Social Work Education Asia Publishing House, Bombay 5. Roy, Sanjay (2011) Introduction to Social Work and practice in India. Akansha Publication House New, Delhi. 6. Singh Surendra and Srivastava S. P. (ed) 2005) Social Work Education Challenge and opportunities, New Royal Book Publications Lucknow 7. Shastri , R.R.(1996) Social Work tradition in India, Welfare Forum &		

Research Organization, Varanasi

8. Mishra, P.D. Social Work: Profession in India, New Royal Book Company

MCC-2

Session: 2023-24			
Part A – Introduction			
Subject	Social Work		
Semester	First		
Name of the Course	Introduction to Society for Social Work		
Course Code	B-23-SWK-102		
Course Type: (CC/MCC/MDC/CC-M/DSEC/VOC/DSE/PC/AEC/VAC)	MCC		
Level of the course (As per Annexure-I	100-199		
Pre-requisite for the course (if any)	Senior Secondary (10+2) or Equivalent in any stream		
Course Learning Outcomes (CLO):	After completing this course, the learner will be able to: • To understand and develop insight about sociological concepts for professional social work practice. • To develop an understanding and analytical thinking on social structure and social systems. • To familiarize on concepts of social process & social stratification. • Capable to understand the basic concepts related to contemporary Indian social concerns.		
Credits	Theory	Practical	Total
	4	--	4
Contact Hours	4	--	4
Internal Assessment Marks	30	--	30
End Term Exam Marks	70	--	70
Part B- Contents of the Course			

Instructions for Paper- Setter

(e) Nine questions shall be set in all, two questions from each unit I-IV and Q. No. 1 shall be compulsory question.

(f) The compulsory question shall consist of five short answer type questions which shall be set from Unit

I-IV.

(g) The Candidate shall be required to attempt five questions in all selecting one question each from Unit I-IV and the compulsory question.

(h) All questions carry equal marks.

Unit	Topics	Contact Hours
I	• Concept and Features: Society, Community, Association, Institutions and organizations • Social institutions: family and marriage; their functioning and impact on life of individuals.	16
II	• Social Process- meaning and types • Social system: concept, meaning, characteristics, elements and classification • Social Structure: meaning and elements	14
III	• Social stratification: Meaning and Types • Culture and Civilization: meaning, elements and functions	14
IV	• Social Change- meaning, nature and causes • Social control- meaning, need and agencies of social control.	16
V*		

Suggested Evaluation Methods

Internal Assessment: ➢ **Theory** • Class Participation: 5 • Seminar/presentation/assignment/quiz/class test etc.:5+5 • Mid-Term Exam: 15	**End Term Examination:** **70**

Part C-Learning Resources

Recommended Books/e-resources/LMS:

Berger,P.L. (1963): *An Invitation to Sociology: An Humanistic Perspective*.Harmondsworth.Penguin.

Bottommore,T.B. (1971): *Sociology: A Guide to Problem andLiterature.*Bombay,George Allen andUnwin.

MacIver& Page (1974): *Society: An Introductory Analysis*.Jaipur,Macmillan IndiaLtd.

Giddens,A.(1999):*Sociology.*Cambridge. PolityPress.

Haralambos,M&Holborn,M. (2014). *Sociology: Themes and Perspectives 8th edition*.Lomdon,HarperCollins.

Nagla.B.K.(2013).*IndianSociologicalThought*.Jaipur:RawatPublication

Shah,A.M.(2014):TheWritingsofA.M.ShahTheHouseholdandfamilyinIndia.StanfordUniversity, Orient Blackswan.

MDC-1

Session: 2023-24			
Part A – Introduction			
Subject	Social Work		
Semester	First		
Name of the Course	Foundations of Social Work		
Course Code	B23-SWK-103		
Course Type: (CC/MCC/MDC/CC-M/DSEC/VOC/DSE/PC/AEC/VAC)	MDC		
Level of the course (As per Annexure-I	100-199		
Pre-requisite for the course (if any)	Senior Secondary (10+2) or Equivalent in any stream		
Course Learning Outcomes (CLO):	After completing this course, the learner will be able to: • Understand the conceptual framework of social work practice. • Aware about the historical development of social work in Indian and worldwide perspective. • Aware about reforms movements, programme and services for vulnerable Groups. • Develop competence to analyze critically the contemporary social issues.		
Credits	Theory	Practical	Total
	3	--	3
Contact Hours	3	--	3
Internal Assessment Marks:	25	--	25
End Term Exam Marks:	75	--	75
Part B- Contents of the Course			
Instructions for Paper- Setter **(i) Nine questions shall be set in all, two questions from each unit I-IV and Q. No. 1 shall be compulsory question.**			

(j) The compulsory question shall consist of five short answer type questions which shall be set from Unit I-IV.
(k) The Candidate shall be required to attempt five questions in all selecting one question each from Unit I-IV and the compulsory question.
(l) All questions carry equal marks.

Unit	Topics	Contact Hours
I	• Social work: Meaning, nature and its scope, • Relationship of Social Work with other Social Sciences. Sociology, Psychology, Public administration, Economics, History, Political Science, Jurisprudence	12
II	• Social work and related concepts: social service, social services, social reform, social welfare, social development and Social Security	10
III	• Philosophical values of social work • Assumptions of social work • Goals of Social Work. • Methods of social work.	11
IV	• Principles of Social Work • Profession: meaning and component • Social Work as a profession	12
V*		

Suggested Evaluation Methods

Internal Assessment:	**End Term Examination:**
➢ **Theory** • Class Participation: 5 • Seminar/presentation/assignment/quiz/class test etc.:7 • Mid-Term Exam: 13	**50**

Part C-Learning Resources

Recommended Books/e-resources/LMS:

1. Ambrosino, R .2015 Social Work and Social Welfare, Rawat Publications ,Jaipur
2. Brenda Dubois and Kalra Keogsrud Miley- (2009). Social-Work: An Empowering Profession Prentice Hall, PTR
3. Bradford W. Sheaf or and Charles R. Horejsi, (2006) Techniques and Guidelines for Social Work Practice, Allyn and Bacon, London.
4. Bogo, Mario, (2006) Social Work Practice:Concepts, Processes and Interviewing Columbia University press., Indian Reprint Rawat Publications, New Delhi.
5. Dasgupta, S Ed. (1967) Towards a Philosophy of Social Works in India, Popular Book Service, New Delhi
6. Desai, Murli, (2006). Ideologies and social Work: Historical and Contemporary analyses, Rawat Publication, New Delhi
7. Friedlander, W.A. (1964) Concepts and Methods of Social Work, PrenticeHall.of India pvt,Ltd. New Delhi
8. Ganguli, B.N. (1973) Gandhi's Social Philosophy, Vikas Publishing House, Delhi
9. Gokhale, S.D. (1975) Social Welfare-Legend & Legacy, Popular Prakshan, Bombay

CC-M1

Session: 2023-24			
Part A – Introduction			
Subject	Social Work		
Semester	First		
Name of the Course	Understanding Society for Social Work		
Course Code	B23-SWK-104		
Course Type: (CC/MCC/MDC/CC-M/DSEC/VOC/DSE/PC/AEC/VAC)	CC-M		
Level of the course (As per Annexure-I	100-199		
Pre-requisite for the course (if any)	Senior Secondary (10+2) or Equivalent in any stream		
Course Learning Outcomes (CLO):	After completing this course, the learner will be able to: • To understand and develop insight about sociological concepts for professional social work practice. • To develop an understanding and analytical thinking on social structure and social systems. • To familiarize on concepts of social process & social stratification. • Capable to understand the basic concepts related to contemporary Indian social concerns.		
Credits	Theory	Practical	Total
	2	--	2
Contact Hours	2	--	2
Internal Assessment Marks:	15		15
End Term Exam Marks:	35		35
Part B- Contents of the Course			

Instructions for Paper- Setter

(m) Nine questions shall be set in all, two questions from each unit I-IV and Q. No. 1 shall be compulsory question.

(n) The compulsory question shall consist of five short answer type questions which shall be set from Unit I-

IV.

(o) The Candidate shall be required to attempt five questions in all selecting one question each from Unit I-IV and the compulsory question.

(p) All questions carry equal marks.

Unit	Topics	Contact Hours
I	• Concept and Features: Society, Community, Association, Institutions and organizations • Social institutions: family and marriage; their functioning and impact on life of individuals.	8
II	• Social Process- meaning and types • Social system: concept, meaning, characteristics, elements and classification • Social Structure: meaning and elements	7
III	• Social stratification: Meaning and Types • Culture and Civilization: meaning, elements and functions	7
IV	• Social Change- meaning, nature and causes • Social control- meaning, need and agencies of social control.	8
V*		

Suggested Evaluation Methods

Internal Assessment:	**End Term Examination:**
➢ **Theory** • Class Participation: 4 • Seminar/presentation/assignment/quiz/class test etc.:4 • Mid-Term Exam: 7	**35**

Part C-Learning Resources

Recommended Books/e-resources/LMS:

Berger,P.L. (1963): An Invitation to Sociology: An Humanistic Perspective.Harmondsworth.Penguin.

Bottommore,T.B. (1971): Sociology: A Guide to Problem andLiterature.Bombay,George Allen andUnwin.

MacIver& Page (1974): Society: An Introductory Analysis.Jaipur,Macmillan IndiaLtd.

Giddens,A.(1999):Sociology.Cambridge. PolityPress.

Haralambos,M&Holborn,M. (2014). Sociology: Themes and Perspectives 8th edition.Lomdon,HarperCollins.

Nagla.B.K.(2013).IndianSociologicalThought.Jaipur:RawatPublication

Shah,A.M.(2014):TheWritingsofA.M.ShahTheHouseholdandfamilyinIndia.StanfordUniversity, Orient Blackswan.

2nd Semester

CC-2/MCC-3

Session: 2023-24			
Part A – Introduction			
Subject	Social Work		
Semester	2nd Semester		
Name of the Course	History & Fields of Social Work		
Course Code	B23-SWK-201		
Course Type: (CC/MCC/MDC/CC-M/DSEC/VOC/DSE/PC/AEC/VAC)	CC/MCC		
Level of the course (As per Annexure-I	200-299		
Pre-requisite for the course (if any)	Senior Secondary (10+2) or Equivalent in any stream		
Course Learning Outcomes (CLO):	After completing this course, the learner will be able to: • To make the students aware about the historical development of social work profession • To develop understanding of different fields of Social Work Practice. • Capable to understand the areas of social work practice. • Gain understanding about the various welfare programmes related to SC, ST, aged, disabled, women and child and youth.		
Credits	Theory	Practical	Total
	3	1	4
Contact Hours	3	2	5
Internal Assessment	20	10	30

Marks:			
End Term Exam Marks:	50	20	70

Part B- Contents of the Course

Instructions for Paper- Setter

(q) Nine questions shall be set in all, two questions from each unit I-IV and Q. No. 1 shall be compulsory question.

(r) The compulsory question shall consist of five short answer type questions which shall be set from Unit I-IV.

(s) The Candidate shall be required to attempt five questions in all selecting one question each from Unit I-IV and the compulsory question.

(t) All questions carry equal marks.

Unit	Topics	Contact Hours
I	• Historical development of social work in U.K, U.S.A. and India. • Contribution of reform movements in 19th and 20th century.	12
II	• Fields of social work: family welfare, child welfare, women welfare and youth welfare, programmes and services • Gandhian Constructive Programmes.	12
III	• Medical & Psychiatric Social work. Correctional Services in India. • Role of Social Worker in Correctional Services.	12
IV	• Welfare of Weaker Sections: SC, ST, aged and physically challenged. • Population Education. School Social Work	12
V*	**Under Field Practicum Component agency visits will be arranged by the College under the supervision of concern teacher. Students will undertake minimum five visits to different NGOs of national repute in the field of social welfare. The students will be required to submit their observation reports about the functioning, organizational structure, sources of funds and the programmes services undertaken by the agencies and their learning out of field visits.**	12

Suggested Evaluation Methods

Internal Assessment: ➢ **Theory** • Class Participation: 05 • Seminar/presentation/assignment/quiz/class test etc.:05 • Mid-Term Exam: 10	**End Term Examination:** **50**
➢ **Practicum** • Field Survey : 05 • Field Report: 05	**20 (Viva Voce)**

Part C-Learning Resources

Recommended Books/e-resources/LMS:

1. Dasgupta, S Ed. (1967) Towards a Philosophy of Social Works in India, Popular Book service, New Delhi.

2. Desai, Murli, (2006) Ideologies and social Work: Historical and Contemporary analyses, Rawat Publication, New Delhi

3. Friedlander, W.A. (1964) Concepts and Methods of Social Work, Prentice-Hall. of India Pvt, Ltd. New Delhi.

4. Gore, M.S. (1965) Social Work and Social Work Education Asia Publishing House, Bombay

5. Roy, Sanjay (2011) Introduction to Social Work and practice in India. Akansha Publication House New, Delhi.

6. Singh Surendra and Srivastava S. P. (ed) 2005) Social Work Education Challenge and opportunities, New Royal Book Publications Lucknow

7. Shastri , R.R.(1996) Social Work tradition in India, Welfare Forum & Research Organization, Varanasi

8. Mishra, P.D. Social Work: Profession in India, New Royal Book Company.

DSEC-1

Session: 2023-24			
Part A – Introduction			
Subject	Social Work		
Semester	2nd Semester		
Name of the Course	**Skills & Techniques of Social Work Practice**		
Course Code	B23-SWK-202		
Course Type: (CC/MCC/MDC/CC-M/DSEC/VOC/DSE/PC/AEC/VAC)	DSEC		
Level of the course (As per Annexure-I	100-199		
Pre-requisite for the course (if any)	Senior Secondary (10+2) or Equivalent in any stream		
Course Learning Outcomes (CLO):	After completing this course, the learner will be able to: • Understand the conceptual framework of Social Work skills and techniques. • To develop the necessary skills to apply the methods of working with individuals and groups. • To develop ability to utilize appropriate skills to work with communities. • Develop necessary skills to practice social work in professional manner.		
Credits	Theory	Practical	Total
	4	--	4
Contact Hours	4	--	4
Internal Assessment Marks	30	--	30

End Term Exam Marks	70	--	70

Part B- Contents of the Course

Instructions for Paper- Setter

(u) Nine questions shall be set in all, two questions from each unit I-IV and Q. No. 1 shall be compulsory question.

(v) The compulsory question shall consist of five short answer type questions which shall be set from Unit I-IV.

(w) The Candidate shall be required to attempt five questions in all selecting one question each from Unit I-IV and the compulsory question.

(x) All questions carry equal marks.

Unit	Topics	Contact Hours
I	• Social Skills - Meaning and Types. • Component of Social Skills. • Skills of Social Work: Interviewing, Listening, Observing, Questioning, Supporting, Educating, Counselling, Explaining and Informing.	14
II	• Skills of Social Case Work– concept and meaning. • Techniques of Social Case Work.	12
III	• Skills in group work- Concept and meaning. • Techniques of group work: group counselling, group discussion, group decision making and program media.	16
IV	• Skills in Community Organization: Concept and Meaning. • Communication, Organizing, Mobilizing Resources, Negotiating, Liaising, Advocacy, Participatory Skills, Documenting Community Processes and Situations. • PRA Techniques – Social Mapping, Resource Mapping, Venn Diagram, Trend Analysis	18
V*		

Suggested Evaluation Methods

Internal Assessment: ➢ **Theory** • Class Participation: 5 • Seminar/presentation/assignment/quiz/class test etc.:5+5 • Mid-Term Exam: 15	**End Term Examination: 70**

Part C-Learning Resources

Recommended Books/e-resources/LMS:

1. Bradford W. Sheaf or and Charles R. Horejsi, (2006) Techniques and Guidelines for Social Work Practice, Allyn and Bacon, London.
2. Bogo, Mario, (2006) Social Work Practice:Concepts, Processes and Interviewing Columbia University press., Indian Reprint Rawat Publications, New Delhi.
3. Dasgupta, S Ed. (1967) Towards a Philosophy of Social Works in India, Popular Book Service, New Delhi
4. Desai, Murli, (2006). Ideologies and social Work: Historical and Contemporary analyses, Rawat Publication, New Delhi
5. Pandya, S. P.2014 Theory and Perspectives in Social Work, Rawat Publications, Jaipur
6. 16 Parker , Jonathan, 2020 Social Work Practice Assessment, Planning, Intervention and Review Sixth Edition, Sage Publications
7. Parrott, L, 2014 Values and Ethics in Social Work Practice Third Edition, Sage Publications
8. Parsons Ruth, J., Jorgensen, J.D. & Hernandez Santos, H. (1994) The Integration of Social Work Practice, California: Books Cole.
9. Reamer, F.G. (1995) Social Work Values and Ethics, New York: Columbia University Press.
10. Roy Sanjay (2011) Introduction to Social Work and practice.

MDC-2

Session: 2023-24			
Part A – Introduction			
Subject	Social Work		
Semester	2nd Semester		
Name of the Course	Direct Methods of Social Work Practice		
Course Code	B23-SWK-203		
Course Type: (CC/MCC/MDC/CC-M/DSEC/VOC/DSE/PC/AEC/VAC)	MDC		
Level of the course (As per Annexure-I	100-199		
Pre-requisite for the course (if any)	Senior Secondary (10+2) or Equivalent in any stream		
Course Learning Outcomes (CLO):	After completing this course, the learner will be able to: • Equip with theoretical knowledge for working with individuals and families & community. • Understand the basic elements of primary methods of social work practice. • Capable to understand the basic assumptions, Process and Principles required for working with individuals and families and community. • Develop an ability to apply primary method in different settings.		
Credits	Theory	Practical	Total
	3	----	3
Contact Hours			
Max. Marks: **Internal Assessment Marks:** 25 **End Term Exam Marks:** 50		**Time: 3 Hrs.**	

Part B- Contents of the Course

Instructions for Paper- Setter

a. Nine questions shall be set in all, two questions from each unit I-IV and Q. No. 1 shall be compulsory question.
b. The compulsory question shall consist of five short answer type questions which shall be set from Unit I-IV.
c. The Candidate shall be required to attempt five questions in all selecting one question each from Unit I-IV and the compulsory question.
d. All questions carry equal marks..

Unit	Topics	Contact Hours
I	• Social Case Work: concept and meaning. • Principles of Social Case Work. • Process of Social Case Work.	12
II	• Basic assumptions of Social Case Work. • Social Group Work: concept and meaning. • Principles of Social Group Work.	11
III	• Basic assumptions of Social Group Work. • Process of Social Group Work. • Community Organization: concept and meaning.	12
IV	• Basic assumptions of Community Organization. • Principles of Community Organization. • Process of Community Organization.	10
V*		

Suggested Evaluation Methods

Internal Assessment:	End Term Examination:
➢ **Theory** • Class Participation: 5 • Seminar/presentation/assignment/quiz/class test etc.:7 • Mid-Term Exam: 13	**50**

Part C-Learning Resources

Recommended Books/e-resources/LMS:

1. Brager,G. and Specht,H.,1969 Community Organisation, New York: Columbia University Press.
2. Chanan, G.2013 Rethinking Community Practice, Rawat
3. Gangrade, K. D. 1971. Community Organization in India, Mumbai; Parkashan, 1971. 6.
4. Gangrade, K. D. 2001. Working with communities at grass root level: Strategies and Programmes, Radha Publications
5. Gilchrist , A and Taylor,M. ,2012 The Short Guide to Community Development, Rawat Publication, New Delhi .
6. Karamer, R.M. & Spech,H.1983 Reading in Community Organization Practice
7. Loretta Pyles, 2009 Progressive Community Organizing: A Critical Approach for a Globalizing World, Routledge.
8. Lakshmipathi Raju M 2012 Community Organization and Social Action: Social Work Methods and Practices, Regal Publications, N. Delhi
9. Mishra, P.D., 1985. Samajik Vijyaktik Sewa Karya (Hindi) Uttar Pradesh Hindi Sansthan, Lucknow.
10. Pearlman, H.H.2011 Social Case Work : A Problem Solving Process Rawat Publications, Jaipur
11. Perlman, 1957 Social Case Work-A Problem solving Process, Chicago: The University of Chicago Press, V Impression.
12. Pathak, S.H. 1966. Records in Social Case Work, Delhi School of Social Work, Delhi.
13. Pinkus, Helen, 1971. Case Records for Teaching.

CC-M2

Session: 2023-24			
Part A – Introduction			
Subject	Social Work		
Semester	Second		
Name of the Course	Social Problems and Social Work Intervention		
Course Code	B23-SWK-204		
Course Type: (CC/MCC/MDC/CC-M/DSEC/VOC/DSE/PC/AEC/VAC)	CC-M		
Level of the course (As per Annexure-I	100-199		
Pre-requisite for the course (if any)	Senior Secondary (10+2) or Equivalent in any stream		
Course Learning Outcomes (CLO):	After completing this course, the learner will be able to: • To understand the concepts in various social concerns and social problems • To understand the factors and dynamics of the social concerns • To develop the critical ability in assessment and analysis of the factors of Social Problems. • To develop ability to for intervention in social and emerging problems.		
Credits	Theory	Practical	Total
	2	--	2
Contact Hours	2	--	2
Internal Assessment Marks:	15	--	15
End Term Exam Marks:	35	--	35
Part B- Contents of the Course			
Instructions for Paper- Setter **(y) Nine questions shall be set in all, two questions from each unit I-IV and Q. No. 1 shall be compulsory question.** **(z) The compulsory question shall consist of five short answer type questions which shall be set from Unit I-IV.**			

(aa) The Candidate shall be required to attempt five questions in all selecting one question each from Unit I-IV and the compulsory question. **(bb) All questions carry equal marks.**		
Unit	**Topics**	**Contact Hours**
I	• Social Problem: Meaning and Concept. • Major Social Problems in India: Unemployment, Corruption, Poverty, Child Labour their causes, effects and suggestions Govt. Measures to eradicate the Problem.	8
II	• Emerging Social Problems: Drug abuse, Alcoholism, HIV/AIDS, Juvenile Delinquency causes effects and remedies.	7
III	• Environment Pollution: meaning & concept, Land Pollution, Water Pollution, Air Pollution, Noise Pollution causes, effects, prevention and role of social worker.	7
IV	• Social Disorganisation ; Concept, Symptoms, Factors, Types and Causes • Social deviation; Meaning, definition and scope/fields of social deviation. • Role of Social Worker in dealing with these problems	8
V*		
Suggested Evaluation Methods		
Internal Assessment: ➢ **Theory** • Class Participation: 4 • Seminar/presentation/assignment/quiz/class test etc.:4 • Mid-Term Exam: 7		**End Term Examination: 35**
Part C-Learning Resources		

Recommended Books/e-resources/LMS:

1. Ahuja, Ram. ,2014	Social Problems in India 3rd Ed. , Rawat Publications, Jaipur
2.Balgopal , P .R and Bhatt Sanjai, (2013)	Social work Response to Social realities, New Royal Book company, Lucknow
3.Bhushan, V. & Sachdeva, D.R., 2006.	An Introduction to Sociology, Allahabad: Kitab Mahal.
4. Kinch, John, W.	Social Problems in the World Today, Addison-Wesley Pub. Co. California, London.
5. Madan, G.R. 1994.	Indian Social Problems, VOl. I and Vol. II Allied Pub. Pvt. Ltc., New Delhi.
6. Parsad, B.K., 2004	Social Problems in India, Anmol Publications, New Delhi.
7. Rawat,H.K.2013	Contemporary Sociology, Rawat Publications, Jaipur
8. Ram Ahuja, 1999.	Society in India, Rawat Publications, Jaipur.
9. Sharma,P.D. 1995	Ecology and Environment, New Delhi: Rastogi Publishers.
10. Uberoi, N.K., 2009	Environmental Studies, Excel Publications, New Delhi.

3rd Semester

CC-3/MCC-4

Session: 2023-24			
Part A – Introduction			
Subject	Social Work		
Semester	3rd Semester		
Name of the Course	Working with Individuals & Groups		
Course Code	B23-SWK-301		
Course Type: (CC/MCC/MDC/CC-M/DSEC/VOC/DSE/PC/AEC/VAC)	MCC		
Level of the course (As per Annexure-I	200-299		
Pre-requisite for the course (if any)	Senior Secondary (10+2) or Equivalent in any stream		
Course Learning Outcomes (CLO):	After completing this course, the learner will be able to: • To equip students with theoretical knowledge for working with individual and groups. • Capable to understand the methodology, tools, techniques and skills required for working with individuals and families. • To develop understanding about the historical development of primary methods. • Understand the process of social case work practice and stages of social group work that facilitates the same.		
Credits	Theory	Practical	Total
	3	1	4
Contact Hours	3	2	5
Internal Assessment Marks:	20	10	30
End Term Exam Marks:	50	20	70
Part B- Contents of the Course			

Instructions for Paper- Setter

a. **Nine questions shall be set in all, two questions from each unit I-IV and Q. No. 1 shall be compulsory question.**
b. **The compulsory question shall consist of five short answer type questions which shall be set from Unit I-IV.**
c. **The Candidate shall be required to attempt five questions in all selecting one question each from Unit I-IV and the compulsory question.**
d. **All questions carry equal marks.**

Unit	Topics	Contact Hours
I	• Social Case Work: concept and meaning • Basic assumptions of Social Case Work • Principles of Social Case Work.	12
II	• Historical development of Social Case Work • Process of Social Case Work • Component of Social Case Work	12
III	• Group- meaning, definition, characteristics and Types • Social Group Work: meaning and basic assumptions.	12
IV	• Historical development of social group work. • Principles of social group work. • Stages of social group work	12
V*	Under Field Practicum Component the students will undertake Field Survey of rural area under supervision of a teacher to investigate socio-economic conditions/problems of people and submit a report to the Department of Social Work of the concern college.	12

Suggested Evaluation Methods

Internal Assessment:	**End Term Examination:**
➢ **Theory** • Class Participation: 05 • Seminar/presentation/assignment/quiz/class test etc.:05 • Mid-Term Exam: 10	**50**

➢ **Practicum** • Field Survey : 05 • Field Report: 05	**20 (Viva Voice)**

Part C-Learning Resources

Recommended Books/e-resources/LMS:

1. Alissi, A.S.1990 Perspectives on Social Group Work Practice: A Book of Readings, New York, The Free Press.

2. Balgopal, P.R. and Vassil. 1983 Groups in social Work- An Ecological Perspective, New York, Macmillan Publishing Co. Inc.

3. Bhatt, P.M.1970 Records of Group Work Practice in India, faculty of Social Work, M.S. University, Baroda.

4. Brandler S & Roman CP 1999 Group work, Skills and Strategies for Effective Interventions, New York. The Haworth Press.

5. Brandler S & Roman CP 1991. Group work, Skills and Strategies for Effective Interventions, New York. The Haworth Press.

6. Capuzzi,D.et.al.2010 Introduction to Group Work, Rawat Publications, Jaipur

7. Conyne, R.K& Diederich, l.T, 2013 What Is Group Work?, Sage Publications

8. Deol,Mark.2010 Using Groupwork, Rawat Publications, Jaipur

9. Garland, J.A.(Ed) 1992. Group Work Reaching Out: People, Places and Power, New York, The Haworth Press.

10. Garwin, C 1987. Contemporary Group Work, New York PrenticeHall Inc.

11. Pathak, S.H. 1966. Records in Social Case Work, Delhi School of Social Work, Delhi.

12. Pinkus, Helen, 1971. Case Records for Teaching Purposes, Faculty as social Work, M.S. University, Baroda.

13. Roberts R.W. Nee, R.H. 1972 Theories of Social Case Work, the Uni. Of Chicago Press, Chicago, London.

14. Reid, W.K. & Anne W. Shyne, 1969 Brief and Extended Case Work: New York: Columbia Uni. Press.

15. Scott Briar and Henry Miller, 1971 Problems and issues in social Case Work: Columbia University Press, New York.

MCC-5

Session: 2023-24			
Part A – Introduction			
Subject	Social Work		
Semester	Third		
Name of the Course	Human Growth and Development		
Course Code	B23-SWK-302		
Course Type: (CC/MCC/MDC/CC-M/DSEC/VOC/DSE/PC/AEC/VAC)	MCC		
Level of the course (As per Annexure-I	200-299		
Pre-requisite for the course (if any)	Senior Secondary (10+2) or Equivalent in any stream		
Course Learning Outcomes(CLO):	After completing this course, the learner will be able to: 1. Develop understanding of human behaviour and various factors influencing growth and development of human. 2. Understand the various stages of human growth and development in the life span of individual. 3. Understand major problems related to human behaviour and alternate solutions. 4. Learn to apply psychological insight and approaches in social work practice.		
Credits	Theory	Practical	Total
	4	-	4
Contact Hours	4	--	4
Internal Assessment Marks:	30	--	30
End Term Exam Marks:	70	--	70

Part B- Contents of the Course

Instructions for Paper- Setter

(cc) Nine questions shall be set in all, two questions from each unit I-IV and Q. No. 1 shall be compulsory question.

(dd) The compulsory question shall consist of five short answer type questions which shall be set one each from Unit I-IV.

(ee) The Candidate shall be required to attempt five questions in all selecting one question each from Unit I-IV and the compulsory question.

(ff) Each question shall carry equal marks.

Unit	Topics	Contact Hours
I	• Human growth and development: Concept and Principles • Difference between growth and development • Biological and social influences on human growth and behaviour	**13**
II	• Socialization: Concept and Agencies of Socialization • Understanding of human life span, Indian concept of life span	**14**
III	• Stages of development: Characteristics, needs, problems, and tasks during developmental stages of infancy, babyhood, child hood (early & late),	**16**
IV	• Stages of development: Characteristics, needs, problems, and tasks during developmental stages of Puberty and adolescence, Adult hood (early, middle) and old age	**17**
V*		

Suggested Evaluation Methods

Internal Assessment: ➢ **Theory** • Class Participation: 5 • Seminar/presentation/assignment/quiz/class test etc.:5+5 • Mid-Term Exam: 15	**End Term Examination:** **70**

Part C-Learning Resources

Recommended Books/e-resources/LMS:

1. Beckett,C&Taylor,H, 2019	Human Growth and Development, FOURTH EDITION ,Sage Publications
2. Erikson, E.H. 1963.	Childhood and Society, New York W.W. Norton and Co.
3. Frank s. Freeman, 1965.	Theory and Practice of Psychological testing. Oxford & IBH Publishing Co., New Delhi.
4. Hall. C.S. and Lindzey, G. 1998. & Campbell. J. B	Theories of Personality, John wiley and Sons Inc. New York
5. Hilgard Ernest R 1979	Atkinson, Rital, Introduction to Psychology, Harcourt Brace Jovanovich inc. New York, 1979.
6. Hurock, Elizabeth B. 1978	Chid Development, McGraw Hil Book Company, London
7. Hurlock, E.A. 1994.	Developmental Psychology: life- span Approach, Tata McGraw Hill, New Delhi.
8. Hurlock E.B., 1992.	Child Growth and Development, Tata McGraw Hill, New Delhi.
9. Hurlock E.B., 1992	Personality Development, McGraw Hill, New Delhi.
10. Ingleby,E,2020	Applied Psychology for Social Work SECOND EDITION, Sage Publications
11. Koenig,T, Spano.R& Thompson, 2019	Human Behavior Theory for Social Work Practice, Sage Publications
12. Kuppuswamy, B., 1980.	An Introduction to Social Psychology, Mumbai: Media Promoters and Pub. Pvt. Ltd.
13. Loid Dodge Farnald 2007	Psychology- Six Perspective, Sage Publication New Delhi,
14. Margarete, Parrish.,2012	Social Work Perspectives on Human behaviour, Rawat Publications, Jaipur
15. Rathus Spencer A. 2006	Psychology: Conecpts and Connections, Wandsworth Publishing Company.

16. Robert A. Baron, 2003.	Social Psychology, Prentice Hall of India, New Delhi.
17. Robinson, Lena, 1995	Psychology for social workers, Routledge, London
18. Sanrouck, john W.2007.	A Topical Approach to life- Span Development. Tata McGraw Hill, New Delhi.
19. Smith, Lesile 2006	Voneche, J, Jacques, Norms in Human Development, Cambidge University Press.
20. Specht, J . (2017)	Personality development across the lifespan. 1st Edition. London: Academic Press
21. Walker ,Janet& Horner, Nigel ,2020	Social Work and Human Development SIXTH EDITION, UK: University of Lincoln, Sage Publication

MDC-3

Session: 2023-24	
Part A – Introduction	
Subject	Social Work
Semester	3rd Semester
Name of the Course	Indirect Methods of Social Work Practice

Course Code	B23-SWK-303		
Course Type: (CC/MCC/MDC/CC-M/DSEC/VOC/DSE/PC/AEC/VAC)	MDC		
Level of the course (As per Annexure-I	200-299		
Pre-requisite for the course (if any)	Senior Secondary (10+2) or Equivalent in any stream		
Course Learning Outcomes (CLO):	After completing this course, the learner will be able to: • Understand the administrative mechanism and processes in the area of welfare and development. • Develop an ability to see the linkages between practice, research, theory and their role in enriching one another. • Familiarize with the nature of social work research and its application in the study of social phenomena. • Understand the conceptual framework and process of social action.		
Credits	Theory	Practical	Total
	3	---	3
Contact Hours	3	--	3
Internal Assessment Marks:	25	--	25
End Term Exam Marks:	50	--	50

Part B- Contents of the Course

Instructions for Paper- Setter

a. **Nine questions shall be set in all, two questions from each unit I-IV and Q. No. 1 shall be compulsory question.**
b. **The compulsory question shall consist of five short answer type questions which shall be set from Unit I-IV.**
c. **The Candidate shall be required to attempt five questions in all selecting one question each from Unit I-IV and the compulsory question.**
d. **All questions carry equal marks.**

Unit	Topics	Contact Hours
I	• Social Welfare Administration: Concept and meaning. • Difference between social welfare administration, social administration & public administration. • Principles and Functions of Social Welfare	12

	Administration..	
II	• Social Research: concept and meaning. • Social Work Research: concept, meaning & importance. • Types of Social Work Research	12
III	• Significance of social work research. • Steps of social work research. • Difference between social research and social work research.	10
IV	• Social Action: concept, meaning and Objectives. • Principles of social action. • Process of social action.	11
V*		

Suggested Evaluation Methods

Internal Assessment: ➢ **Theory** • Class Participation: 5 • Seminar/presentation/assignment/quiz/class test etc.:7 • Mid-Term Exam: 13	**End Term Examination:** **50**

Part C-Learning Resources

Recommended Books/e-resources/LMS:

1. Bhattacharya, Social Work Administration and Development, Rawat Sanjai, 2006 Publications, Jaipur.

2. Choudhari, D. Paul. Social Welfare Administration, Delhi, Atma Ram and Sons. 1983

3. Dubey, S.N. 1973. Administration of Social Welfare Programme in India, Somaiya Publications, Co. Ltd. Bombay.

4. Goel, S.L. and Social Welfare Administration:Theory and Practice, Vol-I,

5. Jain, R.K. 1988 and II, New Delhi, Deep and Deep Publications.

6. Babbie, E. 2015 Basics of Social Research, Rawat Publications, Jaipur.

7. Babbie, E .2014 Practice of Social Research, Rawat Publications, Jaipur

8. Bajpai S.R. 1976 Methods of Social survey and Research, Kitab Ghar, Kanpur
9. Bhattacharyya, D.K., 2009 Research Methodology, Excel Publications,New Delhi.
10. Ross M.G.1955 Community Organization: Theory, Principles and Practice, New York: Harper and Brothers.

4th Semester

CC-4/MCC-6

Session: 2023-24			
Part A – Introduction			
Subject	Social Work		
Semester	4th Semester		
Name of the Course	Working with Communities		
Course Code	B23-SWK-401		
Course Type: (CC/MCC/MDC/CC-M/DSEC/VOC/DSE/PC/AEC/VAC)	MCC		
Level of the course (As per Annexure-I	200-299		
Pre-requisite for the course (if any)	Senior Secondary (10+2) or Equivalent in any stream		
Course Learning Outcomes (CLO):	After completing this course, the learner will be able to: 1. To develop an understanding of community organization as a method of social work. 2. Aware about the historical development of community organization. 3. Enhance understanding of principles, strategies and steps involved in working with communities. 4. Develop necessary skills to practice social work in an ethical & professional manner.		
Credits	Theory	Practical	Total
	3	1	4
Contact Hours	3	2	5
Internal Assessment Marks:	20	10	30
End Term Exam Marks:	50	20	70

Part B- Contents of the Course

Instructions for Paper- Setter

a. **Nine questions shall be set in all, two questions from each unit I-IV and Q. No. 1 shall be compulsory question.**
b. **The compulsory question shall consist of five short answer type questions which shall be set one each from Unit I-IV.**
c. **The Candidate shall be required to attempt five questions in all selecting one question each from Unit I-IV and the compulsory question.**
d. **All questions carry equal marks.**

Unit	Topics	Contact Hours
I	• Concept of community: Meaning, definitions and elements • Types of community: Urban, rural, tribal, virtual and functional communities. • Community power structure	12
II	• Community organization: Concepts, Nature and Characteristics • Assumptions of community organization • Principles of community organization	12
III	• Historical development of Community Organization • Steps of community organization • Strategies of community Organization	12
IV	• Community development: Concept, objectives and basic elements • Difference between Community work, Community development and Community organization. • Brief introduction of the schemes and programmes of community development	12
V*	Under Field Practicum Component the students will undertake Field Survey of urban/slum community under supervision of a teacher to investigate socio-economic conditions/problems of people and submit a report to the Department of Social Work of the concern college.	12

Suggested Evaluation Methods

Internal Assessment: ➢ **Theory** • Class Participation: 05 • Seminar/presentation/assignment/quiz/class test etc.:05 • Mid-Term Exam: 10	**End Term Examination:** **50**
➢ **Practicum** • Field Survey : 05 • Field Report: 05	**20 (Viva Voce)**

Part C-Learning Resources

Recommended Books/e-resources/LMS:

1. Brager,G. and Specht,H.,1969 Community Organisation,New York: Columbia University Press.
2. Chanan, G.2013 Rethinking Community Practice, Rawat
3. Gangrade, K. D. 1971. Community Organization in India, Mumbai; Parkashan, 1971. 6.
4. Gangrade, K. D. 2001. Working with communities at grass root level: Strategies and Programmes, Radha Publications
5. Gilchrist, A and Taylor,M.,2012 The Short Guide to Community Development, Rawat Publication, New Delhi .
6. Karamer, R.M. & Spech,H.1983 Reading in Community Organization Practice
7. Loretta Pyles, 2009 Progressive Community Organizing: A Critical Approach for a Globalizing World, Routledge.
8. Lakshmipathi Raju M 2012 Community Organization and Social Action: Social Work Methods and Practices, Regal Publications, N. Delhi

MCC-7

Part A – Introduction

Subject	Social Work		
Semester	Fourth		
Name of the Course	Social Justice and Social Legislation		
Course Code	**B23-SWK-402**		
Course Type: (CC/MCC/MDC/CC-M/DSEC/VOC/DSE/PC/AEC/VAC)	MCC		
Level of the course (As per Annexure-I	200-299		
Pre-requisite for the course (if any)	Senior Secondary (10+2) or Equivalent in any stream		
Course Learning Outcomes(CLO):	After completing this course, the learner will be able to: 1. Understand the conceptive framework of social justice and social legislation pertaining to Indian society. 2. Understand the basic elements of social security, its methods, programmes, scope and problems. 3. Enhance analytical understanding of the human rights, social legislations and their implications. 4. Develop Skills for Social Work Intervention with respect to social justice and human rights.		
Credits	Theory	Practical	Total
	4	-	4
Contact Hours	4	--	4
Internal Assessment Marks:	30	--	30
End Term Exam Marks:	70	--	70

Part B- Contents of the Course

Instructions for Paper- Setter

(gg) Nine questions shall be set in all, two questions from each unit I-IV and Q. No. 1 shall be compulsory question.

(hh) The compulsory question shall consist of five short answer type questions which shall be set from Unit I-IV.

(ii) The Candidate shall be required to attempt five questions in all selecting one question each from Unit I-IV and the compulsory question.

(jj) Each question shall carry equal marks.

Unit	Topics	Contact Hours

I	• Social Justice- Concept, meaning and scope. • Issues of social Justice in Indian society with reference to inequality and socio- political structure. • Social justice and social work.	**14**
II	• Social security: concept, meaning, objectives and scope. • Methods of social security: social assistance programme in India especially in relation to old age, unemployment, widowhood and disability. • Social insurance- concept, characteristics and significance.	**16**
III	• Human rights: concept, characteristics and its classification. • U. N. Declaration of Human Rights, 1948 • Legal Aid- concept, need, scheme and problems.	**14**
IV	• Social Legislations: Meaning and scope • Implications of Social Legislations in social work practice • Criminal justice system – nature, agencies, prosecutions, judiciary and correction	**16**
V*		

Suggested Evaluation Methods

Internal Assessment: ➢ **Theory** • Class Participation: 5 • Seminar/presentation/assignment/quiz/class test etc.:5+5 • Mid-Term Exam: 15	**End Term Examination:** **70**

Part C-Learning Resources

Recommended Books/e-resources/LMS:

1. Bagchi, S.S.2015 Human Rights and the Third World, Rawat Publications, Jaipur

2. Buxi Uperdra (2011) Perspectives in Development; Law, the Crises of Indian Legal System, Vikas Publication, New Delhi

3. Donnely, Jack .2014 Universal Human Rights in Theory and Practice,Rawat Publications, Jaipur

4. Gangrade, K.D.(1978.) Social Legislation In India Vol. 1 & 2, ConceptPublishing Co. New Delhi.

5. Gupta, H.N. (1986) Social Security Legislation for Labour in India, Deep and Deep Publication, Delhi.

6. Hallen G.C. (1967) Dynamics of social Security, RastogiPublication, Meerut.

7. Social Institute (1992) Legal Education Series(nol 34), Indian Social Institute, Delhi.

8.Iyer,Krishna V.K.(1987) Social Justice; Sunset or Dawn, Lucknow, Eastern Book Company.

9. Lyer V.R.K. (1980) Some Half Hidden Aspects of Indian Social Justice, Eastern Book Co. Lucknow.

10. Lyer V.R.K. (1981) Justice in Words and Justice in Deed for Depressed Classes, Indian Social Institution, New Delhi.

11. Sharma, A.M.(1988). Aspects of labour Welfare & Social Security, Himalaya Publishing House, Mumbai.

12. Singh, A. K. (2014) Human rights and social justice. VL Media Solution India

13. T.K.N. (1979) Gandhi and Social Change, Rawat Publications, Jaipur.

MCC-8

Session: 2023-24			
Part A – Introduction			
Subject	Social Work		
Semester	Fourth		
Name of the Course	Emerging Areas of Social Work Practice		
Course Code	B23-SWK-403		
Course Type: (CC/MCC/MDC/CC-M/DSEC/VOC/DSE/PC/AEC/VAC)	MCC		
Level of the course (As per Annexure-I	200-299		
Pre-requisite for the course (if any)	Senior Secondary (10+2) or Equivalent in any stream		
Course Learning Outcomes(CLO):	After completing this course, the learner will be able to: 1. Understand conceptual framework and theoretical approaches of aged, disabled, livelihood, environment sustainability and disaster management. 2. Understand social work practice with aged and disabled, livelihood promotion and disaster management. 3. Gain critically understanding of various programmes and challenges related to livelihood promotion. 4. Develop the skill to promote and implement theoretical knowledge through Social Work Intervention.		
Credits	Theory	Practical	Total
	4	-	4
Contact Hours	4	--	4
Internal Assessment Marks:	30	--	30
End Term Exam Marks:	70	--	70

Part B- Contents of the Course

Instructions for Paper- Setter

a. **Nine questions shall be set in all, two questions from each unit I-IV and Q. No. 1 shall be compulsory question.**
b. **The compulsory question shall consist of five short answer type questions which shall be set from Unit I-IV.**
c. **The Candidate shall be required to attempt five questions in all selecting one question each from Unit I-IV and the compulsory question.**
d. **Each question shall carry equal marks.**

Unit	Topics	Contact Hours
I	• The aged: concept, needs and problems of the aged. • Role of family in care and protection of the aged • Social work intervention with the aged.	**14**
II	• Concept of impairment, disability and handicap. • Needs and problems of the disabled at different life stages • Family's reactions towards disability in their disabled member and its role in their care and protection.	**15**
III	• Livelihood: Meaning, Definition and Indicators • Livelihood Programmes in India • Challenges in Livelihood Promotion	**17**
IV	• Environment: meaning, nature and components. • Disaster: concept, meaning and types • Disaster management: concept, Pre-disaster prevention and mitigation of disasters.	**14**
V*		

Suggested Evaluation Methods

Internal Assessment: ➢ **Theory** • Class Participation: 5 • Seminar/presentation/assignment/quiz/class test etc.:5+5 • Mid-Term Exam: 15	**End Term Examination:** **70**

Part C-Learning Resources

Recommended Books/e-resources/LMS:

1. Berkman, B. (2015). Social work in Health and aging, Rawat Publications, Jaipur.
2. Binstock, R.H. and Shahas, E. (1976): Handbook of Aging and the social Sciences, New York: Van Nostrand Reinhold Col.
3. Blacher, J.(ed), (1984): Severely Handicapped Young children and their families, New york: Academic Press.
4. Blodgett, Harriet, E. (1971): Mentally Retarded Children: what parents and others should know,Minneapolis ,Uni. of Minnesota Press.
5. Crawford, K., (2004): Social Work with older people, Jaipur, Rawat Publications.
6. Dominelli,l,(2018) Green Social Work: From Environmental Crises to Environmental Justice, New Delhi: Rawat Publications.
7. Fritz, C. E. (1968) : "Disaster." Sills, D. (ed) International Encyclopedia of Social Science. Vol. 4. U.S.A.The Macmillan Company and the Free Press.202-208.
8. Grey, M.,J., & Hetherington, T. Coates,(2013) : Environmental social work. New York: Rutledge.
9. Grossman, L. (1973) : Train Crash : Social Work and Disaster Services. Social Work. Vol.18, No.5,38-44.
10. Joint Assistant Centre.(1980) : Natural Disaster. New Delhi: Adhyatma Sadhana Kendra.
11. Mani Ram,(1988): Physically Handicapped, India ,New Delhi: Ashish Publishing House.
12. Pandey,R.K, (2020). Disaster Management in India, Meerut: Chaudhary Charan Singh University, Sage Publications.
13. Perpetua Katepa, (2005): Sustainable Livelihood Approaches in Operation: A Gender Perspective, International Associates for Development.
14. Phansalkar,(2003) : Livelihoods: Promoting Livelihood Enhancement, Mumbai: Sir Dorabji Tata Trust.
15. Vijay Mahajan, Sankar Datta and Gitali Thakur, (2001) : A Resource Book for Livelihood Promotion. Hyderabad BASIX.
16. Wadia, A.R.(1963): Handicapped Child, Bombay: Tata Institute of Social Sciences.

DSE-1(A)

Part A – Introduction

Subject	Social Work		
Semester	Four		
Name of the Course	Gender and Social Work		
Course Code	**B23-SWK-404**		
Course Type: (CC/MCC/MDC/CC-M/DSEC/VOC/DSE/PC/AEC/VAC)	DSE		
Level of the course (As per Annexure-I	200-299		
Pre-requisite for the course (if any)	Senior Secondary (10+2) or Equivalent in any stream		
Course Learning Outcomes(CLO):	After completing this course, the learner will be able to: 1. Understanding the conceptual framework of gender and related concerns. 2. To develop understanding about the govt. machinery, their structure, role and functions the welfare of gender. 3. To gain capacity to critically analyse the various policies and progresses related to gender. 4. To sharpen the skill to promote and implement theoretical knowledge through Social Work Intervention.		
Credits	Theory	Practical	Total
	4	-	4
Contact Hours	4	-	4
Internal Assessment Marks:	30	-	30
End Term Exam Marks:	70	-	70

Part B- Contents of the Course

Instructions for Paper- Setter

a. **Nine questions shall be set in all, two questions from each unit I-IV and Q. No. 1 shall be compulsory question.**
b. **The compulsory question shall consist of five short answer type questions which shall be set from Unit I-IV.**
c. **The Candidate shall be required to attempt five questions in all selecting one question each from Unit I-IV and the compulsory question.**
d. **Each question shall carry equal marks.**

Unit	Topics	Contact Hours
I	• Definitions and Concepts: gender and Sex • Types of gender • Gender stratification in traditional and modern societies: Gender Stereotyping, Gender Discrimination	**13**
II	• Major Feminist thoughts: Social and Radical • Gender equality and empowerment. • Gender development index	**15**
III	• Sexual minority: concerns of LGBTQ • Gender mainstreaming: Principles and Strategies	**14**

	• Gender Budgeting	
IV	• National Commission for Women, National Commission for Women: Structure, Role and Functions • State Commission for Women: Structure, Role and Functions • Gender Specific Schemes and Programmes	**18**
V*		

Suggested Evaluation Methods

Internal Assessment: ➢ **Theory** • Class Participation: 5 • Seminar/presentation/assignment/quiz/class test etc.:5+5 • Mid-Term Exam: 15	**End Term Examination:** **70**

Part C-Learning Resources

Recommended Books/e-resources/LMS:

1. Andal, N. (2002). Women in Indian Society: Options and Constraints. New Delhi: Rawat Publications.
2. Bansal, D. K. (2006) Gender Violence. New Delhi: Mahaveer and Sons.
3. Basu, A. &Jefferey, P. (2004). Appropriating Gender. London: Routledge.
4. Chaudri, M. (2003) Feminisms in India. New Delhi: Kali for Women.
5. Dube, L. &Palriwala, R. (eds.)(1990). Structures and Strategies: Women, and Family. New Delhi: Sage Publications.
6. Fergusons, C. (ed) (2010) Violent Crime, clinical and implications. California: Sage publications.
7. Holmes, M. (2007). What is Gender. New Delhi, Sage Publications, pp 43-62,71-90
8. Joseph, S. (2005). Social Work Practice and Men Who Have Sex with Men. New Delhi: Sage Publication.
9. Momsen, J. (2009). Gender and Development, London &New York: Routledge
10. Nayar, S. (2010) Violence against Women in South Asian Communities: Issues for Policy and Practice. Delhi: Navyug Books International.
11. Prabhakar, V. (2011) Gender Violence: Women Victims in Man's World. New Delhi: Wisdom Press.
12. Revathi (2009). Laws relating to domestic violence. Hyderabad: Asia Law House.
13. Talwar, R. (1999). The third sex and Human Rights. New Delhi: Gyan Publishing House.

14. Taneja, A. (2005) Gandhi, women and the national movement,1920-1947. New Delhi: Har Anand Publication.
15. Wendt, S & Nicole M. (2016). Contemporary Feminisms in Social Work Practice, New York: Routledge.

DSE-1(B)

1443

Session: 2023-24

Part A – Introduction

Subject	Social Work		
Semester	Four		
Name of the Course	Social Work with Youth		
Course Code	**B23-SWK-405**		
Course Type: (CC/MCC/MDC/CC-M/DSEC/VOC/DSE/PC/AEC/VAC)	DSE		
Level of the course (As per Annexure-I	200-299		
Pre-requisite for the course (if any)	Senior Secondary (10+2) or Equivalent in any stream		
Course Learning Outcomes(CLO):	After completing this course, the learner will be able to: 1) Understand conceptual framework and demographic profile of youth in international and Indian context. 2) To understand multifaceted needs, issues and problems of youth. 3) Gain understanding about the policy and programmes related to youth. 4) Develop skills to Practice Social Work Knowledge with youth.		
Credits	Theory	Practical	Total
	4	-	4
Contact Hours	4	-	4
Internal Assessment Marks:	30	-	30
End Term Exam Marks:	70	-	70

Part B- Contents of the Course

Instructions for Paper- Setter

e. **Nine questions shall be set in all, two questions from each unit I-IV and Q. No. 1 shall be compulsory question.**
f. **The compulsory question shall consist of five short answer type questions which shall be set from Unit I-IV.**
g. **The Candidate shall be required to attempt five questions in all selecting one question each from Unit I-IV and the compulsory question.**
h. **Each question shall carry equal marks.**

Unit	Topics	Contact Hours
I	Concept and definition of youth Demographic profile of youth: International and Indian context Modernization and its impact on youth	**14**
II	Problems of youth: emotional, interpersonal and intergenerational Needs and Problems of urban and rural youth	**15**

	Youth unrest: Meaning, Causes and Impact	
III	• National Youth Policy • National Youth Welfare Programmes • Role of the youth in Nation Building	**17**
IV	• Youth as an agent of social change • Importance and Role of youth leadership • Social work interventions with youth	**14**
V*		

Suggested Evaluation Methods

Internal Assessment:	**End Term Examination:**
➢ **Theory** • Class Participation: 5 • Seminar/presentation/assignment/quiz/class test etc.:5+5 • Mid-Term Exam: 15	**70**

Part C-Learning Resources

Recommended Books/e-resources/LMS:

1) Brown, B. B., Larson, R. W., &Saraswathi, T. S. (Eds.). (2002). The world's youth. Adolescence in eight regions of the globe. Cambridge, UK: Cambridge University Press.
2) Erikson, E.H. 1977Youth, Change and Challenge, Calcutta: Firma KLM Pvt. Ltd.
3) Fuchs, E.(ed)(1976) Youth in changing World: Cross-cultural Perspective on Youth, New York: Mouton the Hague.
4) Gore, M.S. (1977)Indian Youth: Process of Socialization, Delhi: Vishwa Yuva Kendra.
5) Havighurst, R. J (1975) Youth; Chicago: University of Chicago Press.
6) John, V.V. 1974.Youth and National Goals, New Delhi: VishwaYuva Kendra,
7) National Youth Policy (2014), Ministry of youth affairs & sports, Govt. of India, New Delhi.
8) Ross, A. D. (1969). Student Unrest in India- A Comparative Approach, McGill, London: Queen‟s university press.
9) Sachdeva, D.R. (1993). Social Welfare Administration in India. Allahabad: Kitab Mahal
10) United Nations (UN) (2018). Youth and the 2030 Agenda for Sustainable Development. Retrieved on 07thJune, 2023 from https://www.un.org/development/desa/youth/worldyouth-report/wyr2018.html

DEPARTMENT OF SOCIAL WORK
KURUKSHETRA UNIVERSITY, KURUKSHETRA
(Established by the State Legislature Act XII of 1956)
('A+' Grade NAAC Accredited)

Curriculum and Credit Framework under UG Programme

As per NEP 2020 (w.e.f. 2023-24)

Scheme and Syllabus of Value Added Courses(VAC)

Semester	Course	Course Code	Nomenclature of course		Credits	Contact Hours	Internal Marks	External Marks	Total	Duration of Exam (Hrs)
	VAC-3	B23-VAC-323	National Health Programmes	Theory	2	2	15	35	50	3 hrs.
	VAC	B23-VAC-324	Gender Sensitization	Theory	2	2	15	35	50	3 hrs.

NATIONAL HEALTH PROGRAMMES

VAC-3

Session: 2023-24			
Part A – Introduction			
Subject	Value Added Course		
Semester			
Name of the Course	National Health Programmes		
Course Code	B23-VAC-323		
Course Type: (CC/MCC/MDC/CC-M/DSEC/VOC/DSE/PC/AEC/VAC)	VAC		
Level of the course (As per Annexure-I	100-199		
Pre-requisite for the course (ifany)	Senior Secondary (10+2) or Equivalent in any stream		
CourseLearningOutcomes(CLO):	After completing this course, the learner will be able to: 1. Understand the changing concept of health and hygiene as an aspect of social development. 2. Understand basic common ailments, diseases caused by virus and bacteria affecting common people. 3. Gain understanding about national health programs that have been designed for Communicable and non-communicable disease. 4. Develop a critical perspective of healthcare services and programmes in context of health scenario in the country		
Credits	Theory	Practical	Total
	2	-	2
Contact Hours	2 Hours	-	-

Max. Marks: 50 **Internal Assessment Marks: 15** **End Term Exam Marks: 35**	**Time: 3 Hrs.**

Part B – Contents of the Course

Instructions for Paper- Setter

(a) Nine questions shall be set in all, two questions from each unit I-IV and Q. No. 1 shall be compulsory question.

(b) The compulsory question shall consist of four objective type questions which shall be set one each from Unit I-IV.

(c) The Candidate shall be required to attempt five questions in all selecting one question each from Unit I-IV and the compulsory question.

(d) Each question shall carry equal marks.

Unit	Topics	Contact Hours
I	• Health-concept and nature. • Hygiene: personal and environmental, need and importance. • PM-Ayushman Bharat Health Mission. • National Program of Health Care for the Elderly (NPHCE).	**7**
II	• Diseases caused by parasites: scabies, malaria and intestinal worms. • Diseases caused by bacteria: symptoms, causes, prevention and control of whooping cough, diphtheria, typhoid, cholera and Tuberculosis. • Programmes for controlling communicable diseases and role of IEC (Information, Education and Communication).	**9**
III	• Sexually Transmitted Diseases, HIV and AIDS. • Cancer: types, causes and treatment. • National AIDS and STD Control Programme. • National Cancer Control Programme.	**7**

IV	• Common diseases of childhood: causes, symptoms, prevention and control of diarrhea, dysentery, common cold, jaundice. • Maternal and child health services. • National Health Mission (NHM)-objectives, progress and problems. • Primary Health Care: organization and functions.	**9**
V*		

Suggested Evaluation Methods

Internal Assessment: ➢ **Theory** • Class Participation: **04 Marks** • Seminar/presentation/assignment/quiz/class test etc.: **04 Marks** • Mid-Term Exam: **07 Marks**	**End Term Examination: 35 Marks**

PartC-Learning Resources

Recommended Books/e-resources/LMS:

1. Allen. K.M&Spitzer, W.J ,2015 Social Work Practice in Health care Advanced Approaches and Emerging Trends, Sage Publication.
2. Banarjee, G.R.,1950 Social Service Department in Hospital itsOrganization and Functions, Mumbai; Tata Instituteof social Sciences.
3. Bartalatt, Harriet M.1961. Social Work Practice in the Health Field, NewYork:National Association of Social Work.
4. Bartalatt, Harriet; M. 1961. Social Work Practice in the Health Field, NewYork; National association of Social Workers.
5. Caplan, Gerald, 1961. An Approach to Community Mental Health,Grune and Stratton.
6. Codey, Carol H.,1951. Social Aspects of Illness, Philadelphia &London: W.B. Sounders Co.
7. Codey, Control h., 1951. Social Aspects to Illness, Philadelphia & London;W.D. Saunders

Co.

8. Doyal, Lestely and Pennell, Imogen, 1978. Health, Medicine and Underdevelopment,Economic & Political Weekly, Vol. XI, 31-33,August, Special Number.
9. Goel, Rajneesh, Community Health Care, Deep and Deep Pub.2002. New Delhi.
10. Goel, S.L.2004 Health Care Management and Administration,Deep and Deep Publication, New Delhi.
11. Goel, S.L.2004 Health Care Organization and Structure.Deep and Deep Publication, New Delhi.
12. Goel, S.L.2004 Health Care Policies and Programmes.Deep and Deep Publication, New Delhi.
13. Hunter, D.J. and Perkins, N., Partnership Working in Public Health, Rawat2014 Publications, Jaipur
14. K.Park, (2005) Textbook of Preventive and Social Medicine, Jabalpur: M/sBanarsidas Bhonot.
15. Khandekar, Mandakini 1987 The Social Dimensions of Child Nutrition amongthe Economically Disadvantaged in GreaterMumbai.
16. Naik, J.P., 1977. An Alternative System of Health Care Services inIndia, Some Proposals, Allied Publishers. Pvt. Ltd.
17. Rao, Dr. K.N., 1969. Health Services Public Health in Encyclopedia ofSocial Work in India, Vol. 1, India: PublicationDivn.

Gender Sensitization

Session: 2023-24			
Part A - Introduction			
Subject	Value Added Course		
Semester			
Name of the Course	Gender Sensitization		
Course Code	B23-VAC-324		
Course Type: (CC/MCC/MDC/CC-M/DSEC/VOC/DSE/PC/AEC/VAC)	Value Added Course		
Level of the course (As per Annexure-I	100-199		
Pre-requisite for the course (if any)	Senior Secondary (10+2) or Equivalent in any stream		
Course Learning Outcomes(CLO):	After completing this course, the learner will be able to: 5. Understand basic concepts and terms of Gender Sensitization. 6. Gain understanding of gender discrimination and gender equality. 7. Analyse contemporary issues related to gender equality. 8. Develop ability to articulate gender issues.		
Credits	Theory	Practical	Total
	2	--	2
Contact Hours	2		
Max. Marks: **Internal Assessment Marks:** **End Term Exam Marks:**	**50** **15** **35**	**Time: 3 Hrs.**	

Part B- Contents of the Course

Instructions for Paper- Setter

(b) Nine questions shall be set in all, two questions from each unit I-IV and Q. No. 1 shall be compulsory question.
(c) The compulsory question shall consist of four objective type questions which shall be set one each from Unit I-IV.
(d) The Candidate shall be required to attempt five questions in all selecting one question each from Unit I-IV and the compulsory question.
(e) Each question shall carry 7 marks.

Unit	Topics	Contact Hours
I	Concept of Sex and Gender, Gender Roles and Stereotypes, Sexual Division of Labour, Gender Relations, Meaning of Patriarchy and Patriarchal Control.	**7**
II	Gender Discrimination and its Indicators, Meaning of Gender Equality and its Need, Status of Women in Haryana and India.	**8**
III	Women's Health and Nutrition, Economic Participation of Women, Declining Sex Ratio, Child Marriage, Crime against Women, Its forms and Reasons.	**7**
IV	Meaning of Empowerment of Women, Need and Strategies of Women Empowerment, Constitutional Rights and Legal Safeguards for Women.	**8**
V*		

Suggested Evaluation Methods

Internal Assessment: ➢ **Theory** • Class Participation: **04 Marks** • Seminar/presentation/assignment/quiz/class test etc.: **04 Marks** • Mid-Term Exam: **07 Marks**	**End Term Examination: 35 Marks**

Part C-Learning Resources

Recommended Books/e-resources/LMS:

Bhasin, Kamala	What is Patriarchy? Kali for Women, New Delhi, 1994
Bhasin, Kamala	Understanding Gender Kali for Women, New Delhi, 2000
Ahlawat, Neerja	Gender Discrimination and Development, Rawat, Jaipur, 2016
Padmavathi, Karve	Empowerment of Women in India, Serial Pub., New Delhi, 2016
Ann Oakley	Gender, Women and Social Science: The Reader, Bristol University Press, Policy Press, 2005
Verma, Arpita	Women's Health and Nutrition, Jaipur, Jawahar Nagar, 2017
Melhotra, Mamta	Crime Against Women, New Delhi, A.P.H., 2015
Saxena, Shobha	Crimes Against Women And Protective Laws. Deep & Deep Publications Pvt. Ltd, New Delhi, 2001,
Ravi, R Venkata Reddy, V. Narayana & Venkataramana, M.	Empowerment of People : Grassroots Strategies And Issues Kanishka Publishers, Distributors, New Delhi. 2004,
Patel, Tulsi.	Sex-Selective Abortion In India. Sage Publication, New Delhi, 2007,

*Applicable for courses having practical component.

DEPARTMENT OF HINDI

KURUKSHETRA UNIVERSITY
KURUKSHETRA

(Established by the State Legislature Act XII of 1956)
(A+ Grade, NAAC Accredited)

Syllabus for Subject: Hindi for UG Progamme in accordance to NEP- 2020 (Multiple Entry-Exit, Internship & Choice Based Credit System-LOCF to be implemented w.e.f. 2023-24 (in Phased Manner)

Department of Hindi
Kurukshetra University, Kurukshetra
(Established by the State Legislature Act XII of 1956)
(A+ Grade, NAAC Accredited)

Scheme of Examination for Undergraduate Programme Under Multiple Entry-Exit, Internship and CBCS-LOCF in accordance with NEP-2020 w.e.f. 2023-24 (in phased manner), Subject: Hindi

SEMESTER-1										
Remarks	**Course Type**	**Course Code**	**Nomenclature of Course**	**Credits**	**Theory + Tutorial**	**Cont. Hours/ Week**	**Internal marks**	**External Marks**	**Total Marks**	**Exam Duration**
Scheme A & C	CC-1 MCC-1 4 credits	B23-HIN-101	भाषा विज्ञान एवं हिन्दी भाषा	4	**3+1**	4	30	70	100	3 hrs.
Scheme C only	MCC-2 4 credits	B23-HIN-102	**हिन्दी साहित्य का इतिहास**	4	**3+1**	4	30	70	100	3 hrs.
Scheme A	CC-MI1 2 credits	B23-HIN-103	हिन्दी का व्यावहारिक व्याकरण	2	**2+0**	2	15	35	50	3 hrs.
Scheme A & C	MDC-1 3 credits	B23-HIN-104	हिन्दी भाषा और लिपि	3	**2+1**	3	25	50	75	3 hrs.
SEMESTER-2										
Remarks	**Course Type**	**Course Code**	**Nomenclature of Course**	**Credits**	**Theory + Tutorial**	**Cont. Hours/ Week**	**Internal marks**	**External Marks**	**Total Marks**	**Exam Duration**
Scheme A & C	CC-2 MCC-3 4 credits	B23-HIN-201	मध्यकालीन हिन्दी कविता	4	**3+1**	4	30	70	100	3 hrs.
Scheme A Only	CC-MI2 2 credit	B23-HIN-202	राजभाषा हिन्दी : प्रावधान और प्रयोग	2	**2+0**	2	15	35	50	3 hrs.
Scheme C only	DSEC-1 4 credits	B23-HIN-203	छायावादोत्तर हिन्दी काव्य	4	**3+1**	4	30	70	100	3 hrs.
Scheme A & C	MDC-2 3 credits	B23-HIN-204	हिन्दी कहानी साहित्य एवं मानक रचना	3	**2+1**	3	25	50	75	3 hrs.

SEMESTER-3										
Remarks	Course Type	**Course Code**	**Nomenclature of Course**	**Credits**	**Theory + Tutorial**	**Cont. Hours/ Week**	**Internal marks**	**External Marks**	**Total Marks**	**Exam Duration**
Scheme A, B & C	CC-3 MCC-4 4 credits	B23-HIN-301	आधुनिक गद्य-साहित्य	4	**3+1**	4	30	70	100	3 hrs.
Scheme B & C	MCC-5 4 credits	B23-HIN-302	भारतीय काव्यशास्त्र और साहित्यालोचन	4	**3+1**	4	30	70	100	3 hrs.
Scheme A, B & C	MDC-3 3 credits	B23-HIN-303	मध्यकालीन काव्य एवं मानक हिन्दी व्याकरण एवं रचना	3	**2+1**	3	25	50	75	3 hrs.
SEMESTER-4										
Remarks	Course Type	Course Code	Nomenclature of Course	Credits	Theory + Tutorial	Cont. Hours/ Week	Internal marks	External Marks	Total Marks	Exam Duration
Scheme A, B & C	CC-4 MCC-6 4 credits	B23-HIN-401	पाश्चात्य काव्यशास्त्र और साहित्यालोचन	4	3+1	4	30	70	100	3 hrs.
Scheme B & C	MCC-7 4 credits	B23-HIN-402	आलोचक एवं आलोचना	4	3+1	4	30	70	100	3 hrs.
Scheme B & C	MCC-8 4 credits	B23-HIN-403	आधुनिक काव्य (छायावाद तक)	4	3+1	4	30	70	100	3 hrs.
Scheme B & C	DSE-1 4 credits **Select One Option**	B23-HIN-404	हिन्दी भाषा शिक्षण	4	3+1	4	30	70	100	3 hrs.
		B23-HIN-405	प्रयोजनमूलक हिन्दी	4	3+1	4	30	70	100	3 hrs.

SEMESTER-5										
Remarks	**Course Type**	**Course Code**	**Nomenclature of Course**	**Credits**	**Theory + Tutorial**	**Cont. Hours/ Week**	**Internal marks**	**External Marks**	**Total Marks**	**Exam Duration**
Scheme A, B & C	**CC-5 MCC-9 4 credits**	B23-HIN-501	हिन्दी साहित्य का इतिहास (आरम्भ से रीतिकाल तक)	4	**3+1**	4	30	70	100	3 hrs.
Scheme B & C	**MCC-10 4 credits**	B23-HIN -502	हिन्दी साहित्य का इतिहास (भारतेन्दू युग से अब तक)	4	**3+1**	4	30	70	100	3 hrs.
Scheme B & C	**DSE-2 4 credits**	B23-HIN -503	हिन्दी साहित्य का इतिहास (छायावादी युग)	4	**3+1**	4	30	70	100	3 hrs.
	Select one Option	B23-HIN -504	हिन्दी साहित्य का इतिहास (प्रगतिवादी युग)	4	**3+1**	4	30	70	100	3 hrs.
Scheme B & C	**DSE-3 4 credits**	B23-HIN -505	हिन्दी साहित्य का इतिहास (प्रयोगवादी युग)	4	**3+1**	4	30	70	100	3 hrs.
	Select one Option	B23-HIN -506	कबीरदासः विशेष अध्ययन	4	**3+1**	4	30	70	100	3 hrs.
SEMESTER-6										
Remarks	**Course Type**	**Course Code**	**Nomenclature of Course**	**Credits**	**Theory + Tutorial**	**Cont. Hours/ Week**	**Internal marks**	**External Marks**	**Total Marks**	**Exam Duration**
Scheme A, B & C	**CC-6 MCC-11 4 credits**	B23-HIN-601	मलिक मुहम्मद जायसीः विशेष अध्ययन	4	**3+1**	4	30	70	100	3 hrs.
Scheme B & C	**MCC-12 4 credits**	B23-HIN-602	सूरदासः विशेष अध्ययन	4	**3+1**	4	30	70	100	3 hrs.
Scheme B & C	**DSE-4 4 credits Select one Option**	B23-HIN-603	जयशंकर प्रसादः विशेष अध्ययन	4	**3+1**	4	30	70	100	3 hrs.
		B23-HIN-604	प्रेमचन्दः विशेष अध्ययन	4	**3+1**	4	30	70	100	3 hrs.
Scheme B & C	**DSE-5 4 credits Select one Option**	B23-HIN-605	लोक साहित्य	4	**3+1**	4	30	70	100	3 hrs.
		B23-HIN-606	हिन्दी कहानी साहित्य	4	**3+1**	4	30	70	100	3 hrs.

SEMESTER-7 (For Honours/Honours With Research in Hindi)										
Remarks	**Course Type**	**Course Code**	**Nomenclature of Course**	**Credits**	**Theory + Tutorial**	**Cont. Hours/ Week**	**Internal marks**	**External Marks**	**Total Marks**	**Exam Duration**
Remarks for Honours in Hindi/ Honours with Research in Hindi (For Scheme B & C)	**CC-H1** 4 credits	B23-HIN-701	अन्य गद्य रूप	4	**3+1**	4	30	70	100	3 hrs.
	CC-H2 4 credits	B23-HIN-702	नाटक साहित्य	4	**3+1**	4	30	70	100	3 hrs.
	CC-H3 4 credits	B23- HIN-703	हिन्दी भाषा और साहित्य का इतिहास	4	**3+1**	4	30	70	100	3 hrs.
	DSE-6 4 credits Select one Option	B23- HIN-704	हिन्दी की आलोचना दृष्टियां	4	**3+1**	4	30	70	100	3 hrs.
		B23- HIN-705	भाषा परिचय	4	**3+1**	4	30	70	100	3 hrs.
	PC-H1 4 credits	B23- HIN-706	Practicum Based on B23-HIN-701 TO 704/705/706	4	**3+1**	4	30	70	100	6 hrs.
SEMESTER-8 (FOR HONOURS IN HINDI)										
Remarks	**Course Type**	**Course Code**	**Nomenclature of Course**	**Credits**	**Theory + Tutorial**	**Cont. Hours/ Week**	**Internal marks**	**External Marks**	**Total Marks**	**Exam Duration**
Remarks for Honours in Hindi/ Honours with Research in Hindi (For Scheme B & C)	CC-H4 4 credits	B23- HIN-801	आधुनिक गद्य निबन्ध एवं नाटक	4	**3+1**	4	30	70	100	3 hrs.
	CC-H5 4 credits	B23- HIN-802	छायावादोत्तर काव्य	4	**3+1**	4	30	70	100	3 hrs.
	CC-H6 4 credits	B23- HIN-803	कथा-साहित्य	4	**3+1**	4	30	70	100	3 hrs.
	DSE-7 4 credits Select one option	B23- HIN-804	प्रादेशिक भाषाएः हरियाणवी साहित्य	4	**3+1**	4	30	70	100	3 hrs.
		B23- HIN-805	आदिकालीन एवं निर्गुण काव्य	4	**3+1**	4	30	70	100	3 hrs.
	PC-H2 4 credits	B23- HIN-806	Practicum Based on B23-HIN-801 TO 804/805/806	4	**3+1**	4	30	70	100	6 hrs.
OR SEMESTER-8 (FOR HONOURS WITH RESEARCH IN HINDI)										
Remarks	**Course Type**	**Course Code**	**Nomenclature of Course**	**Credits**	**Theory + Tutorial**	**Cont. Hours/ Week**	**Internal marks**	**External Marks**	**Total Marks**	**Exam Duration**
Honours with Research in Hindi (For Scheme B & C)	CC-H4 4 credits	B23- HIN-801	आधुनिक गद्य निबन्ध एवं नाटक	4	**3+1**	4	30	70	100	3 hrs.
	CC-H5 4 credits	B23- HIN-802	छायावादोत्तर काव्य	4	**3+1**	4	30	70	100	3 hrs.
	Project/Dissertation 12 credits	B23- HIN-807	Project/Dissertation	12		-	-	300	300	-

Programme Learning Outcomes in Bachelor of Arts (Multidisciplinary, Single Major, Honours and Honours with Research) as per NEP 2020

1. Acquire a comprehensive understanding of relevant concepts, theories, and principles in the field.
2. Develop practical skills and technical expertise to effectively apply knowledge in real-world situations.
3. Apply acquired knowledge and skills to solve complex problems and make informed decisions.
4. Communicate effectively, both orally and in writing, with diverse audiences and in various contexts.
5. Apply critical thinking skills to analyse information, evaluate arguments, and generate innovative solutions to complex problems.
6. Demonstrate ethical integrity and social responsibility in decision-making and actions.
7. Embrace continuous learning and adaptability for staying current in the field.
8. Foster innovative thinking and generate new ideas to tackle challenges and seize opportunities.
9. Develop proficiency in research methods to contribute to the advancement of knowledge in the field.
10. Apply interdisciplinary analysis to solve complex problems with evidence-based approaches.

हिन्दी

सेमेस्टर-I

Nomenclature of the Course: भाषा विज्ञान एवं हिन्दी भाषा

Course Code: **B23- HIN-101**
Course Type: CC-1/M**CC-1**
Level of the Course: **100-199**

Credits: 4 (Theory 3, Tutorial 1)

Total Marks: 100
External Exam Marks: 70
Internal Assessment: 30
Time: 3 Hrs.

Workload: 4 Hours (3 hours theory and 1 hour tutorial. Tutorial group size for grammar and composition drills will be 20 students)

Course Learning Outcomes:

B23- HIN-101-1 Comprehend different forms and techniques of Language.
B23- HIN-101-2 The students will be able to understand Linguistic.
B23- HIN-101-3 The students will understand parts of Language and Script.
B23- HIN-1-H101-4 The students will progress to understand basics of grammar.

पाठ्य विषय

इकाईः 1 भाषा : परिभाषा एवं विशेषताएं (Language : Defination & Features) भाषा का अर्थ, परिभाषा, भाषा के माध्यम, भाषा की प्रकृति एवं विशेषताएं, भाषा और वाक्, भाषा और बोली में अन्तर, भाषा बन जाने के कारण, भाषा का विराट स्वरूप, मानव जीवन में भाषा का स्थान।

इकाईः 2 शब्द विज्ञान (Wordlogy): शब्दों का वर्गीकरण, हिन्दी में वैज्ञानिक एवं तकनीकी पारिभाषिक शब्दावली, पारिभाषिक शब्दावली का अर्थ, भारत में पारिभाषिक शब्दावली का उद्भव एवं विकास, हिन्दी शब्द निर्माण में राजभाषा कर्मियों की भूमिका।

इकाईः 3 भाषा विज्ञान का अन्य विषयों से सम्बन्ध: भाषा विज्ञान और व्याकरण, भाषा विज्ञान और समाज विज्ञान, भाषा विज्ञान और इतिहास, भाषा विज्ञान और दर्शन, भाषा विज्ञान और उसकी शाखाएं (Branches of Linguistics) भाषा विज्ञान और लिपि, भाषा विज्ञान और उच्चारण, कम्प्यूटर और भाषा विज्ञान, भाषा विज्ञान एवं भाषा प्रौद्योगिकी।

इकाईः 4 लिपि विज्ञान एवं देवनागरी लिपि (Graphology and Devnagri Script) लिपि की उत्पति, लिपियों का विकास, संसार की लिपियां, भारत की लिपियां, लिपि विकास के कुछ महत्वपूर्ण पड़ाव, नागरी लिपि,ब्राह्मी लिपि का विकास, उत्तरी भारत की लिपियां, देवनागरी लिपि एवं कम्प्यूटरीकरण।

संदर्भ सूची-

1. देवेन्द्र शर्मा एवं दीप्ति शर्मा, भाषा विज्ञान की भूमिका, राधा कृष्ण प्रकाशन दिल्ली।

2. बाबूराम सक्सेना, सामान्य भाषा विज्ञान, हिन्दी साहित्य सम्मेलन, प्रयाग।
3. उदय नारायण तिवारी, हिन्दी भाषा का उद्भव और विकास, भारती भंडार, इलाहाबाद।
4. राम विलास शर्मा, भाषा और समाज, राजकमल प्रकाशन दिल्ली।
5. रामविलास शर्मा, भारत की भाषा समस्या, राजकमल प्रकाशन, दिल्ली।
6. अनन्त चौधरी, नागरी लिपि, हिन्दी और वर्तनी, दिल्ली माध्यम कार्यान्वयक, निदेशालय, दिल्ली।
7. सम्पादक विधानिवास मित्र, भारतीय भाषाशास्त्रीय चिंतन, राजस्थान हिंदी ग्रंथ अकादमी, जयपुर।
8. रामदेव त्रिपाठी, भाषा विज्ञान की भारतीय परम्परा और पाणिनी, बिहार राष्ट्रभाषा परिषद्, पटना।
9. धीरेन्द्र वर्मा, हिन्दी भाषा का इतिहास, हिन्दुस्तानी एकेड़मी, प्रयागराज।
10. कामता प्रसाद गुरु, हिन्दी व्याकरण, नागरी प्रचारिणी सभा, वाराणसी।
11. किशोरी दास वाजपेयी, हिन्दी शब्द् अनुशासन, नागरी प्रचारिणी सभा वाराणसी।

Note for Paper Setters:

1. The paper-setter will set essay type 02 questions from each unit (with internal choice). Out of 08 questions student will attempt 04 questions by selecting one question in each unit. Each question will be 15 marks.
2. Question No. 5 will consist of 10 short questions based on all the four Units. Out of 10 short questions, the students will be required to attempt any five questions. Every short-answer type question will be of 2 marks each.

Evaluation of Internal Assessment

Internal Assessment will be based on the following components.

i.	Class Participation	5 Marks
ii.	Seminar/Presentation/Assignments/ Quiz/Class Test etc.	10 Marks
iii.	Mid-Term Exam	15 Marks

हिन्दी

सेमेस्टर-I

Nomenclature of the Paper: **हिन्दी साहित्य का इतिहास**

Course Code: **B23-HIN-102**
Course Type: M**CC-2**
Level of the Course: **100-199**

Credits: 4 (Theory 3, Tutorial 1)

Max. Marks: 100
Internal Assessment: 30
Theory: 70
Time: 3 Hours

Workload: 4 Hours (3 hours theory and 1 hour tutorial. Tutorial group size for grammar and composition drills will be 20 students)

Course Learning Outcomes:
B23-HIN-102-1 The students will be introduced to great English Poets.
B23-HIN-102-2 The students will understand the impact of Renaissance on literature.
B23-HIN-H102-3 The students will be acquainted with Shakespearean tragedy.
B23-HIN-102-4 The students Will be able to understand and appreciate romantic comedy.

पाठ्य विषय

इकाईः 1 **आदिकाल :** साहित्येतिहास की अवधारणा, हिन्दी साहित्य के इतिहास लेखन की परम्परा, हिन्दी साहित्य इतिहास लेखन की समस्याएं, हिन्दी साहित्य का इतिहास, कालविभाजन और नामकरण आदिकाल की प्रवृतियां, सिद्ध, नाथ और जैन साहित्य की प्रवृतियां

इकाईः 2 **भक्तिकाल (पूर्वमध्यकाल) :** भक्तिकाल की सामान्य विशेषताएं, भक्तिकाल की विभिन्न काव्यधाराएं, निर्गुण काव्यधारा की विशेषताएं, सूची काव्यधारा की विशेषताएं, रामभक्ति काव्यधारा की विशेषताएं, कृष्णभक्तिकाव्य की विशेषताएं, भक्तिकाल के प्रमुख कवि और उनकी रचनाओं का वैशिष्टय।

इकाईः 3 **रीतिकाल (उत्तरमध्यकाल) :** प्रवृतियां, नामकरण, रीतिकाल की विभिन्न धाराएं, रीतिबद्ध, रीतिसिद्ध और रीति मुक्त काव्यधारा की विशेषताएं।

इकाईः 4 **आधुनिककाल :** भारतेन्दू युग, द्विवेदी युग, छायावाद, प्रगतिवाद, नयी कविता, साठोत्तरी कविता और समकालीन कविता की प्रमुख प्रवृतियां।

पाठ्य़ पुस्तकें:

1. आचार्य रामचन्द्र शुक्ल : हिन्दी साहित्य का इतिहास, नागरी प्रचारिणी सभा काशी।
2. डॉ. रामस्वरूप चतुर्वेदी : हिन्दी साहित्य और संवेदना का विकास, लोकभारती प्रकाशन, प्रयागराज।
3. आचार्या विश्वनाथ प्रसाद मिश्र: हिन्दी साहित्य का अतीत, भाग 1, 2, वाणी प्रकाशन, दिल्ली।
4. आचार्य हजारी प्रसाद द्विवेदी : हिन्दी साहित्य का आदिकाल, वाणी प्रकाशन दिल्ली।
5. डॉ. बच्चन सिंह : हिन्दी साहित्य का दूसरा इतिहास, लोकभारती, प्रयागराज।

6. डॉ. सभापति मिश्र : हिन्दी साहित्य का प्रवृतिपरक इतिहास, जयभारती प्रकाशन, इलाहाबाद।
7. डॉ. राम किशोर शर्मा : हिन्दी साहित्य का इतिहास, लोकभारती प्रकाशन, प्रयागराज।
8. सम्पादक डॉ. नगेन्द्र : हिन्दी साहित्य का इतिहास, नेशनल पब्लिकेशन हाऊस, दिल्ली।

Note for Paper-Setters:

1. The paper-setter will set essay type 02 questions from each unit (with internal choice). Out of 8 questions student will attempt 4 questions by selecting one question in each unit. Each question will be 15 marks.

2. Question No. 5 will consist of 10 short questions based on all the Five Units. Out of 10 short questions, the students will be required to attempt any five questions. Every short-answer type question will be of 2 mark each.

Evaluation of Internal Assessment

Internal Assessment will be based on the following components.

i.	Class Participation	5 Marks
ii.	Seminar/Presentation/Assignments/ Quiz/Class Test etc.	10 Marks
iii.	Mid-Term Exam	15 Marks

हिन्दी

सेमेस्टर -I

Nomenclature of the Course: हिन्दी का व्यावहारिक व्याकरण

Course Code: **B23-MI-103**
Course Type: **MI-1**
Level of the Course: **100-199**

Credits: 2 (Theory 2)

Total Marks: 50
External Exam Marks: 35
Internal Assessment: 15
Time: 3 Hrs.

Course Learning Outcomes

B23-HIN-103-1. The students will be introduced to the Hindi Grammer.
B23-HIN-103-2. They will learn various aspects of writing of Hindi.
B23-HIN-103-3. They will learn the practical use of punctuation and spelling.
B23-HIN-103-4. They will have the comprehensive knowledge of capitalization.

पाठ्य विषय

इकाईः1 **शब्द भेद :** विकारी शब्द- संज्ञा, सर्वनाम, विशेषण, क्रिया, शब्द के विकार के कारण, लिंग, वचन, कारक अविकारी शब्द का अव्यव, क्रियाविशेषण अव्यव, समुच्चयबोधक अव्यव, सम्बन्ध बोधक अव्यव, विस्मय आदिबोधक।

इकाईः2 **शब्द संपदा :** उपसर्ग, प्रत्यय, समास, सन्धिः स्वर सन्धि, व्यञजन सन्धि, विसर्ग सन्धि। **काल :** वर्तमानकाल, भूतकाल, भविष्यत्काल।

अशुद्धियां और शोधन : वाक्यगत अशुद्धियां और उनका शोधन, पदगत अशुद्धियां और उनका शोधन।

इकाईः3 **वाक्य :** रचना के आधार पर वाक्य के प्रकार - सरल संयुक्त मिश्र वाक्य, अन्य आधार पर वाक्य के प्रकार - विधानार्थक वाक्य, निषेधवाचक, आज्ञार्थक, प्रश्नार्थक, इच्छाबोधक, सन्देहसूचक, संकेतार्थक वाक्य।

इकाईः4 वर्तनी विचार, विराम चिह्न, पर्यायों के अर्थ भेद।
पर्यायवाची, विलोम शब्द, लोकोक्तियां मुहावरे।
रस, छन्द, अलंकार

पाठ्य पुस्तकें :

- मानक हिन्दी व्याकरण तथा रचना : डॉ. कमल सत्यार्थी
- व्यावहारिक हिन्दी व्याकरण : हरदेव बाहरी।

Note for Paper Setters:

1. Question number 1 will consist of 04 (with internal choice) out of whole syllabus. Every question will be of 07 mark each (Total Marks:28).

2 Question No. 2 will consist of 07objective questions based on whole syllabi. Every short-answer type question will be of 1 mark each.

Evaluation of Internal Assessment

Internal Assessment (Theory) will be based on the following components.

i.	Class Participation	4 Marks
ii.	Seminar/Presentation/Assignments/ Quiz/Class Test etc.	4 Marks
iii.	Mid-Term Exam	7 Marks

हिन्दी

सेमेस्टर-I

Nomenclature of the Course: हिन्दी भाषा और लिपि

Course Code: **B23-HIN-104**
Course Type: **MDC-1**
Level of the Course:**100-199**

Credits: 3 (Theory 2, Tutorial 1)

Total Marks: 75
External Exam Marks: 50
Internal Assessment: 25
Time: 3 Hrs.

Workload: 3 Hours (2 hours theory and 1 hour tutorial; Tutorial group size will be 20 students)

Course Learning Outcomes
After the successful completion of the course the student will be able to:
1. B23-HIN-104-1 The students will progress to understand language.
2. B23-HIN-104-2 The students will be able to writing language and script.
3. B23-HIN-104-3 The students will be able to understand parts of speech, voice and narration.
4. B23-HIN-104-4 Comprehend different forms and techniques of languages.

पाठ्य विषय

इकाईः 1 'हिन्दी भाषा' : उद्भव और विकास, विविध बोलियां।

इकाईः 2. हिन्दी शब्द समूह : समूह (हिन्दी की शब्द सम्पदा)- तत्सम, तद्भव, आगत एवं देशज शब्दावली।

इकाईः 3. हिन्दी के व्याकरणिक अवयव : संज्ञा, सर्वनाम, विशेषण, क्रिया, क्रिया विशेषण, अवयव, उपसर्ग, प्रत्यय, लिंग, वचन।

इकाईः 4. देवनागरी लिपि : उद्भव और विकास, देवनागरी लिपि की वैज्ञानिकता। देवनागरी लिपि की विशेषताएं, देवनागरी लिपि की त्रुटियां, सुधार के उपाय, मानकीकरण।

पाठ्य पुस्तकें :

- मानक हिन्दी व्याकरण तथा रचना : डॉ. कमल सत्यार्थी
- व्यावहारिक हिन्दी व्याकरण : हरदेव बाहरी।

Note for Paper-Setters:

1. Question number 1 will consist of 04 (with internal choice) out of whole syllabus. Every question will be of 10 mark each (Total Marks:40).

2 Question No. 2 will consist of 10 objective questions based on whole syllabi. Every objective answer type question will be of 1 mark each.

Evaluation of Internal Assessment (Theory)

Internal Assessment (Theory) will be based on the following components.

iv.	Class Participation	5 Marks
v.	Seminar/Presentation/Assignments/ Quiz/Class Test etc.	7 Marks
vi.	Mid-Term Exam	13 Marks
	Total	25 Marks

हिन्दी

सेमेस्टर-II

Nomenclature of the Course: **मध्यकालीन हिन्दी कविता**

Course Code: **B23- HIN-201**
Course Type: CC-2/M**CC-3**
Level of the Course: **200-299**

Credits: 4 (Theory 3, Tutorial 1)

Total Marks: 100
External Exam Marks: 70
Internal Assessment: 30
Time: 3 Hrs.

Workload: 4 Hours (3 hours theory and 1 hour tutorial; Tutorial group size for explanation and questions will be 20 students)

Course Learning Outcomes:

B23- HIN-201-1 The students will be able to understand various components of poetry.
B23- HIN-201-2 Perusal of essays type will enrich their knowledge of different poetry styles.
B23- HIN-201-3 The students will be acquainted with Writers of Poetry.
B23- HIN-201-4 The students will be able to critical aspects of Poetry.

पाठ्य विषय

इकाईः 1 **व्याख्या हेतु पाठ्य पुस्तक:**

कबीरदास (सम्पादक बाबू श्याम सुंदरदास) कबीर-ग्रंथावली - साध को अंग, विचार को अंग, उपदेश को अंग, गुरुशिष हेरा को अंग, पद (राग गौड़ी) (१-१० पद)।

जायसी सम्पादक रामचन्द्र शुक्ल (पदमावत) नागमती वियोगखंड।

इकाईः 2 **तुलसीदास** (सुन्दर काण्ड) गीता प्रेस गोरखपुर।

सूरदास (सम्पादक धीरेन्द्र वर्मा) सूरसागर (पहले 25 पद)

इकाईः 3 **कबीर** का तात्विक चिंतन, रहस्यवाद, काव्य-कला, विद्रोह भावना, कबीर की भक्ति भावना, कबीर का समाज दर्शन, कबीर का काव्य-सौन्दर्य।

जायसी साहित्य में प्रेमभावना, प्रेमाख्यान परम्परा में जायसी का स्थान, जायसी का श्रृंगार वर्णन, पद्मावत की कहानी और जायसी का रहस्यवाद, जायसी का लोकतत्व, जायसी काव्य की कथानक रूढियां।

इकाईः 4 **तुलसीदास** और उनका युग, सामाजिक चेतना, रामकाव्य परम्परा में तुलसी का स्थान, तुलसी साहित्य का काव्य सौष्ठव, लोकनायक तुलसी, तुलसी का दार्शनिक चिंतन, रामचरित मानस की प्रासंगिकता, तुलसी साहित्य की सामाजिक-सांस्कृतिक दृष्टि।

सूरदास के सूर साहित्य का वात्सल्य, सूर साहित्य में वाग्वदग्ध्य, सूर साहित्य का काव्य सौंदर्य, सूर साहित्य में बृज संस्कृति, सूर साहित्य में प्रकृति के विभिन्न रूप, सूरदास की भक्तिभावना।

पाठ्य पुस्तकें:

1. आचार्य शुक्ल : सूरदास, वाणी प्रकाशन, दिल्ली।

2. आचार्य शुक्ल : गोस्वामी तुलसीदास, वाणी प्रकाशन।
3. रांगेय राघव : तुलसी का कथ्य शिल्प।
4. रामचन्द्र तिवारी : तुलसीदास, वाणी प्रकाशन।
5. कमलानन्द झा : तुलसी का काव्य विवेक मर्यादा बोध, वाणी प्रकाशन, दिल्ली।
6. योगेन्द्र प्रताप सिंह : जन-जन के तुलसी, वाणी प्रकाशन।
7. बलदेव वंशी : कबीर की चिंता, वाणी प्रकाशन।
8. कमलाप्रसाद : मध्यकालीन: रचना और मूल्य, वाणी प्रकाशन।
9. शिव कुमार मिश्र : भक्तिकाल और लोकजीवन, वाणी।
10. देवी शंकर अवस्थी : भक्ति का संदर्भ, वाणी प्रकाशन।
11. डॉ. नरेश : सूफी मत और हिन्दी सूफी काव्य।
12. अयोध्या सिंह : उपाध्याय 'हरिऔध' कबीर वचनावली, वाणी।

Note for Paper-Setters:

1. The paper-setter will set essay type 02 questions from each unit (with internal choice). Out of 8 questions student will attempt 4 questions by selecting one question in each unit. Each question will be 15 marks.
2. Question No. 5 will consist of 10 short questions based on all the Five Units. Out of 10 short questions, the students will be required to attempt any five questions. Every short-answer type question will be of 1 mark each.

Evaluation of Internal Assessment

Internal Assessment will be based on the following components.

i.	Class Participation	5 Marks
ii.	Seminar/Presentation/Assignments/ Quiz/Class Test etc.	10 Marks
iii.	Mid-Term Exam	15 Marks

हिन्दी

सेमेस्टर -II

Nomenclature of the Course: **राजभाषा हिन्दी : प्रावधान और प्रयोग**

Course Code: **B23-HIN-202**
Course Type: **MI-2**
Level of the Course: **200-299**

Credits: 2 (Theory 2)

Total Marks: 50
External Exam Marks: 35
Internal Assessment: 15
Time: 3 Hrs.

Course Learning Outcomes

B23-HIN-202-1. The students will be introduced to the Official Hindi.
B23-HIN-202-2. They will learn various aspects of writing skills and their use in communication.
B23-HIN-202-3. They will learn the practical use of punctuation and capitalization.
B23-HIN-4. They will have the comprehensive knowledge of Official Hindi.

पाठ्य विषय

इकाईः1 **राजभाषा** : परिभाषा और प्रकृति (स्वरूप), सम्पर्क भाषा, राष्ट्रभाषा और राजभाषा में अन्तर, प्रशासन और राजभाषा का अन्त: सम्बन्ध, राजभाषा का चयन, स्वीकृति और राष्ट्र की अन्य भाषाओं में सहसम्बन्ध, मानक भाषा और राजभाषा।

इकाईः2 **राजभाषा हिन्दी की संवैधानिक व्यवस्था** : राजभाषा अधिनियम, राष्ट्रपति के राजभाषा सम्बन्धी आदेश, राजभाषा संकल्प- 1988, राजभाषा नियम, द्विभाषा नीति, त्रिभाषा-सूत्र, हिन्दी भाषी प्रदेशों एवं हिन्दीत्तर प्रदेशों में राष्ट्रभाषा हिन्दी की वर्तमान स्थिति।

इकाईः3 हिन्दी का वैज्ञानिक और तकनीकी विकास : उपलब्धियां और सीमाएं। कार्यालयी हिन्दी में अनुवाद की समस्या, मौलिक लेखन की भाषा के रूप में हिन्दी, अनुवाद भाषा के रूप में राजभाषा हिन्दी का विकास, न्यायपालिका, बैंकिंग बीमा आदि में राजभाषा हिन्दी।

इकाईः4 **राजभाषा हिन्दी का अनुपयुक्त पक्ष** : हिन्दी आलेख, टिप्पण, संक्षेपण, पत्राचार, हिन्दी टंकण, मुद्रण एवं कम्प्यूटरीकरण की अद्यतन स्थिति, हिन्दी के प्रचार प्रसार में विभिन्न संस्थाओं की भूमिका, अन्तर्राष्ट्रीय स्तर पर हिन्दी, राष्ट्रसंघ में हिन्दी, विश्व हिन्दी सम्मेलन और हिन्दी।

पाठ्य पुस्तकें**:**

- डॉ. मलिक मुहम्मद : राजभाषा हिन्दी : विकास के विविध आयाम, प्रवीण प्रकाशन, नई दिल्ली।
- डॉ. हरदेव बाहरी : हिन्दी उद्भव विकास और रूप, किताब महल दिल्ली।

- डॉ. रामविलास शर्मा : भारत की भाषा समस्या।
- डॉ. सुभाष शर्मा देवेन्द्र मिश्र : हिन्दी भाषा : विविध आयाम, साहित्य ससंद, नई दिल्ली।
- विनोद गोदरे : प्रयोजनमूलक हिन्दी।
- दिनेश प्रसाद सिंह : व्यवहारिक हिन्दी और भाषा संरचना।
- डॉ. रवीन्द्र नाथ श्रीवास्तव : हिन्दी भाषा का समाजशास्त्र, राधाकृष्ण प्रकाशन, नई दिल्ली।
- सं. अमर बदाहुर सिंह : बैंकिंग हिन्दी पाठ्यक्रम, केन्द्रीय हिन्दी निदेशालय संस्थान, आगरा।

Note for Paper Setters:

1. Question number 1 will consist of 04 (with internal choice) out of whole syllabus. Every question will be of 07 mark each (Total Marks:28).
2. Question No. 2 will consist of 07 objective questions based on whole syllabi. Every short-answer type question will be of 1 mark each.

Evaluation of Internal Assessment

Internal Assessment (Theory) will be based on the following components.

i.	Class Participation	4 Marks
ii.	Seminar/Presentation/Assignments/ Quiz/Class Test etc.	4 Marks
iii.	Mid-Term Exam	7 Marks
	Total	15 Marks

हिन्दी

सेमेस्टर-II

Nomenclature of the Course: **छायावादोत्तर हिन्दी काव्य**

Course Code: **B23-HIN-203**
Course Type: DSEC-**1**
Level of the Course: **200-299**

Credits: 4 (Theory 3, Tutorial 1)

Total Marks: 100
External Exam Marks: 70
Internal Assessment: 30
Time: 3 Hrs.

Workload: 4 Hours (3 hours theory and 1 hour tutorial. Tutorial group size for grammar and composition drills will be 20 students)

Course Learning Outcomes:
B23-HIN-203-1 Comprehend different forms and techniques of Modern Poetry.
B23-HIN-203-2 The students will be able to understand Modern Poetry.
B23-HIN-203-3 The students will understand parts of Modern Poetry and Script.
B23-HIN-203-4 The students will progress to understand update Poetry.

पाठ्य विषय

इकाईः 1 **व्याख्या हेतु**

- रामधारी सिंह दिनकर : 'उर्वशी' तृतीय अंक
- सच्चिदानन्दन हीरानन्द वात्स्यायन 'अज्ञेय' - 'असाध्य वीणा' कविता, कलगी बाजरे की, नदी के द्वीप, बावरा अहेरी, सोन मछली।
- बच्चन : निशा निमंत्रण : दिन जल्दी जल्दी ढ़लता है, बीत चली संध्या की बेला, अंधकार बढ़ता जाता है, प्रबल झंझावत, स्वप्न भी छल जागरण भी।
- गजानन माधव मुक्तिबोध : 'अंधेरे में' कविता,

इकाईः 2 **समीक्षात्मक प्रश्न:**

दिनकर: उर्वशी में कामाध्यात्म, उर्वशी में संवाद-कौशल, उर्वशी के तृतीय अंक की विशेषताएं, उर्वशी का वास्तुशिल्प, उर्वशी का काव्यरूप, उर्वशी की ऐतिहासिक पृष्ठभूमि।

अज्ञेय: अज्ञेयकाव्य में प्रेमानुभूति, रहस्यानुभूति, सामाजिकता का प्रश्न, नदी के द्वीप का प्रतिपाद्य एवं शिल्प, असाध्य वीणा का कथ्य एवं शिल्प, अज्ञेय की साहित्य को देन।

गजानन माधव मुक्तिबोधः ' ,कविता का उद्देश्य 'अंधेरे में'अंधेरे मेंगजानन ,कविता का भाव सौंदर्य ' आधुनिक कविता के विकास में ,साधना-मुक्तिबोध की साहित्य ,माधव का व्यक्तित्व ' ,मुक्तिबोध की अवधारणाब्रह्मराक्षसकविता का प्रतिपाद्य। '

पाठ्य ग्रन्थ :

- मुक्तिबोध : नये साहित्य का सौंदर्य शास्त्र।

- जगदीश गुप्त : नयी कविता : स्वरूप और समस्याएं।
- रामस्वरूप चतुर्वेदी : अज्ञेय और आधुनिक रचना की समस्याएं।
- नामवर सिंह : कविता के नये प्रतिमान।
- सं. विश्वनाथ त्रिपाठी : गजानन माधव मुक्तिबोध।
- सुरेन्दु स्निग्ध : नई कविता : नया परिदृश्य।

Note for Paper-Setters:

1. Question No. 1, the paper-setter will set 04 Explanation from Unit-1, out of which student will attempt 02 explanation 8 marks (Total=16 marks).
2. Question No. 2, The paper-setter will set essay type 04 questions from Unit-2 (with internal choice). Out of 8 questions student will attempt 4 questions by selecting one question in each unit. Each question will be 12 marks (Total=48 marks).
3. Question No. 3 will consist of 06 objective type questions from all Units. The students will be required to attempt all questions. Question will be of 1 mark each(Total=6 marks).

Evaluation of Internal Assessment

Internal Assessment will be based on the following components.

i.	Class Participation	5 Marks
ii.	Seminar/Presentation/Assignments/ Quiz/Class Test etc.	10 Marks
iii.	Mid-Term Exam	15 Marks

हिन्दी

सेमेस्टर -II

Nomenclature of the Course: हिन्दी कहानी साहित्य एवं मानक रचना

Course Code: **B23-HIN-204**
Course Type: **MDC-2**
Level of the Course: **200-299**

Credits-3 (Theory 2, Tutorial 1)

Total Marks- 75
External Exam Marks- 50
Internal Assessment- 25
Time- 3 Hrs.

Workload: 3 Hours (2 hours theory and 1 hour tutorial; Tutorial group size will be 20 students)

Course Learning Outcomes:

1. B23-HIN-204-1 The students will be able to understand various components of prose.
2. B23-HIN-204-2 It will enrich their knowledge of different prose styles.
3. B23-HIN-204-3 The students will be able to write paragraphs, essays, and précis.
4. B23-HIN-204-4 The students will be able to write speeches and resume.

पाठ्य विषय

इकाईः 1 ‘

- कथाभूमि : ’सम्पादक डॉचितरंजन मिश्र ., राधाकृष्ण प्रकाशन, नई दिल्ली। उसने कहा था, पूस की रात, अमृतसर आ गया, केवल तीन कहानियां।
- ‘कथाभूमिपुस्तक से सप्रसंग व्या ’ख्या और समीक्षात्मक प्रश्न पूछे जाएंगे।

इकाईः 2 भाव पल्लवन : भाव पल्लवन के लिए दिए गए कथनों, सूक्तियों आदि को निबंधों के शीर्षक के रूप में पाएंगे, किंतु निबंध और भाव पल्लवन की स्थिति में अंतर होता है। निबंध में एक निश्चित रूपरेखा होती है। निबंध में लेखक अपने विचारों को प्रस्तुत करता है, जबकि भाव पल्लवन के लिए किसी निश्चित ढांचे में बंधने की आवश्यकता नहीं है। भाव पल्लवन कर्ता तटस्थ रहकर कथन के भाव को अपनी लेखनी के माध्यम से अभिव्यक्त एवं विषय का विस्तार करता है।

इकाईः 3 अपठित बोध : गद्यांश के अनुच्छेद से पांच प्रश्न दिए जाएंगे, जिसमें सभी का उत्तर देना होगा।

इकाईः 4

- किसी अपठित गद्यांश का एक तिहाई शब्दों का सार लिखिए। (यह गद्यांश 250 शब्दों में होगा)

- निम्नलिखित अलंकारों का परिचय देते हुए उदाहरण सहित समझाइए। अनुप्रास, यमक, श्लेष, उपमा, रूपक, उत्प्रेक्षा, अतिश्योक्ति, अन्योक्ति, मानवीकरण।

Note for Paper Setters:

1. Question number 1 will consist of 04 (with internal choice) out of whole syllabus. Every question will be of 10 mark each (Total Marks:40).
2 Question No. 2 will consist of 10 objective questions based on whole syllabi. Every objective answer type question will be of 1 mark each.

Evaluation of Internal Assessment (Theory)

Internal Assessment (Theory) will be based on the following components.

i.	Class Participation	5 Marks
ii.	Seminar/Presentation/Assignments/ Quiz/Class Test etc.	7 Marks
iii.	Mid-Term Exam	13 Marks
	Total	25 Marks

हिन्दी

सेमेस्टर -III

Nomenclature of the Paper – **आधुनिक गद्यसाहि-त्य**

Course Code: **B23- HIN-301**
Course Type: CC-3/M**CC-4**
Level of the Course: **300-399**

Credits: 4 (Theory 3, Tutorial 1)
Max. Marks: 100
Internal Assessment: 30
Theory: 70
Time: 3 Hours

Workload: 4 Hours (3 hours theory and 1 hour tutorial; Tutorial group size for grammar and composition drills will be 20 students)

Course Learning Outcomes:

B23- HIN-301-1 The students will be able to understand various components of Prose.
B23- HIN-301-2 Perusal of essays type will enrich their knowledge of different Prose.
B23- HIN-301-3 The students will be acquainted with Writers of Prose.
B23- HIN-301-4 The students will be able to critical aspects of Prose.

पाठ्य विषय

इकाईः 1 व्याख्या हेतु

- नाटक : जयशंकर प्रसाद (चन्द्रगुप्त)
- उपन्यास : प्रेमचन्द (गोदान)
- कहानी : चन्द्रधर शर्मा गुलेरी (उसने कहा था) जयशंकर प्रसाद (गुण्डा), प्रेमचन्द (पूस की रात),
- जैनेन्द्र (पाजेब), निर्मल वर्मा (परिन्दें), उषा प्रियंवदा (वापसी)
- निबंध : आचार्य रामचन्द्र शुक्ल (श्रद्धा और भक्ति), सरदार पूर्ण सिंह (प्रेम और मजदूरी), आचार्य हजारी प्रसाद द्विवेदी (नाखून क्यों बढ़ते हैं), विद्या निवास मिश्र (मेरे राम का मुकुट भीग रहा है), कुबेरनाथ राय (उत्तराफालुग्नी), हरिशंकर परसाई (पगडंडियों का जमाना)।

इकाईः 2 समीक्षात्मक प्रश्न हेतु

- नाटक : चन्द्रगुप्त नाटक में राष्ट्रीयता का आदर्श, प्रसाद के नाटकों में ऐतिहासिकता, चन्द्रगुप्त नाटक की नारी, चन्द्रगुप्त नाटक में संघर्ष आदर्श और चरित्र-चित्रण, प्रसाद के नाटकों की सामान्य विशेषताएं, चन्द्रगुप् नाटक की कल्याणी का गुण-दोष।
- उपन्यास : उपन्यास की परिभाषा, स्वरूप, शिल्प विधान, उपन्यास जनसाधारण के जीवन का महाकाव्य है, हिन्दी उपन्यास परम्परा में प्रेमचन्द का स्थान, प्रेमचन्द युगीन देशकालीन परिस्थितियों की समीक्षा 'गोदान' के आधार पर, प्रेमचन्द का परिचय देते हुए उनकी साहित्य साधना, प्रेमचन्द के उपन्यासों में जीवन दर्शन।
- कहानी : पाठ्यक्रम में निर्धारित सभी कहानीकारों का परिचय देते हुए उनकी साहित्य-साधना, कहानी की परिभाषा स्वरूप शिल्प विधान, हिन्दी कहानी परम्परा में

पाठ्यक्रम में निर्धारित कहानीकारों का स्थान, पाठ्यक्रम में निर्धारित कहानियों का तात्विक विवेचन, पाठ्यक्रम में निर्धारित कहानियों का समसामयिक विवेचन, बीसवीं सदी की हिन्दी कहानी और प्रमुख कहानी आन्दोलन।

- निबन्ध : हिन्दी निबन्ध की विकास यात्रा, हिन्दी निबन्ध की तात्विक समीक्षा, पाठ्यक्रम में निर्धारित सभी निबन्धों का समीक्षात्मक अध्ययन।

पाठ्य पुस्तकें:

1. प्रेमचन्द और उनका युग रामविलास शर्मा :, राजकमल प्रकाशन, नई दिल्ली।

2. इन्दुनाथ मदान प्रेमचन्द एक विवेचन। :

3. शिवनारायण श्रीवास्तव हिन्दी उपन्यास :, सरस्वती मन्दिर वाराणसी।

4. बलराज पाण्डेय कहानी आन्दोलन की भूमिका :, अनामिका प्रकाशन, इलाहाबाद।

5. विजय मोहन इक्षसह आज की हिन्दी कहानी :, दिल्ली।

6. नामवर सिंह कहानी नयी कहानी :, राजकमल प्रकाशन, दिल्ली।

Note for Paper-Setters:

1. Question No. 1, the paper-setter will set 04 Explanation from Unit-1, out of which student will attempt 02 explanation 8 marks (Total=16 marks).
2. Question No. 2, The paper-setter will set essay type 04 questions from Unit-2 (with internal choice). Out of 8 questions student will attempt 4 questions by selecting one question in each unit. Each question will be 12 marks (Total=48 marks).
3. Question No. 3 will consist of 06 objective type questions from all Units. The students will be required to attempt all questions. Question will be of 1 mark each(Total=6 marks).

Evaluation of Internal Assessment

Internal Assessment will be based on the following components.

iv.	Class Participation	5 Marks
v.	Seminar/Presentation/Assignments/ Quiz/Class Test etc.	10 Marks
vi.	Mid-Term Exam	15 Marks

हिन्दी

सेमेस्टर-III

Nomenclature of the Course: **भारतीय काव्यशास्त्र और साहित्यालोचन**

Course Code: **B23- HIN-302**
Course Type: M**CC-5**
Level of the Course: **300-399**

Credits: 4 (Theory 3, Tutorial 1)

Total Marks: 100
External Exam Marks: 70
Internal Assessment: 30
Time: 3 Hrs.

Workload: 4 Hours (3 hours theory and 1 hour tutorial; Tutorial group size for grammar and composition drills will be 20 students)

Course Learning Outcomes:

B23- HIN-302-1 The students will be able to understand various components of poetry
B23- HIN-302-2 Perusal of poetry will enrich their knowledge of sub-genres of poetry
B23- HIN-302-3 The students will understand speech sounds in English language
B23- HIN-302-4 The students will be able to write phonemic transcription and word stress

पाठ्य विषय

इकाईः 1

- काव्य लक्षण, काव्य हेतु एवं काव्य प्रयोजन।
- रस सिद्धान्त - रस की अवधारणा, रस निष्पत्ति और साधारणीकरण।
- ध्वनि सिद्धान्त - ध्वनि की अवधारणा, ध्वनि का वर्गीकरण।

इकाईः 2

- अलंकार सिद्धान्त - अलंकार की अवधारणा, अलंकार और अलंकार्य, अलंकारों का वर्गीकरण
- रीति सिद्धान्त - रीति की अवधारणा, रीति एवं गुण, रीति का वर्गीकरण।
- वक्रोक्ति सिद्धान्त - वक्रोक्ति की अवधारणा, वक्रोक्ति एवं अभिव्यंजनावाद।

इकाईः 3

- औचित्य सिद्धांत - प्रमुख स्थापनाएं
- हिन्दी काव्यशास्त्र - रीतिकालीन आचार्यों का योगदान,
- आचार्य रामचंद्र शुक्ल की साहित्य संबंधी स्थापनाएं,

इकाईः 4

- प्रेमचंद की साहित्य संबंधी स्थापनाएं
- मुक्तिबोध की साहित्य संबंधी स्थापनाएं
- रवींद्रनाथ टैगोर की साहित्य संबंधी स्थापनाएं

पाठ्य पुस्तकें

- भारतीय काव्यशास्त्र- बलदेव उपाध्याय
- भारतीय काव्यशास्त्र- संपा. उदयभानु सिंह

- काव्य तत्त्व विमर्श- राममूर्ति त्रिपाठी
- भारतीय काव्यशास्त्र- सत्यदेव चौधरी
- काव्यांग दर्पण- डॉ. विजयबहादुर अवस्थी
- रस मीमांसा- रामचंद्र शुक्ल
- रस सिद्धांत- नगेन्द्र
- रस-सिद्धांतः स्वरूप और विश्लेषण- आनंदप्रकाश दीक्षित
- भारतीय काव्यशास्त्र की परंपरा- नगेन्द्र

Note for Paper Setters:

1. The paper-setter will set essay type 02 questions (with internal choice) out of each Unit. Out of 08 questions student will attempt 05 questions. Each question will be 12 marks (Total 60 marks).
2. Question No. 5 will consist of 10 short questions based on whole syllabi. Out of 10 short questions, the students will be required to attempt any five questions. Every short-answer type question will be of 2 marks each.

Evaluation of Internal Assessment

Internal Assessment will be based on the following components.

i.	Class Participation	5 Marks
ii.	Seminar/Presentation/Assignments/ Quiz/Class Test etc.	10 Marks
iii.	Mid-Term Exam	15 Marks

हिन्दी

सेमेस्टर -III

Nomenclature of the Course: मध्यकालीन काव्य एवं मानक हिन्दी व्याकरण एवं रचना

Course Code: **B23-HIN-303**
Course Type: **MDC-3**
Level of the Course: **300-399**

Credits-3 (Theory 2, Tutorial 1)

Total Marks- 75
External Exam Marks- 50
Internal Assessment- 25
Time- 3 Hrs.

Workload: 3 Hours (2 hours theory and 1 hour tutorial; Tutorial group size for grammar and composition drills will be 30 students)

Course Learning Outcomes:
1. B23-HIN-303-1 The students will be able to understand various components of poetry
2. B23-HIN-303-2 Perusal of poetry will enrich their knowledge of sub-genres of poetry
3. B23-HIN-303-3 The students will understand speech sounds in Hindi language
4. B23-HIN-303-4 The students will be able to write phonemic transcription and word stress

पाठ्य विषय

इकाईः 1

- 'काव्य शिखर' : डॉ. नरेश मिश्र (सम्पादक) महर्षि दयानन्द विश्वविद्यालय से प्रकाशित
  (कबीर, सूरदास, बिहारी)
- 'काव्य शिखर' पुस्तक से व्याख्या और प्रश्न पूछे जायेंगे।
- दो व्याख्याओं में से एक की संप्रसंग व्याख्या करनी होगी।
- दो समीक्षात्मक प्रश्नों में से एक का उत्तर देना होगा।

इकाईः 2

- 'हिन्दी व्याकरण': वर्तनी, पर्यायवाची, विलोम, वाक्य के लिए एक शब्द, मुहावरे, लोकोक्तियां,
- कार्यालय पत्र : सरकारी पत्र, अद्र्धसरकारी पत्र, अनौपचारिक पत्र, ज्ञापन, कार्यालय ज्ञापन, परिपत्र, अनुस्मारक, स्वीकृति पत्र, कार्यालय - आदेश।

इकाईः 3 'अंग्रेजी अनुच्छेद' : (लगभग 150 शब्द) का हिन्दी में अनुवाद

इकाईः 4 निबन्ध लेखन : नैतिक मूल्य एवं आदर्श, सामाजिक एवं राष्ट्रीय देश सम्बन्धी, विज्ञान सम्बन्धी, खेल एवं मनोरंजन, प्रर्यावरण एवं प्रकृति सम्बन्धी (किसी एक विषय पर 250 शब्दों में निबन्ध)।

पाठ्य पुस्तकें :

- मानक हिन्दी व्याकरण तथा रचना : डॉ. कमल सत्यार्थी
- व्यावहारिक हिन्दी व्याकरण : हरदेव बाहरी।

Note for Paper Setters:

1. Question number 1 will consist of 04 (with internal choice) out of whole syllabus. Every question will be of 10 mark each (Total Marks:40).
2 Question No. 2 will consist of 10 objective questions based on whole syllabi. Every objective answer type question will be of 1 mark each.

Evaluation of Internal Assessment (Theory)

Internal Assessment (Theory) will be based on the following components.

i.	Class Participation	5 Marks
ii.	Seminar/Presentation/Assignments/ Quiz/Class Test etc.	7 Marks
iii.	Mid-Term Exam	13 Marks
	Total	25 Marks

हिन्दी

सेमेस्टर -IV

Nomenclature of the Paper: **पाश्चात्य काव्यशास्त्र और साहित्यालोचन**

Course Code: **B23- HIN-401**
Course Type: CC-4/M**CC-6**
Level of the Course: **400-499**

Credits: 4 (Theory 3, Tutorial 1)
Max. Marks: 100
Internal Assessment: 30
Theory: 70
Time: 3 Hours

Workload: 4 Hours (3 hours theory and 1 hour tutorial; Tutorial group size for grammar and composition drills will be 20 students)

Course Learning Outcomes:
B23- HIN-401-1 They will able to learn about the various aspects of western poetics.
B23- HIN-401-2 They will be familiarized with the various aspects of western poetics.
B23- HIN-401-3 They will understand the background of western poetics.
B23- HIN-401-4 They will be familiarized with the thinker of western poetics.

पाठ्य विषय

इकाईः 1

- प्लेटो - काव्य संबंधी मान्यताएँ,
- अरस्तू - अनुकृति एवं विरेचन,
- लोंजाइनस - काव्य में उदात्त की अवधारणा

इकाईः 2

- वडर्सवर्थ - काव्य भाषा का सिद्धान्त,
- कॉलरिज - कल्पना और फैन्टेसी।
- क्रोचे - अभिव्यंजनावाद।

इकाईः 3

- टी.एस. एलियट - परम्परा और वैयक्तिक प्रतिभा, निर्वैयक्तिकता का सिद्धान्त
- मैथ्यू ऑरनाल्ड के साहित्य सिद्धांत
- आई.ए. रिचडर्स - मूल्य सिद्धान्त, सम्प्रेषण सिद्धान्त

इकाईः 4

- मार्क्सवादी समीक्षा,
- मनोविश्लेषणवादी समीक्षा
- आधुनिकता और उत्तर आधुनिकता

Note for Paper Setters:

1. The paper-setter will set essay type 02 questions from whole syllabi (with internal choice). Out of 10 questions student will attempt 05 questions by

selecting one question in (with internal choice). Each question will be 12 marks.

2. Question No. 5 will consist of 10 short questions based on whole syllabi. Out of 10 short questions, the students will be required to attempt any five questions. Every short-answer type question will be of 2 marks each.

Evaluation of Internal Assessment

Internal Assessment will be based on the following components.

i.	Class Participation	5 Marks
ii.	Seminar/Presentation/Assignments/ Quiz/Class Test etc.	10 Marks
iii.	Mid-Term Exam	15 Marks

हिन्दी

सेमेस्टर -IV

Nomenclature of the Paper: **आलोचक एवं आलोचना**

Course Code: **B23- HIN-402**
Course Type: M**CC-7**
Level of the Course: **400-499**
Credits: 4 (Theory 3, Tutorial 1) Max. Marks: 100
Internal Assessment: 30
Theory: 70
Time: 3 Hours
Workload: 4 Hours (3 hours theory and 1 hour tutorial; Tutorial group size for grammar and composition drills will be 20 students)

Course Learning Outcomes:

B23- HIN-402-1 They will able to learn about the various aspects of criticism.
B23- HIN-402-2 They will be familiarized with the various aspects criticism.
B23- HIN-402-3 They will understand the background critics.
B23- HIN-402-4 They will be familiarized with the critics.

पाठ्य विषय

इकाईः 1 **व्याख्या हेतु**

- **बालकृष्ण भट्ट :** साहित्य जनसमूह के हृदय का विकास है, सच्ची समालोना।
- **आचार्य शुक्ल :** कविता क्या है, काव्य में लोकमंगल की साधनावस्था काव्य में रहस्यवाद - चिन्तामणि भाग - 1-2
- **आचार्य द्विवेदी :** भारत की सांस्कृतिक समस्या, मनुष्य ही साहित्य का लक्ष्य है। हजारी प्रसाद द्विवेदी : संकलित निबन्ध : सं. नामवर सिंह।
- **रामविलास शर्मा :** आस्था और सौन्दर्य : रामविलास शर्मा, सौन्दर्य की वस्तुगत सत्ता और सामाजिक विकास, काव्य में उदात्त तत्व और रमणीयता।

इकाईः 2 **समीक्षात्मक प्रश्न:**

- बालकृष्ण भट्ट की आलोचनात्मक दृष्टि और देन
- आचार्य रामचन्द्र शुक्ल की लोकमंगल की अवधारणा, विरुद्धों का सामंजस्य, काव्य में रहस्यवाद सम्बन्धी अवधारणा।
- आचार्य हजारी प्रसाद द्विवेदी की मानवतावादी आलोचना दृष्टि।
- डॉ. रामविलास शर्मा की वस्तुवादी आलोचना दृष्टि और देन।

पाठ्य पुस्तकें:

- रामचन्द्र तिवारी : हिन्दी का गद्य साहित्य।
- रामचन्द्र तिवारी : हिन्दी आलोचना : शिखरों का साक्षात्कार।
- नन्दकिशोर नवल : हिन्दी आलोचना का विकास।

- रामविलास शर्मा : रामचन्द्र शुक्ल और हिन्दी आलोचना।
- मलयज : रामचन्द्र शुक्ल।
- विश्वनाथ त्रिपाठी : हिन्दी आलोचना, राजकमल प्रकाशन।

Note for Paper-Setters:

1. Question No. 1, the paper-setter will set 04 Explanation from Unit-1, out of which student will attempt 02 explanation 8 marks (Total=16 marks).
2. Question No. 2, The paper-setter will set essay type 04 questions from Unit-2 (with internal choice). Out of 8 questions student will attempt 4 questions by selecting one question in each unit. Each question will be 12 marks (Total=48 marks).
3. Question No. 3 will consist of 06 objective type questions from all Units. The students will be required to attempt all questions. Question will be of 1 mark each (Total=6 marks).

Evaluation of Internal Assessment

Internal Assessment will be based on the following components.

i.	Class Participation	5 Marks
ii.	Seminar/Presentation/Assignments/ Quiz/Class Test etc.	10 Marks
iii.	Mid-Term Exam	15 Marks

हिन्दी

सेमेस्टर -IV

Nomenclature of the Paper: **आधुनिक काव्य (छायावाद तक)**

Course Code: **B23- HIN-403**
Course Type: M**CC-8**
Level of the Course: **400-499**
Credits: 4 (Theory 3, Tutorial 1) Max. Marks: 100
Internal Assessment: 30
Theory: 70
Time: 3 Hours
Workload: 4 Hours (3 hours theory and 1 hour tutorial; Tutorial group size for grammar and composition drills will be 20 students)

Course Learning Outcomes:

BB23- HIN-403-1 They will able to learn about the various aspects of criticism.
BB23- HIN-403-2 They will be familiarized with the various aspects criticism.
BB23- HIN-403-3 They will understand the background critics.
BB23- HIN-403-4 They will be familiarized with the critics.

पाठ्य विषय

इकाईः 1 **व्याख्या हेतु**

- मैथिलीशरणगुप्त : 'साकेत' का नवम सर्ग
- जयशंकर प्रसाद : 'कामायनी' से 'चिन्ता' सर्ग
- सूर्यकान्त त्रिपाठी 'निराला' : 'बादलराग'- एक-छः, तोड़ती पत्थर, बांधो न नाव, इस ठाँव बन्धु, चर्खा चला,
- सुमित्रानन्दल पंत : नौका विहार, बादल, सांध्य वन्दना, मौन नियंत्रण, ताज

इकाईः 2 **समीक्षात्मक प्रश्न:**

- पंत का जीवन परिचय, पंत का प्रकृति चित्रण, प्रगतिवादी पंत, पंत और छायावाद, पंत की नारी- भावना, पंत की भाषा।
- जयशंकर प्रसाद का व्यक्तित्व एवं कृतित्व, वर्तमान संदर्भ में प्रसाद साहित्य की प्रासंगिकता, प्रसाद का जीवन-दर्शन, कामायनी: छायावादी रचना कामायनी का शैवदर्शन, महाकाव्यत्व की दृष्टि से कामायनी, कामायनी का रूपक तत्व।
- सूर्यकान्त त्रिपाठी निराला : सरस्वती के अमर पुत्र निराला, निराला साहित्य के पुर्नमूल्यांकन की आवश्यकता, निराला के काव्य में ग्रामीण चित्रण, राष्ट्रीयता के अग्रदूत निराला, निराला जी का स्वतन्त्रता परवर्ती काव्य, निराला साहित्य के निष्पक्ष अध्ययन की आवश्यकता।
- मैथिलीशरण गुप्त : द्विवेदी युगीन काव्य सृष्टि, साकेत की सीता और उर्मिला : नारी के उत्कर्ष रूप, राष्ट्रकवि गुप्त : व्यक्तित्व एवं साहित्यकार, 'साकेत' का महाकाव्य, गुप्तकृत कृतियों में संवेदना और शिल्प, साकेत का प्रतिपाद्य, साकेत का कलापक्ष।

सहायक पुस्तकें:

- प्रसाद और कामायनी: नगेन्द्र, नेशनल पब्लिशिंग हाऊस, दिल्ली।
- कामायनी में काव्य संस्कृति और दर्शन : द्वारिका प्रसाद सक्सेना, विनोद पुस्तक मंदिर, आगरा।
- रामेश्वर लाल खण्डेलवाल : जयशंकर प्रसाद : वस्तु ओर कला, नेशनल पब्लिशिंग हाऊस, दिल्ली।
- पद्मसिंह शर्मा कमलेश : निराला, राधाकृष्ण प्रकाशन, दिल्ली।
- शचीरानी गुर्टु : सुमित्रानन्दन पंत : काव्य कला और दर्शन, आत्माराम एण्ड सन्स, दिल्ली।
- शिवपाल सिंह : पंत का काव्य, साहित्य रत्नालय, कानपुर।
- सूर्यप्रसाद दीक्षित: राष्ट्रकवि मैथिलीशरणगुप्त और साकेत, किताबघर प्रकाशन नई दिल्ली।
- शिवगोपाल मिश्र : निराला के सम्पर्क में, साहित्यसंगम, इलाहाबाद।

Note for Paper-Setters:

1. Question No. 1, the paper-setter will set 04 Explanation from Unit-1, out of which student will attempt 02 explanation 8 marks (Total=16 marks).
2. Question No. 2, The paper-setter will set essay type 04 questions from Unit-2 (with internal choice). Out of 8 questions student will attempt 4 questions by selecting one question in each unit. Each question will be 12 marks (Total=48 marks).
3. Question No. 3 will consist of 06 objective type questions from all Units. The students will be required to attempt all questions. Question will be of 1 mark each (Total=6 marks).

Evaluation of Internal Assessment

Internal Assessment will be based on the following components.

i.	Class Participation	5 Marks
ii.	Seminar/Presentation/Assignments/ Quiz/Class Test etc.	10 Marks
iii.	Mid-Term Exam	15 Marks

हिन्दी

सेमेस्टर-IV

Nomenclature of the Course: हिन्दी भाषा शिक्षण

Course Code: **B23-HIN-404**
Course Type: DSE-**1**
Level of the Course: **400-499**

Credits: 4 (Theory 3, Tutorial 1)

Total Marks: 100
External Exam Marks: 70
Internal Assessment: 30
Time: 3 Hrs.

Workload: 4 Hours (3 hours theory and 1 hour tutorial. Tutorial group size for grammar and composition drills will be 20 students)

Course Learning Outcomes:
B23-HIN-404-1 Comprehend different forms and techniques of Language.
B23-HIN-404-2 The students will be able to understand Linguistic.
B23-HIN-404-3 The students will understand parts of Language and Script.
B23-HIN-404-4 The students will progress to understand basics of grammar.

पाठ्य विषय

इकाई **1 :** भाषा और भाषा शिक्षण, भाषा शिक्षण की प्रविधियांव्याकरण -, अनुवाद, प्रत्यक्ष विधि, वार्तालाप विधि, श्रव्यदृश्य विधि-, भाषा और शिक्षण का सामाजिक सांस्कृतिक एवं शैक्षिक संदर्भ

इकाई **2 :** बोधन क्षमता : सैद्धांतिक पक्ष, विकास के चार चरण, चारों चरणों के अभ्यास, कक्ष में प्रस्तुतिकरण, संदर्भसामग्री-, वाचन क्षमता सैद्धांतिक पक्ष :, विकास के पंच चरण, सभी चरणों का अभ्यास, अशुद्धियां, सहायक सामग्री।

इकाई **3 :** लेखन क्षमता: लिपि वर्तनी, लेखन विकास के पांच चरण, सभी चरणों के अभ्यास, अशुद्धियां, सहायक सामग्री। अभिव्यकित क्षमतासैद्धांतिक पक्ष :, विकास के पंच चरण, सभी चरणों के अभ्यास, अशुद्धियां, सहायक सामग्री।

इकाई **4 :** भाषा का सामाजिक संदर्भ भाषा और संस्कृति :, भाषा और परिवेश, सहायक पुस्तकें, श्रव्यदृश्य- उपकरणसामान्य परिचय :, भाषा प्रयोगशाला प्रकार एवं - प्रयोजन भाषा, प्रयोगशाला द्वारा शिक्षण, भाषा परीक्षणमूल्यांकन की : संकल्पना, प्रकार पद्धति, मूल्यांकन में श्रुत लेख एवं निकट परीक्षण। (क्लोज)

पाठ्य पुस्तकें **:**

- भाषा शिक्षण तथा भाषा विज्ञान : बृजेश्वर वर्मा, केन्द्रीय हिन्दी संस्थान, आगरा।
- भाषा मूल्यांकन तथा परीक्षण : किशोरी लाल शर्मा, केन्द्रीय हिन्दी संस्थान आगरा।
- अन्य भाषा शिक्षण के कुछ पक्ष : अमर बहादुर सिंह, केन्द्रीय हिन्दी संस्थान आगरा।

Note for Paper Setters:

1. The paper-setter will set essay type 02 questions from each unit (with internal choice). Out of 08 questions student will attempt 04 questions by selecting one question in each unit. Each question will be 15 marks.
2. Question No. 6 will consist of 10 short questions based on all the four Units. Out of 10 short questions, the students will be required to attempt any five questions. Every short-answer type question will be of 2 marks each.

Evaluation of Internal Assessment

Internal Assessment will be based on the following components.

vii.	Class Participation	5 Marks
viii.	Seminar/Presentation/Assignments/ Quiz/Class Test etc.	10 Marks
ix.	Mid-Term Exam	15 Marks

हिन्दी

सेमेस्टर-IV

Nomenclature of the Course: **प्रयोजनमूलक हिन्दी**

Course Code: **B23-HIN-405**
Course Type: **DSE-1**
Level of the Course: 3**00-399**

Credits: 4 (Theory 3, Tutorial 1)

Total Marks: 100
External Exam Marks: 70
Internal Assessment: 30
Time: 3 Hrs.

Workload: 4 Hours (3 hours theory and 1 hour tutorial. Tutorial group size for grammar and composition drills will be 20 students)

Course Learning Outcomes:

B23-HIN-405-1 Comprehend different forms and techniques of Functional Hindi.
B23- HIN-405-2 The students will be able to understand Linguistic.
B23- HIN-405-3 The students will understand parts of Functional Hindi and Script.
B23- HIN-405-4 The students will progress to understand basics of Function Hindi

पाठ्य विषय

इकाईः 1 प्रयोजनमूलक हिन्दी : परिभाषा, स्वरूप एवं क्षेत्र, प्रयोजनमूलक हिन्दी का प्रयोजन एवं उसकी उपयोगिता, हिन्दी के विभिन्न रूप : बोलचाल की भाषा, सम्पर्क भाषा, राजभाषा, राष्ट्रभाषा, संचार भाषा, सर्जनात्मक भाषा, संविधान में हिन्दीपारिभाषिक , शब्दावली, हिन्दी शब्द-सम्पदा,

इकाईः 2 पत्रकारिता का स्वरूप और प्रकार, हिन्दी पत्रकारिता का उद्भव और विकास, सम्पादकीय लेखन, पत्रकार के गुण, समाचार लेखन कला। पत्राचार : पत्राचार के प्रकार : व्यावहारिक पत्र, सरकारी पत्राचार, कार्यालयी पत्र, व्यावसायिक पत्र, कार्यालयी हिन्दी : संक्षेपण, पल्लवन प्रारूपण टिप्पण।

इकाईः 3 सम्पादन कला : प्रिन्ट मीडिया, इलेक्ट्रॉनिक मीडिया, फीचर लेखन, रिपोतार्ज, पृष्ठ सज्जा एवं प्रस्तुतीकरण, प्रमुख जनसंचार माध्यम : प्रेस, रेडियो, टी.वी., इन्टरनेट, वीडियो, हिन्दी कम्प्यूटिंग - कम्प्यूटरी परिचय, हिन्दी के प्रमुख इन्टरनेट पोर्टल, हिन्दी के सॉफ्टवेयर पैकेज।

इकाईः 4 अनुवाद : स्वरूप एवं प्रक्रिया, प्रकार : कार्यालयी अनुवाद, वैज्ञानिक अनुवाद, तकनीकी अनुवाद, वाणिज्यिक अनुवाद, विधिक अनुवाद, आशु अनुवाद, अनुवाद के सिद्धान्त, अनुवाद की सीमाएं, अनुवादक के गुण।

सन्दर्भ पुस्तकें:

- डॉ. रवीन्द्रनाथ श्रीवास्तव : प्रयोजनमूलक हिन्दी
- डॉ. कैलाश चन्द्र भाटिया : प्रयोजनमूलक हिन्दी

- डॉ. अशोक कुमार शर्मा : संचारक्रांति और हिन्दी पत्रकारिता
- अवधेश मोहन गुप्त : राजभाषा सहायिका
- कैलाश चन्द्र भाटिया : प्रशासन में राजभाषा हिन्दी
- डॉ. रामकिशोर शर्मा : व्यवहारिक हिन्दी
- रामचन्द्र सिंह सागर : कार्यालय-कार्य-विधि
- डॉ. मनमोहन सिंह : समाचार लेखन एवं मुद्रण कला
- डॉ. प्रदीप के. शर्मा : कार्यालयी हिन्दी

Note for Paper Setters:

1. The paper-setter will set essay type 02 questions from each unit (with internal choice). Out of 08 questions student will attempt 04 questions by selecting one question in each unit. Each question will be 15 marks.
2. Question No 5 will consist of 10 short questions based on all the four Units. Out of 10 short questions, the students will be required to attempt any five questions. Every short-answer type question will be of 2 marks each.

Evaluation of Internal Assessment

Internal Assessment will be based on the following components.

x.	Class Participation	5 Marks
xi.	Seminar/Presentation/Assignments/ Quiz/Class Test etc.	10 Marks
xii.	Mid-Term Exam	15 Marks

DEPARTMENT OF HINDI

KURUKSHETRA UNIVERSITY
KURUKSHETRA

(Established by the State Legislature Act XII of 1956)
(A+ Grade, NAAC Accredited)

Syllabus for VACs, SECs, VOCs and AECs for Subject: Hindi for UG Progamme in accordance to NEP- 2020 to be implemented w.e.f. 2023-24 (in Phased Manner)

Department of Hindi
Kurukshetra University, Kurukshetra
(Established by the State Legislature Act XII of 1956)
(A+ Grade, NAAC Accredited)

Scheme of Examination for Undergraduate Programme Under Multiple Entry-Exit, Internship and CBCS-LOCF in accordance with NEP-2020 w.e.f. 2023-24 (in phased manner), Subject: Hindi **(VACs, SECs, VOCs and AECs)**

Semester	Course Type	Course Code	Nomenclature of Course	Contact/ Hours/ Week	Contact/ Hours/ Week	Internal Marks	External Marks	Internal Marks	External Marks
III	VAC-3	B23-HIN-309	हरियाणवी संस्कृतिः विविध आयाम	2	2	15	35	50	3 Hrs.
III	VAC-3	B23-HIN-325	संस्कृति एवं संचार	2	2	15	35	50	3 Hrs.
II	SEC-2	B23-HIN-206	Public Speaking in Hindi Language & Leadership	3	3	25	50	50	3 Hrs.
II	SEC-2	B23-HIN-217	सृजनात्मक लेखन	3	3	25	50	50	3 Hrs.
III	SEC-3	B23-HIN-309	अनुवाद कला	3	3	25	50	50	3 Hrs.
III	VOC-3	B23-HIN-315	Typing Shorthand in Hindi	4	4	30	70	100	3 Hrs.
I	AEC-4	B23-HIN-121	हिन्दी भाषा और व्याकरण	2	2	15	35	50	3 Hrs.
II	AEC-1	B23-HIN-221	हिन्दी भाषा एवं सम्प्रेषण: मौखिक सम्प्रेषण	2	2	15	35	50	3 Hrs.
III	AEC-2	B23-HIN-321	हिन्दी भाषा एवं सम्प्रेषण: लेखन सम्प्रेषण	2	2	15	35	50	3 Hrs.
IV	AEC-3	B23-HIN-421	हिन्दी भाषा एवं सम्प्रेषण: व्यक्तित्व विकास	2	2	15	35	50	3 Hrs.

Programme Learning Outcomes in Bachelor of Arts (Multidisciplinary, Single Major, Honours and Honours with Research) as per NEP 2020

1. Acquire a comprehensive understanding of relevant concepts, theories, and principles in the field.
2. Develop practical skills and technical expertise to effectively apply knowledge in real-world situations.
3. Apply acquired knowledge and skills to solve complex problems and make informed decisions.
4. Communicate effectively, both orally and in writing, with diverse audiences and in various contexts.
5. Apply critical thinking skills to analyse information, evaluate arguments, and generate innovative solutions to complex problems.
6. Demonstrate ethical integrity and social responsibility in decision-making and actions.
7. Embrace continuous learning and adaptability for staying current in the field.
8. Foster innovative thinking and generate new ideas to tackle challenges and seize opportunities.
9. Develop proficiency in research methods to contribute to the advancement of knowledge in the field.
10. Apply interdisciplinary analysis to solve complex problems with evidence-based approaches.

हिन्दी

सेमेस्टर -III

Nomenclature of the Course: **हरियाणवी** संस्कृतिः विविध आयाम

Course Code: B23-HIN-309
Course Type: **VAC-3**
Level of the Course: **300-399**

Credits: 2 (Theory 2)

Total Marks: 50
External Exam Marks: 35
Internal Assessment: 15
Time: 3 Hrs.

Course Learning Outcomes

B23-HIN-309-1. The students will be introduced to the Haryanvi Culture.
B23-HIN-309-2. They will learn various aspects of Haryanvi Languages.
B23-HIN-309-3. They will learn the about Art and Culture of Haryana.
B23-HIN-309-4. They will have the comprehensive knowledge of Haryanvi Literature.

पाठ्य विषय

इकाई - 1 संस्कृति का अर्थ, परिभाषा, महत्व, संस्कृति का कला के साथ संबंध, संस्कृति तत्वों के उदाहरणः रीति-रिवाज, पोशाक, सामाजिक मानक एवं परम्पराऐं।

इकाई - 2 हरियाणवी संस्कृति से अभिप्राय विविध स्वरूप, हरियाणवी साहित्य के विविध आयाम, गीत, कहानी, कथा, लोक नाट्य, लोक गाथा, बुझावल, पहेलियां, लोकोक्तियां, मुहावरे, लोक विनोद के विविध स्वरूप,

इकाई - 3 हरियाणवी कला शिक्षा और लोक संस्कृति की विशेषताएं, संस्कृति के प्रतीक, परिवहन के साधन, खान-पान, आभूषण, लोक परिधान, अन्तर्राष्ट्रीय स्तर पर हरियाणवी भाषा एवं संस्कृति का विकास।

इकाई - 4 भारत में बोली जाने वाली बोलियां, भाषा ध्वनियों का विवरण, हरियाणवी संस्कृति, कला, स्थापत्य मंदिर, धार्मिक समुदाय, संस्कृतिक-सामाजिक जीवन एवं परम्पराऐं, मेले व त्यौहार

पाठ्य पुस्तकें:

- हरियाणा का लोक साहित्य, सांस्कृतिक संदर्भ : डॉ. भीम सिंह मलिक।
- हरियाणा की लोकधर्मी नाट्य परम्परा : डॉ. पूर्णचन्द शर्मा।
- हरियाणा प्रदेश का लोक साहित्य : डॉ. शंकरलाल यादव।
- हरियाणा का लोक साहित्य : राजा राम शास्त्री।
- हरियाणा की लोक साहित्यिक धरोहर : डॉ. महासिंह पूनिया।
- संचार कौशल : डॉ. महादेव पांडेय।
- बोल-चाल की कौशल कला : रमेश सानवाल।
- संवाद कौशल : आशा भागवत।

Note for Paper Setters:

1. Question number 1 will consist of 04 (with internal choice) out of whole syllabus. Every question will be of 07 mark each (Total Marks:28).
2. Question No. 2 will consist of 07objective questions based on whole syllabi. Every short-answer type question will be of 1 mark each.

Evaluation of Internal Assessment

Internal Assessment (Theory) will be based on the following components.

i.	Class Participation	4 Marks
ii.	Seminar/Presentation/Assignments/ Quiz/Class Test etc.	4 Marks
iii.	Mid-Term Exam	7 Marks

हिन्दी

सेमेस्टर -III

Nomenclature of the Course: संस्कृति एवं संचार

Course Code: B23-HIN-325
Course Type: **VAC-3**
Level of the Course: **300-399**

Credits: 2 (Theory 2)

Total Marks: 50
External Exam Marks: 35
Internal Assessment: 15
Time: 3 Hrs.

Course Learning Outcomes

B23-HIN-201-1. The students will be introduced to the communication.
B23-HIN-201-2. They will learn various aspects of writing skills and their use in communication.
B23-HIN-201-3. They will learn the practical use of punctuation and capitalization.
B23-HIN-201-4. They will have the comprehensive knowledge of communication.

पाठ्य विषय

इकाईः 1 **संचार का अर्थ, परिभाषा, प्रकृति, महत्व एवं उद्देश्य। संचार की विशेषताएं, संचार के विविध प्रकार, संचार के लाभ, संचार के विविध आयाम एवं माध्यम।**

इकाईः 2 **संस्कृति से अभिप्राय, संस्कृति के विविध आयाम, संस्कृति की महत्ता, संस्कृति के तत्व, सांस्कृतिक परम्पराएं एवं मान्यताएं।**

इकाईः 3 **हरियाणा की संस्कृति, कला, स्थापत्य मंदिर, प्रदर्शन कलाएं, नृत्य कला, लोकनृत्य, लोक नाट्य, हरियाणवी भाषा एवं बोलियां, हरियाणा के तीज-त्योहार, हरियाणा के ऐतिहासिक स्थल।**

इकाईः 4 भारत में बोली जाने वाली बोलियां, भाषा ध्वनियों का विवरण और अभिव्यक्ति, संचार कौशल को बढ़ाने वाले कारक, संचार का जीवन और कार्य में महत्व, मौखिक एवं लिखित संचार कौशल

Note for Paper Setters:

1. Question number 1 will consist of 04 (with internal choice) out of whole syllabus. Every question will be of 07 mark each (Total Marks:28).
2. Question No. 2 will consist of 07objective questions based on whole syllabi. Every short-answer type question will be of 1 mark each.

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Evaluation of Internal Assessment

Internal Assessment (Theory) will be based on the following components.

i.	Class Participation	4 Marks
ii.	Seminar/Presentation/Assignments/ Quiz/Class Test etc.	4 Marks
iii.	Mid-Term Exam	7 Marks
	Total	15 Marks

हिन्दी

सेमेस्टर-**II**

Nomenclature of the Course: Public Speaking in Hindi Language & Leadership

Course Code: **B23-HIN-206**
Course Type: **SEC**
Level of the Course: **200-299**
Credits: 3 (2 Theory, 1 Tutorial)

Total Marks: 75
Internal Assessment: 25
End Term Exam Marks: 50
Time: 3 hours

Course Learning Outcomes:

B23- HIN-206-1, To understand various aspects of Hindi Language.
B23- HIN-206-2, To acquaint the students with the basic skills required for effectively Speaking.
B23- HIN-206-3, To explain the differences in spoken Hindi on social media and other platform.
B23- HIN-206-4, To enhance the leadership with Hindi Spoken

.

पाठ्य विषय

इकाईः1

- **भाषण कला से अभिप्राय।**
- **भाषण कला का विकास एवं उपयोगिता।**
- **सफल वक्ता के गुण।**
- **विषय चयन हेतु सावधानियां।**

इकाईः2

- **अच्छा भाषण कैसे लिखें।**
- **भाषण का आरंभ, मध्य एवं अंत में रोचकता कैसे।**
- **भाषण शैली का विकास कैसे करें।**
- **सफल भाषण की कसौटी एवं मंच निर्भीकता।**

इकाईः3

- **सार्वजनिक अभिव्यक्ति की कसौटी के विविध आयाम।**
- **नेतृत्व से अभिप्राय एवं नेता के विविध गुण।**
- **नेतृत्व एवं सार्वजनिक अभिव्यक्ति एक मूल्यांकन।**
- **सार्वजनिक बोलने के युवा कार्यकर्ताओं के लिए भाषणकला।**
- शिक्षा के महत्व पर सार्वजनिक बोलना, मंच पर सार्वजनिक बोलना के कौशल ग्रहण, सार्वजनिक बोलने में नेतृत्व की भावना

इकाईः4

- हिन्दी भाषा की प्रासंगिकता
- सार्वजनिक बोलने की कला पर विचार

- नेतृत्व का परिप्रेक्ष्य, बच्चों के लिए नेतृत्व और व्यक्तित्व विकास नेतृत्व भाषण, शिक्षा में नेतृत्व

पाठ्य पुस्तकें

- डेल कारनेगी : The Art of Public Speaking
- भाषण कला और सामयिक भाषण : Prof. Khajan Singh, Prakashk Bhartendu Bhawan, Chandigarh
- अच्छा बोलने की कला और कामयाबी - Dale Carngie
- How to Develop self confidence and influence people by public speaking Dale Carnegie

Note for Paper Setters:

1. Question number 1 will consist of 04 (with internal choice) out of whole syllabus. Every question will be of 10 mark each (Total Marks:40).
2 Question No. 2 will consist of 10 objective questions based on whole syllabi. Every short-answer type question will be of 1 mark each.

Evaluation of Internal Assessment

Internal assessment will be based on the following components:

(i)	Class participation	5 marks
(ii)	Assignments- Presentations	7 marks
(iii)	Mid Term:	13 marks
	Total Marks	25 marks

हिन्दी

सेमेस्टर-**II**

Nomenclature of the Course: **सृजनात्मक लेखन**

Course Code: **B23-HIN-H217**
Course Type: **SEC**
Level of the Course: **200-299**
Credits: 3 (2 Theory, 1 Tutorial)

Total Marks: 75
Internal Assessment: 25
End Term Exam Marks: 50
Time: 3 hours

Course Learning Outcomes:

B23- HIN-217-1, To understand various aspects of Creative Writing.
B23- HIN-217-2, To acquaint the students with the basic skills required for a creative writer.
B23- HIN-217-3, To explain the differences in writing for various literary and social media contexts.
B23- HIN-217-4, To enhance the creative and critical abilities of the students

.

पाठ्य विषय

इकाईः1	सृजनात्मकता : अवधारणा और सिद्धांत
	सृजनात्मकता से अभिप्राय एवं उसके विविध स्वरूप।
इकाईः2	कविता से अभिप्राय एवं कविता लेखन।
	कथा लेखन से अभिप्राय एवं उसके विविध स्वरूप।
	कहानी लेखन, गीत लेखन, फिल्म लेखन, संवाद लेखन।
इकाईः3	आलेख लेखन, पत्र लेखन, साक्षात्कार के विविध स्वरूप।
	यात्रा लेखन एवं उसके प्रकार, नाटक से अभिप्राय एवं लेखन शैली।
	निबन्ध से अभिप्राय एवं उसके विविध स्वरूप, समाचार लेखन।
इकाईः4	फीचर लेखन, टी.वी. एवं रेडियो समाचार लेखन।
	संस्मरण एवं रेखाचित्र से अभिप्राय, डायरी लेखन।
	ब्लॉग लेखन, मंच संचालन।

पाठ्य पुस्तकें

- लेखक कैसे बनें - रस्किन बॉण्ड
- Creative Writing - हेनरी हार्विन
- On Poetry - जोनाथन डेविडसन
- Short stories & personal essay – Windy Lynn Harris
- Melin E Page Brian Jamaxson - A short guide to writing about history

Note for Paper Setters:

1. Question number 1 will consist of 04 (with internal choice) out of whole syllabus. Every question will be of 10 mark each (Total Marks:40).
2 Question No. 2 will consist of 10 objective questions based on whole syllabi. Every short-answer type question will be of 1 mark each.

Evaluation of Internal Assessment

Internal assessment will be based on the following components:

(iv)	Class participation	5 marks
(v)	Assignments- Presentations	7 marks
(vi)	Mid Term:	13 marks
	Total Marks	25 marks

हिन्दी

सेमेस्टर-**III**

Nomenclature of the Course: **अनुवाद कला**

Course Code: **B23-HIN-309**
Course Type: **SEC**
Level of the Course: **300-399**
Credits: 3 (2 Theory, 1 Tutorial)

Total Marks: 75
Internal Assessment: 25
End Term Exam Marks: 50
Time: 3 hours

Course Learning Outcomes:

B23- HIN-309-1, To understand various aspects of Translation.
B23- HIN-309-2, To acquaint the students with the basic skills Translation and writing.
B23- HIN-309-3, To explain the differences in writing for various literary and social media contexts.
B23- HIN-309-4, To enhance the creative and critical abilities of the students

.

पाठ्य विषय

इकाईः1

- अनुवाद **:** अर्थ परिभाषा स्वरूप एवं सीमाएं,
- अनुवाद में भाषा विज्ञान का महत्व,
- अनुवाद के विविध प्रकार**-** शब्दानुवाद**,** भावानुवाद**,** छायानुवाद**,** साहित्यिक अनुवाद।

इकाईः2

- अनुवाद शब्दावली से अभिप्राय एवं इसके विविध स्वरूप,
- हिन्दी से अंग्रेजी में अनुवाद **150** शब्द
- अंग्रेजी से हिन्दी में अनुवाद। **150** शब्द

इकाईः3

- अनुवाद अध्ययन उद्देश्य**:**
- अन्तरविषयी विधा होने के कारण अनुवाद अध्ययन अन्य विधाओं से वह चीजें ग्रहण करती है जो अनुवाद को प्रोत्साहन देती है।
- तुलनात्मक साहित्य कम्प्यूटर विज्ञान**,** इतिहास भाषा विज्ञान**,** सांस्कृतिक भाषा शास्त्र संकेत विज्ञान शब्दावली विज्ञान।

इकाईः4 अनुवाद की विभिन्न विचारधाराएं**-** समतुल्यता का सिद्धान्त**,** वर्णनात्मक अनुवाद अध्ययन**,** स्कोपोस का सिद्धान्त**,** सांस्कृतिक अनुवाद**,** अनुवाद के क्षेत्र

में निरीक्षण, अनुवाद एक समाजशास्त्र के रूप में उत्तर अपनिवेशवाद एवं अनुवाद अध्ययन लैंगिक अध्ययन नीतिशास्त्र

पाठ्य पुस्तक

James S. Holines : The name and nature of translation studies.

Note for Paper Setters:

1. Question number 1 will consist of 04 (with internal choice) out of whole syllabus. Every question will be of 10 mark each (Total Marks:40).
2 Question No. 2 will consist of 10 objective questions based on whole syllabi. Every short-answer type question will be of 1 mark each.

Evaluation of Internal Assessment

Internal assessment will be based on the following components:

(vii)	Class participation	5 marks
(viii)	Assignments- Presentations	7 marks
(ix)	Mid Term:	13 marks
	Total Marks	25 marks

हिन्दी

सेमेस्टर-III

Nomenclature of the Course: **Typing Shorthand in Hindi**

Course Code: **B23-HIN-315**
Course Type: **VOC-3**
Level of the Course: 3**00-399**

Credits: 4 (Theory 3, Tutorial 1)

Total Marks: 100
External Exam Marks: 70
Internal Assessment: 30
Time: 3 Hrs.

Workload: 4 Hours (3 hours theory and 1 hour tutorial. Tutorial group size for grammar and composition drills will be 20 students)

Course Learning Outcomes:

B23-HIN-315-1 Comprehend different forms and techniques of Functional Hindi.
B23-HIN-315-2 The students will be able to understand Linguistic.
B23-HIN-315-3 The students will understand parts of Functional Hindi and Script.
B23-HIN-315-4 The students will progress to understand basics of Function Hindi

पाठ्य विषय

इकाईः1 आशुलिपि का इतिहास ,लाभ ,तकनीक ,मानक आशुलिपि ,आशुलिपि में कितने स्वर होते हैं ,आशुलिपि का अर्थउच्चारण ,अनुवाद ,

इकाईः2 हिन्दी आशुलिपि का परिचय दीजिएहिन्दी आशुलिपि शब्द चिन्ह एवं , ,वाक्यांशआशुलिपि कैसे लिखें ,आशुलिपिक क्या है, आशुलिपिक कैसे तैयार करें ,आशुलिपिक का कार्य

इकाईः3 आशुलिपिक केरियर की जानकारी ,भारत में आशुलिपिक केरियर का महत्व , आशुलिपि श्रुतलेख ,टाइपराइटिंग में खराब प्रदर्शन के कारण

इकाईः4 आशुलिपि लेखन पर कीबोर्ड शैलियाँ ,शॉर्टहैंड टाइपिंग स्पीड ,आशुलिपिक कौशल गति ,पैराग्राफ और विषय वाक्य लेखन ट्यूटोरियल-

Reading Books

- Writing and Spelling Short Stories
- Current short hand: Henry Sweet
- Duployan Shorthand (Emile Duploye)
- Electric Shorthand: J.G. Cross
-Pitman Shorthand: Isaac Pitman

Note for Paper Setters:

1. The paper-setter will set essay type 02 questions from each unit (with internal choice). Out of 08 questions student will attempt 04 questions by selecting one question in each unit. Each question will be 15 marks.

2. Question No. 5 will consist of 10 short questions based on all the four Units. Out of 10 short questions, the students will be required to attempt any five questions. Every short-answer type question will be of 2 marks each.

Evaluation of Internal Assessment

Internal Assessment will be based on the following components.

i.	Class Participation	5 Marks
ii.	Seminar/Presentation/Assignments/ Quiz/Class Test etc.	10 Marks
iii.	Mid-Term Exam	15 Marks

हिन्दी

सेमेस्टर -I

Nomenclature of the Course: हिन्दी भाषा और व्याकरण **Level-I**

Course Code: **B23-AEC-HIN-121**
Course Type: **AEC**
Level of the Course: **100-199**

Credits: 2 (Theory 2)

Total Marks: 50
External Exam Marks: 35
Internal Assessment: 15
Time: 3 Hrs.

Workload: Theory 2 hours

B23-AEC-HIN-121-1. The students will learn various aspects of Language.
B23-AEC-HIN-121-401-2. They will understand the importance of Grammer.
B23-AEC-HIN-121-3. They will comprehend the importance of language skills and its types.
B23-AEC-HIN-121-4. They will be introduced to parts of speech and their role in language learning.

पाठ्य विषय

इकाई **- 1 :** हिन्दी के विविध रूप (राष्ट्रभाषा, राजभाषा, सम्पर्क भाषा), हिन्दी भाषा और भारतीय संविधान, हिन्दी की बोलियां।

इकाई **- 2 :** व्याकरण का स्वरूप और महत्व, देवनागरी लिपि का मानवीकरण, हिन्दी की वर्णव्यवस्था : स्वर एवं व्यञजन।

इकाई **- 3 :** हिन्दी भाषा शब्द भण्डार : तत्सम, तद्भव देशज, विदेशी शब्द निर्माण : उपसर्ग, प्रत्यय, पर्यायवाची शब्द, विलोम शब्द संज्ञा, सर्वनाम, विशेषण, क्रिया।

इकाई **- 4 :** मुहावरे लोकोक्तियाँ, हिन्दी वाक्य रचना, वाक्य रचना एवं भेद, शब्द शुद्धि, वाक्य शुद्धि, परिभाषिक शब्दावली।

सहायक पुस्तकें**:**

- कामता प्रसाद गुरु : हिन्दी व्याकरण
- किशोरीदास वाजपेयी : हिन्दी शब्दानुशासन
- भोलेनाथ तिवारी : हिन्दी भाषा की संरचना्र
- हरदेव बाहरी : सामान्य हिन्दी
- प्रथ्वीनाथ पाण्डेय : सामान्य हिन्दी

Note for Paper Setters:

1. Question number 1 will consist of 04 (with internal choice) out of whole syllabus. Every question will be of 07 mark each (Total Marks:28).
2. Question No. 2 will consist of 07objective questions based on whole syllabi. Every short-answer type question will be of 1 mark each.

Evaluation of Internal Assessment

Internal Assessment (Theory) will be based on the following components.

iv.	Class Participation	4 Marks
v.	Seminar/Presentation/Assignments/ Quiz/Class Test etc.	4 Marks
vi.	Mid-Term Exam	7 Marks
	Total	15 Marks

हिन्दी

सेमेस्टर-II

Nomenclature of the Course: हिन्दी भाषा एवं सम्प्रेषण: मौखिक सम्प्रेषण **Level-II**

Course Code: **B23-AEC**-HIN-**221**

Course Type: **AEC**

Level of the Course: **200-299**

Credits: 2 (Theory 2)

Total Marks: 50
External Exam Marks: 35
Internal Assessment: 15
Time: 3 Hrs.

Course Learning Outcomes

B23-AEC- HIN-221-1. The students will be introduced to the communication in Hindi language.
B23-AEC- HIN-221-2. They will learn various aspects of speaking skills and their use in communication.
B23-AEC- HIN-221-3. They will learn the practical use of punctuation and capitalization.
B23-AEC- HIN-221-4. They will have the comprehensive knowledge of communication.

पाठ्य विषय

इकाई - 1 : सम्प्रेषण का अर्थ, प्रकृति महत्व और उद्देश्य, सम्प्रेषण के तत्व व प्रकार, सम्प्रेषण की विशेषताएं, सम्प्रेषण की प्रक्रिया, अन्तर्राष्ट्रीय सम्प्रेषण वा सांस्कृतिक भिन्नता, प्रौद्योगिकी आधारित सम्प्रेषण उपकरण, मौखिक और गैर मौखिक।

इकाई - 2 : सम्प्रेषण श्रवण प्रक्रिया, श्रवण में बाधाएं, श्रवण के प्रकार, प्रभावी ढंग से श्रवण के लाभ, नोट लेना और नोट बनाना।

इकाई - 3 : भारत में बोली जाने वाली हिन्दी, हिन्दी भाषण ध्वनियों का विवरण और अभिव्यक्ति, हिन्दी में भाषण के अंग, वर्तन और उच्चारण, शब्दकोश के अनुसार शब्दों में प्राप्त उच्चारण का अन्तर्राष्ट्रीय ध्वन्यात्मक वर्णमाला प्रतिलेखन।

इकाई - 4 : प्रस्तुति कौशल, साक्षात्कार कौशल, साक्षात्कार के लिए तैयारी, साक्षात्कार तकनीक, सार्वजनिक भाषण, भाषण की तैयारी, भाषण का आयोजन, भाषण की प्रस्तुति।

सहायक पुस्तकें:

- संचार कौशल : डॉ. महादेव पाण्डेय व अनूप कुमार दीक्षित
- बोलचाल की कौशल कला : रमेश सानवाल
- संवाद कौशल : आशा भागवत

Note for Paper Setters:

1. Question number 1 will consist of 04 (with internal choice) out of whole syllabus. Every question will be of 07 mark each (Total Marks:28).
2. Question No. 2 will consist of 07objective questions based on whole syllabi. Every short-answer type question will be of 1 mark each.

Evaluation of Internal Assessment

Internal Assessment (Theory) will be based on the following components.

iv.	Class Participation	4 Marks
v.	Seminar/Presentation/Assignments/ Quiz/Class Test etc.	4 Marks
vi.	Mid-Term Exam	7 Marks

हिन्दी

सेमेस्टर -III

Nomenclature of the Course: हिन्दी भाषा एवं सम्प्रेषण: लेखन सम्प्रेषण **Level-III**

Course Code: **B23-AEC-HIN-321**

Course Type: **AEC**

Level of the Course: **300-399**

Credits: 2 (Theory 2)

Total Marks: 50
External Exam Marks: 35
Internal Assessment: 15
Time: 3 Hrs.

Course Learning Outcomes

B23-AEC--HIN-321-1. The students will be introduced to the communication in Hindi language.
B23-AEC--HIN-321-2. They will learn various aspects of writing skills and their use in communication.
B23-AEC--HIN-321-3. They will learn the practical use of punctuation and capitalization.
B23-AEC--HIN-321-4. They will have the comprehensive knowledge of communication.

पाठ्य विषय

ईकाई **- 1 :** लेखन सम्प्रेषण से अभिप्राय विविध आयाम: उद्देश्य, महत्व, प्रक्रिया, पद्धतियां ।

ईकाई **- 2 :** प्रभावी लेखन कौशल : प्रभावी लेखन कौशल के गुण व तत्व पत्राचार : व्यक्तिगत, आधिकारिक व व्यवसायिक रिपोर्ट लेखन, संवाद लेखन, निबन्ध लेखन

ईकाई **- 3 :** समाचार और सम्पादकीय लेखन, अनुवाद सिद्धांत और व्यवहार, शब्द सम्पदा।

ईकाई **- 4 :** व्यावहारिक हिन्दी व्याकरण और उपयोग के महत्वपूर्ण पहलू। (Composition); पुनर्रचना संक्षेपण, भाव, पल्लवन।

सहायक पुस्तकें**:**

- हिन्दी भाषा : लेखन कौशल : संजय कपूर
- बदरीनाथ कपूर : परिष्कृत हिन्दी व्याकरण

Note for Paper Setters:

1. Question number 1 will consist of 04 (with internal choice) out of whole syllabus. Every question will be of 07 mark each (Total Marks:28).
2. Question No. 2 will consist of 07objective questions based on whole syllabi. Every short-answer type question will be of 1 mark each.

Evaluation of Internal Assessment

Internal Assessment (Theory) will be based on the following components.

iv.	Class Participation	4 Marks
v.	Seminar/Presentation/Assignments/ Quiz/Class Test etc.	4 Marks
vi.	Mid-Term Exam	7 Marks
	Total	15 Marks

हिन्दी

सेमेस्टर -IV

Nomenclature of the Course: हिन्दी भाषा एवं सम्प्रेषण: व्यक्तित्व विकास **Level-IV**

Course Code: **B23-AEC-HIN-421**

Course Type: **AEC**

Level of the Course: 4**00-499**

Credits: 2 (Theory 2)

Total Marks: 50
External Exam Marks: 35
Internal Assessment: 15
Time: 3 Hrs.

Course Learning Outcomes

B23-AEC-HIN-421-1. The students will enhance their vocabulary for personality development.
B23-AEC-HIN-421-2. They will learn the various types of leadership
B23-AEC-HIN-421-3. They will learn about the importance of values and etiquettes.
B23-AEC-HIN-421n -4. They will learn practical use of time management

पाठ्य विषय

इकाईः 1 व्यक्तित्व: व्यक्तित्व की परिभाषा, व्यक्तित्व विकास के तत्व, प्रकार, सॉफ्ट कौशल, सॉफ्ट कौशल में सुधार, व्यक्तित्व लक्षण नेतृत्व गुण, स्वामी विवेकानन्द के व्यक्तित्व विकास की अवधारणा। व्यक्तित्व विकास में भाषा एवं साहित्य का योगदान।

इकाईः 2 नेतृत्व योजना : नेतृत्व से अभिप्राय, सफल नेता के गुण, नेतृत्व के लाभ, प्रेरणा और लक्ष्य का निर्धारण, लक्ष्य प्राप्ति, सफलता-विफलता की अवधारणा, सफलता प्राप्त करने में बाधाएं, सफलता के जिम्मेदार कारक, टीम निर्माण, टीम कार्य, इमोशनल इंटेलीजन्स का अर्थ एवं महत्व।

इकाईः 3 मूल्य: मूल्यों की शक्ति, व्यक्तिगत मूल्य, सांस्कृतिक मूल्य, सामाजिक मूल्य। शिष्टाचार : शिष्टाचार का वर्गीकरण, अच्छे आचरण की अभ्यास, आत्मानुशासन का महत्व, आत्म मूल्यांकन एवं विकास।

इकाईः 4 समय प्रबन्धन : अर्थ महत्व, समय प्रबन्धन की तकनीक और शैलियां, टाइम मैट्रिक्स, प्रभावी शैड्यूलिंग। तनाव प्रबन्धन : तनाव प्रबन्धन का अर्थ, परिचय, कारण तनाव के प्रभाव एवं प्रकार, तनाव के स्त्रोत, तनाव प्रबन्धन की तरकीब।

सहायक पुस्तकें:

- डॉ. पुनीत बिसारिया : संचार कौशल और व्यक्तित्व विकास
- डॉ. अरविन्द कालिया : व्यक्तित्व विकास
- आशा भागवत : संवाद कौशल

Note for Paper Setters:

1. Question number 1 will consist of 04 (with internal choice) out of whole syllabus. Every question will be of 07 mark each (Total Marks:28).
2. Question No. 2 will consist of 07objective questions based on whole syllabi. Every short-answer type question will be of 1 mark each.

Evaluation of Internal Assessment

Internal Assessment (Theory) will be based on the following components.

i.	Class Participation	4 Marks
ii.	Seminar/Presentation/Assignments/ Quiz/Class Test etc.	4 Marks
iii.	Mid-Term Exam	7 Marks
	Total	15 Marks

DEPARTMENT OF PANJABI
KURUKSHETRA UNIVERSITY KURUKSHETRA
(Established by the State Legislature Act XII of 1956)
("A+" Grade, NAAC Accredited)

Scheme of Examination for the subject:

Punjabi (Sem. I to VIII)

for U.G. Programme in Accordance to NEP - 2020 (Multiple Entry-Exit, Internship & Choice Based Credit System- LOCF) to be implemented w.e.f Session 2023-24 (in Phased Manner)

Programme Learning Outcomes in Bachelor of Arts (Multidisciplinary, Single Major, Honours and Honours with Research) as per NEP 2020

1. Acquire a comprehensive understanding of relevant concepts, theories, and principles in the field.
2. Develop practical skills and technical expertise to effectively apply knowledge in realworld situations.
3. Apply acquired knowledge and skills to solve complex problems and make informed decisions.
4. Communicate effectively, both orally and in writing, with diverse audiences and in various contexts.
5. Apply critical thinking skills to analyse information, evaluate arguments, and generate innovative solutions to complex problems.
6. Demonstrate ethical integrity and social responsibility in decision-making and actions.
7. Embrace continuous learning and adaptability for staying current in the field.
8. Foster innovative thinking and generate new ideas to tackle challenges and seize opportunities.
9. Develop proficiency in research methods to contribute to the advancement of knowledge in the field.
10. Apply interdisciplinary analysis to solve complex problems with evidence-based approaches.

NEP 2020 ਦੇ ਅਨੁਸਾਰ ਬੈਚਲਰ ਆਫ਼ ਆਰਟਸ (ਬਹੁ-ਅਨੁਸ਼ਾਸਨੀ, ਸਿੰਗਲ ਮੇਜਰ, ਆਨਰਜ਼ ਅਤੇ ਰਿਸਰਚ ਦੇ ਨਾਲ ਆਨਰਜ਼) ਵਿੱਚ ਪ੍ਰੋਗਰਾਮ ਸਿੱਖਣ ਦੇ ਨਤੀਜੇ

1. ਖੇਤਰ ਵਿੱਚ ਸੰਬੰਧਿਤ ਸੰਕਲਪਾਂ, ਸਿਧਾਂਤਾਂ ਅਤੇ ਸਿਧਾਂਤਾਂ ਦੀ ਇੱਕ ਵਿਆਪਕ ਸਮਝ ਪ੍ਰਾਪਤ ਕਰੋ।
2. ਅਸਲ ਸੰਸਾਰ ਸਥਿਤੀਆਂ ਵਿੱਚ ਗਿਆਨ ਨੂੰ ਪ੍ਰਭਾਵਸ਼ਾਲੀ ਢੰਗ ਨਾਲ ਲਾਗੂ ਕਰਨ ਲਈ ਵਿਹਾਰਕ ਹੁਨਰ ਅਤੇ ਤਕਨੀਕੀ ਮੁਹਾਰਤ ਦਾ ਵਿਕਾਸ ਕਰੋ।
3. ਗੁੰਝਲਦਾਰ ਸਮੱਸਿਆਵਾਂ ਨੂੰ ਹੱਲ ਕਰਨ ਅਤੇ ਸੂਝਵਾਨ ਫੈਸਲੇ ਲੈਣ ਲਈ ਹਾਸਲ ਕੀਤੇ ਗਿਆਨ ਅਤੇ ਹੁਨਰ ਨੂੰ ਲਾਗੂ ਕਰੋ।
4. ਮੌਖਿਕ ਅਤੇ ਲਿਖਤੀ ਰੂਪ ਵਿੱਚ, ਵਿਭਿੰਨ ਦਰਸ਼ਕਾਂ ਨਾਲ ਅਤੇ ਵੱਖ-ਵੱਖ ਸੰਦਰਭਾਂ ਵਿੱਚ ਪ੍ਰਭਾਵਸ਼ਾਲੀ ਢੰਗ ਨਾਲ ਸੰਚਾਰ ਕਰੋ।
5. ਜਾਣਕਾਰੀ ਦਾ ਵਿਸ਼ਲੇਸ਼ਣ ਕਰਨ, ਦਲੀਲਾਂ ਦਾ ਮੁਲਾਂਕਣ ਕਰਨ, ਅਤੇ ਗੁੰਝਲਦਾਰ ਸਮੱਸਿਆਵਾਂ ਦੇ ਨਵੀਨਤਾਕਾਰੀ ਹੱਲ ਤਿਆਰ ਕਰਨ ਲਈ ਆਲੋਚਨਾਤਮਕ ਸੋਚ ਦੇ ਹੁਨਰ ਨੂੰ ਲਾਗੂ ਕਰੋ।
6. ਫੈਸਲੇ ਲੈਣ ਅਤੇ ਕਾਰਵਾਈਆਂ ਵਿੱਚ ਨੈਤਿਕ ਅਖੰਡਤਾ ਅਤੇ ਸਮਾਜਿਕ ਜ਼ਿੰਮੇਵਾਰੀ ਦਾ ਪ੍ਰਦਰਸ਼ਨ ਕਰੋ।
7. ਖੇਤਰ ਵਿੱਚ ਮੌਜੂਦਾ ਰਹਿਣ ਲਈ ਨਿਰੰਤਰ ਸਿੱਖਣ ਅਤੇ ਅਨੁਕੂਲਤਾ ਨੂੰ ਅਪਣਾਓ।
8. ਨਵੀਨਤਾਕਾਰੀ ਸੋਚ ਨੂੰ ਉਤਸ਼ਾਹਿਤ ਕਰੋ ਅਤੇ ਚੁਣੌਤੀਆਂ ਨਾਲ ਨਜਿੱਠਣ ਅਤੇ ਮੌਕਿਆਂ ਨੂੰ ਹਾਸਲ ਕਰਨ ਲਈ ਨਵੇਂ ਵਿਚਾਰ ਪੈਦਾ ਕਰੋ।
9. ਖੇਤਰ ਵਿੱਚ ਗਿਆਨ ਦੀ ਤਰੱਕੀ ਵਿੱਚ ਯੋਗਦਾਨ ਪਾਉਣ ਲਈ ਖੋਜ ਵਿਧੀਆਂ ਵਿੱਚ ਮੁਹਾਰਤ ਦਾ ਵਿਕਾਸ ਕਰੋ।
10. ਸਬੂਤ-ਆਧਾਰਿਤ ਪਹੁੰਚਾਂ ਨਾਲ ਗੁੰਝਲਦਾਰ ਸਮੱਸਿਆਵਾਂ ਨੂੰ ਹੱਲ ਕਰਨ ਲਈ ਅੰਤਰ-ਅਨੁਸ਼ਾਸਨੀ ਵਿਸ਼ਲੇਸ਼ਣ ਨੂੰ ਲਾਗੂ ਕਰੋ।

Semester I									
Course	**Paper(s)**	**Nomenclature of Paper**	**Credits**	**Theory+ Tutorial**	**Hours/ Week**	**Internal marks**	**External Marks**	**Total**	**Exam**
CC-1 MCC-1 4 credits	B23-PNB-101	ਆਧੁਨਿਕ ਪੰਜਾਬੀ ਕਵਿਤਾ ਅਤੇ ਵਿਹਾਰਕ ਪੰਜਾਬੀ Aadhunik Punjabi Kavita Ate Viharak Punjabi	4	**3+1**	4	30	70	100	3 hrs.
MCC-2 4 credits	B23-PNB-102	ਹਰਿਆਣਾ ਦਾ ਪੰਜਾਬੀ ਸਾਹਿਤ Haryana Da Punjabi Sahit	4	**3+1**	4	30	70	100	3 hrs.
CC-M1 2 credits	B23-PNB-103	ਪੰਜਾਬੀ ਭਾਸ਼ਾ : ਮੁੱਢਲੀ ਜਾਣ-ਪਛਾਣ Punjabi Bhasha L Mudhli Jaan-Pachhan	2	2+0	2	15	35	50	2 hrs.
MDC -1 3 credits	B23-PNB-104	ਪੰਜਾਬੀ ਭਾਸ਼ਾ, ਗੁਰਮੁਖੀ ਲਿੱਪੀ ਅਤੇ ਪੰਜਾਬੀ ਦਾ ਕੰਪਿਊਟਰੀਕਰਨ Punjabi Bhasha, Gurmukhi Lipi Ate Punjabi Da Computerikaran	3	**2+1**	3	25	50	75	3 hrs.
Semester II									
CC-2 MCC-3 4 credits	B23-PNB-201	ਪੰਜਾਬੀ ਗਲਪ ਅਤੇ ਵਿਹਾਰਕ ਪੰਜਾਬੀ Punjabi Galap Ate Viharak Punjabi	4	**3+1**	4	30	70	100	3 hrs.
CC-M2 2 credits	B23-PNB-203	ਵਿਹਾਰਕ ਪੰਜਾਬੀ Viharak Punjabi	2	**2+0**	2	15	35	50	2 hrs.
DSEC-1 4 credits	B23-PNB-202	ਪੰਜਾਬੀ ਵਿੱਚ ਅਨੁਵਾਦਿਤ ਹਿੰਦੀ ਸਾਹਿਤ Punjabi Vich Anuvadit Hindi Sahit	4	**3+1**	4	30	70	100	3 hrs.
MDC-2 3 credits	B23-PNB-204	ਲੋਕਧਾਰਾ ਅਤੇ ਪੰਜਾਬੀ ਲੋਕਧਾਰਾ Lokdhara Ate Punjabi Lokdhara	3	**2+1**	3	25	50	75	3 hrs.
Internship of 4 Credits of 4-6 weeks duration after 2nd Semester									
Semester III									
CC-3 MCC 4 4 credits	B23-PNB-301	ਆਧੁਨਿਕ ਪੰਜਾਬੀ ਵਾਰਤਕ ਅਤੇ ਵਿਹਾਰਕ ਪੰਜਾਬੀ Aadhunik Punjabi Vartak Ate Viharak Punjabi	4	**3+1**	4	30	70	100	3 hrs.
MCC-5 4 credits	B23-PNB-302	ਪੰਜਾਬੀ ਵਿੱਚ ਅਨੁਵਾਦਿਤ ਅੰਗਰੇਜ਼ੀ ਸਾਹਿਤ Punjabi Vich Anuvadit Angrezi Sahit	4	**3+1**	4	30	70	100	3 hrs.
MDC-3 3 credits	B23-PNB-303	ਸਭਿਆਚਾਰ ਅਤੇ ਪੰਜਾਬੀ ਸਭਿਆਚਾਰ Sabhyachar Ate Punjabi Sabhyachar	3	**2+1**	3	25	50	75	3 hrs.
Semester IV									
CC-4 MCC-6 4 credits	B23-PNB-401	ਪੰਜਾਬੀ ਨਾਟਕ, ਇਕਾਂਗੀ ਅਤੇ ਵਿਹਾਰਕ ਪੰਜਾਬੀ Punjabi Natak, Ikangi Ate Viharak Punjabi	4	**3+1**	4	30	70	100	3 hrs.
MCC-7 4 credits	B23-PNB-402	ਭਾਰਤੀ ਸਾਹਿਤ Bharti Sahit	4	**3+1**	4	30	70	100	3 hrs.

MCC-8 4 credits	B23-PNB-403	ਪੰਜਾਬੀ ਵਿੱਚ ਅਨੁਵਾਦਿਤ ਉਰਦੂ ਸਾਹਿਤ Punjabi Vich Anuvadit Urdu Sahit	4	**3+1**	4	30	70	100	3 hrs.
DSE-1 4 credits Select one Option	B23-PNB-404	ਨਾਰੀ ਪੰਜਾਬੀ ਸਾਹਿਤ Nari Punjabi Sahit	4	**3+1**	4	30	70	100	3 hrs.
	B23-PNB-405	ਜੰਮੂ ਕਸ਼ਮੀਰ ਦਾ ਪੰਜਾਬੀ ਸਾਹਿਤ Jammu Kashmir Da Punjabi Sahit	4	**3+1**	4	30	70	100	3 hrs
Internship of 4 Credits of 4-6 weeks duration after 4th Semeste									
Semester V									
Course	**Paper(s)**	**Nomenclature of Paper**	**Credits**	**Theory+ Tutorial**	**Hours/ Week**	**Internal marks**	**External Marks**	**Total**	**Exam**
CC-5 MCC-9 4 credits	B23-PNB-501	ਮੱਧਕਾਲੀ ਪੰਜਾਬੀ ਕਵਿਤਾ ਅਤੇ ਵਿਹਾਰਕ ਪੰਜਾਬੀ Madhkali Punjabi Kavita Ate Viharak Punjabi	4	**3+1**	4	30	70	100	3 hrs.
MCC-10 4 credits	B23-PNB-502	ਸਾਹਿਤ ਸਿਧਾਂਤ ਅਤੇ ਭਾਰਤੀ ਕਾਵਿ ਸ਼ਾਸਤਰ (Sahit Sidhant, Ate Bharti Kaav Shastar)	4	**3+1**	4	30	70	100	3 hrs.
DSE-2 4 credits Select one Option	B23-PNB-503	ਪੰਜਾਬੀ ਦਲਿਤ ਸਾਹਿਤ Punjabi Dalit Sahit	4	**3+1**	4	30	70	100	3 hrs.
	B23-PNB-504	ਪਾਕਿਸਤਾਨੀ ਪੰਜਾਬੀ ਸਾਹਿਤ Pakistani Punjabi Sahit	4	**3+1**	4	30	70	100	3 hrs.
DSE-3 4 credits Select one Option	B23-PNB-505	ਪਰਵਾਸੀ ਪੰਜਾਬੀ ਸਾਹਿਤ Parvasi Punjabi Sahit	4	**3+1**	4	30	70	100	3 hrs.
	B23-PNB-506	ਦੇਸ਼ ਵੰਡ ਅਤੇ ਪੰਜਾਬ ਸੰਤਾਪ ਉੱਪਰ ਪੰਜਾਬੀ ਸਾਹਿਤ Desh Vand Ate Punjab Santap Uppar Punjabi Sahit	4	**3+1**	4	30	70	100	3 hrs.
Semester VI									
CC-6 MCC-11 4 credits	B23-PNB-601	ਮੱਧਕਾਲੀ ਪੰਜਾਬੀ ਵਾਰਤਕ ਅਤੇ ਵਿਹਾਰਕ ਪੰਜਾਬੀ Madhkali Punjabi Vartak Ate Viharak Punjabi	4	**3+1**	4	30	70	100	3 hrs.
MCC-12 4 credits	B23-PNB-602	ਸਾਹਿਤ ਸਿਧਾਂਤ ਅਤੇ ਪੱਛਮੀ ਕਾਵਿ ਸ਼ਾਸਤਰ Sahit Sidhant Ate Pachhmi Kaav Shastar	4	**3+1**	4	30	70	100	3 hrs.
DSE-4 4 credits Select one Option	B23-PNB-603	ਵਿਸ਼ਵ ਸਾਹਿਤ Vishav Sahit	4	**3+1**	4	30	70	100	3 hrs.
	B23-PNB-604	ਪੰਜਾਬੀ ਗਦਰ ਕਾਵਿ ਅਤੇ ਕ੍ਰਾਂਤੀਕਾਰੀ ਲਹਿਰਾਂ Punjabi Gadar Kaav Ate Krantikari Lehran	4	**3+1**	4	30	70	100	3 hrs.
DSE-5 4 credits Select one Option	B23-PNB-605	ਤੁਲਨਾਤਮਕ ਭਾਰਤੀ ਸਾਹਿਤ Tulnatmik Bharti Sahit	4	**3+1**	4	30	70	100	3 hrs.
	B23-PNB-606	ਪੰਜਾਬੀ ਵਿੱਚ ਅਨੁਵਾਦਿਤ ਬੰਗਾਲੀ ਸਾਹਿਤ	4	**3+1**	4	30	70	100	3 hrs.

		Punjabi Vich Anuvadit Bengali Sahit							
Semester VII (FOR HONOURS/HONOURS WITH RESEARCH IN PANJABI)									
Course	**Paper(s)**	**Nomenclature of Paper**	**Credits**	**Theory + Tutorial**	**Hours/ Week**	**Internal marks**	**External Marks**	**Total**	**Exam**
CC-H1 4 credits	B23-PNB-701	ਸੂਫ਼ੀ ਅਤੇ ਭਗਤੀ ਕਾਵਿ Sufi Ate Bhagti Kaav	4	**3+1**	4	30	70	100	3 hrs.
CC-H2 4 credits	B23-PNB-702	ਗੁਰਮਤਿ ਕਾਵਿ Gurmat Kaav	4	**3+1**	4	30	70	100	3 hrs.
CC-H3 4 credits	B23-PNB-703	ਬੀਰ ਰਸੀ ਕਾਵਿ Bir Rasi Kaav	4	**3+1**	4	30	70	100	3 hrs.
DSE-6 4 credits Select one Option	B23-PNB-704	ਕਿੱਸਾ ਕਾਵਿ Qissa Kaav	4	**3+1**	4	30	70	100	3 hrs.
	B23-PNB-705	ਮਹਾਕਾਵਿ ਅਤੇ ਪੰਜਾਬੀ ਮਹਾਕਾਵਿ Mahakaav Ate Punjabi Mahakaav	4	**3+1**	4	30	70	100	3 hrs.
PC-H1 4 credits	B23-PNB-706	ਮੀਡੀਆ, ਜਨ-ਸੰਚਾਰ ਅਤੇ ਸਿਰਜਣਾਤਮਕ ਲੇਖਣ ਦਾ ਹੁਨਰ : ਅਧਿਐਨ ਅਤੇ ਸਿਖਲਾਈ (Media, Jan-Sanchar Ate Sirjanatmak Lekhan Da Hunar: Adhyan Ate Sikhlai)	4	**3+1**	4	30	70	100	6 hrs.
SEMESTER-VIII (FOR HONOURS IN PANJABI)									
CC-H4 4 credits	B23-PNB-801	ਆਧੁਨਿਕ ਪੰਜਾਬੀ ਕਵਿਤਾ Aadhunik Punjabi Kavita	4	**3+1**	4	30	70	100	3 hrs.
CC-H5 4 credits	B23-PNB-802	ਪੰਜਾਬੀ ਗਲਪ Punjabi Galap	4	**3+1**	4	30	70	100	3 hrs.
CC-H6 4 credits	B23-PNB-803	ਪੰਜਾਬੀ ਨਾਟਕ ਅਤੇ ਇਕਾਂਗੀ Punjabi Natak Ate Ikangi	4	**3+1**	4	30	70	100	3 hrs.
DSE-7 4 credits Select one option	B23-PNB-804	ਭਾਸ਼ਾ ਵਿਗਿਆਨ ਅਤੇ ਪੰਜਾਬੀ ਭਾਸ਼ਾ Bhasha Vigiyan Ate Punjabi Bhasha	4	**3+1**	4	30	70	100	3 hrs.
	B23-PNB-805	ਆਰਥੋਗ੍ਰਾਫ਼ੀ ਅਤੇ ਗੁਰਮੁਖੀ ਲਿੱਪੀ Arthography ate Gurmukhi Lipi	4	**3+1**	4	30	70	100	3 hrs.
PC-H2 4 credits	B23-PNB-806	ਪੰਜਾਬੀ ਫ਼ਿਲਮਕਾਰੀ ਦਾ ਸਾਹਿਤਕ ਅਧਿਐਨ Punjabi Filmkari Da Sahitik Adhyan	4	**3+1**	4	30	70	100	6 hrs.
SEMESTER-VIII (FOR HONOURS WITH RESEARCH IN PANJABI)									
CC-H4 4 credits	B23-PNB-801	ਆਧੁਨਿਕ ਪੰਜਾਬੀ ਕਵਿਤਾ Aadhunik Punjabi Kavita	4	**3+1**	4	30	70	100	3 hrs.
CC-H5 4 credits	B23-PNB-802	ਪੰਜਾਬੀ ਗਲਪ Punjabi Galap	4	**3+1**	4	30	70	100	3 hrs.
Project/Dissertation 12 cretits	B23-PNB-807	Project/Dissertation	12		-	-	300	300	-

Ability Enhancement Course								
I	B23-PNB-AEC-141	ਪੰਜਾਬੀ ਭਾਸ਼ਾ ਅਤੇ ਸੰਚਾਰ I Punjabi Bhasha Ate Sanchar I	2	2	15	35	50	2
II	B23-PNB-AEC-241	ਪੰਜਾਬੀ ਭਾਸ਼ਾ ਅਤੇ ਸੰਚਾਰ II Punjabi Bhasha Ate Sanchar II	2	2	15	35	50	2
III	B23-PNB-AEC-341	ਪੰਜਾਬੀ ਭਾਸ਼ਾ ਅਤੇ ਸੰਚਾਰ III Punjabi Bhasha Ate Sanchar III	2	2	15	35	50	2
IV	B23-PNB-AEC-441	ਪੰਜਾਬੀ ਭਾਸ਼ਾ ਅਤੇ ਸੰਚਾਰ IV Punjabi Bhasha Ate Sanchar IV	2	2	15	35	50	2

ਪੰਜਾਬੀ ਵਿਭਾਗ

ਕੁਰੂਕਸ਼ੇਤਰ ਯੂਨੀਵਰਸਿਟੀ, ਕੁਰੂਕਸ਼ੇਤਰ

(Established by the State Legislature Act XII of 1956)
("A+" Grade, NAAC Accredited)

ਪੰਜਾਬੀ ਸਿਲੇਬਸ (ਸਮੈਸਟਰ I ਤੋਂ IV) ਫਾਰ ਅੰਡਰਗ੍ਰੈਜੁਏਟ ਪ੍ਰੋਗਰਾਮ ਰਾਸ਼ਟਰੀ ਸਿੱਖਿਆ ਨੀਤੀ 2020 (ਮਲਟੀਪਲ ਐਂਟਰੀ ਐਗਜ਼ਿਟ, ਇੰਟਰਨਸ਼ਿਪ ਅਤੇ ਚੁਆਇਸ ਬੇਸਡ ਕ੍ਰੈਡਿਟ ਸਿਸਟਮ CBCS-LOCF) ਦੇ ਅਨੁਸਾਰ ਸੈਸ਼ਨ 2023-24 ਤੋਂ ਚਰਣਬੱਧ ਤਰੀਕੇ ਨਾਲ ਲਾਗੂ

DEPARTMENT OF PANJABI
KURUKSHETRA UNIVERSITY KURUKSHETRA
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Syllabus for the subject: Punjabi (Sem. I to IV)

for Undergraduate Programme in Accordance to NEP - 2020 (Multiple Entry-Exit, Internship & Choice Based Credit System- LOCF) to be implemented w.e.f Session 2023-24 (in Phased Manner)

Programme Learning Outcomes in Bachelor of Arts (Multidisciplinary, Single Major, Honours and Honours with Research) as per NEP 2020

1. Acquire a comprehensive understanding of relevant concepts, theories, and principles in the field.
2. Develop practical skills and technical expertise to effectively apply knowledge in realworld situations.
3. Apply acquired knowledge and skills to solve complex problems and make informed decisions.
4. Communicate effectively, both orally and in writing, with diverse audiences and in various contexts.
5. Apply critical thinking skills to analyse information, evaluate arguments, and generate innovative solutions to complex problems.
6. Demonstrate ethical integrity and social responsibility in decision-making and actions.
7. Embrace continuous learning and adaptability for staying current in the field.
8. Foster innovative thinking and generate new ideas to tackle challenges and seize opportunities.
9. Develop proficiency in research methods to contribute to the advancement of knowledge in the field.
10. Apply interdisciplinary analysis to solve complex problems with evidence-based approaches.

NEP 2020 ਦੇ ਅਨੁਸਾਰ ਬੈਚਲਰ ਆਫ਼ ਆਰਟਸ (ਬਹੁ-ਅਨੁਸ਼ਾਸਨੀ, ਸਿੰਗਲ ਮੇਜਰ, ਆਨਰਜ਼ ਅਤੇ ਰਿਸਰਚ ਦੇ ਨਾਲ ਆਨਰਜ਼) ਵਿੱਚ ਪ੍ਰੋਗਰਾਮ ਸਿੱਖਣ ਦੇ ਨਤੀਜੇ

1. ਖੇਤਰ ਵਿੱਚ ਸੰਬੰਧਿਤ ਸੰਕਲਪਾਂ, ਸਿਧਾਂਤਾਂ ਅਤੇ ਸਿਧਾਂਤਾਂ ਦੀ ਇੱਕ ਵਿਆਪਕ ਸਮਝ ਪ੍ਰਾਪਤ ਕਰੋ।
2. ਅਸਲ ਸੰਸਾਰ ਸਥਿਤੀਆਂ ਵਿੱਚ ਗਿਆਨ ਨੂੰ ਪ੍ਰਭਾਵਸ਼ਾਲੀ ਢੰਗ ਨਾਲ ਲਾਗੂ ਕਰਨ ਲਈ ਵਿਹਾਰਕ ਹੁਨਰ ਅਤੇ ਤਕਨੀਕੀ ਮੁਹਾਰਤ ਦਾ ਵਿਕਾਸ ਕਰੋ।
3. ਗੁੰਝਲਦਾਰ ਸਮੱਸਿਆਵਾਂ ਨੂੰ ਹੱਲ ਕਰਨ ਅਤੇ ਸੂਝਵਾਨ ਫੈਸਲੇ ਲੈਣ ਲਈ ਹਾਸਲ ਕੀਤੇ ਗਿਆਨ ਅਤੇ ਹੁਨਰ ਨੂੰ ਲਾਗੂ ਕਰੋ।
4. ਮੌਖਿਕ ਅਤੇ ਲਿਖਤੀ ਰੂਪ ਵਿੱਚ, ਵਿਭਿੰਨ ਦਰਸ਼ਕਾਂ ਨਾਲ ਅਤੇ ਵੱਖ-ਵੱਖ ਸੰਦਰਭਾਂ ਵਿੱਚ ਪ੍ਰਭਾਵਸ਼ਾਲੀ ਢੰਗ ਨਾਲ ਸੰਚਾਰ ਕਰੋ।
5. ਜਾਣਕਾਰੀ ਦਾ ਵਿਸ਼ਲੇਸ਼ਣ ਕਰਨ, ਦਲੀਲਾਂ ਦਾ ਮੁਲਾਂਕਣ ਕਰਨ, ਅਤੇ ਗੁੰਝਲਦਾਰ ਸਮੱਸਿਆਵਾਂ ਦੇ ਨਵੀਨਤਾਕਾਰੀ ਹੱਲ ਤਿਆਰ ਕਰਨ ਲਈ ਆਲੋਚਨਾਤਮਕ ਸੋਚ ਦੇ ਹੁਨਰ ਨੂੰ ਲਾਗੂ ਕਰੋ।
6. ਫੈਸਲੇ ਲੈਣ ਅਤੇ ਕਾਰਵਾਈਆਂ ਵਿੱਚ ਨੈਤਿਕ ਅਖੰਡਤਾ ਅਤੇ ਸਮਾਜਿਕ ਜ਼ਿੰਮੇਵਾਰੀ ਦਾ ਪ੍ਰਦਰਸ਼ਨ ਕਰੋ।
7. ਖੇਤਰ ਵਿੱਚ ਮੌਜੂਦਾ ਰਹਿਣ ਲਈ ਨਿਰੰਤਰ ਸਿੱਖਣ ਅਤੇ ਅਨੁਕੂਲਤਾ ਨੂੰ ਅਪਣਾਓ।
8. ਨਵੀਨਤਾਕਾਰੀ ਸੋਚ ਨੂੰ ਉਤਸ਼ਾਹਿਤ ਕਰੋ ਅਤੇ ਚੁਣੌਤੀਆਂ ਨਾਲ ਨਜਿੱਠਣ ਅਤੇ ਮੌਕਿਆਂ ਨੂੰ ਹਾਸਲ ਕਰਨ ਲਈ ਨਵੇਂ ਵਿਚਾਰ ਪੈਦਾ ਕਰੋ।
9. ਖੇਤਰ ਵਿੱਚ ਗਿਆਨ ਦੀ ਤਰੱਕੀ ਵਿੱਚ ਯੋਗਦਾਨ ਪਾਉਣ ਲਈ ਖੋਜ ਵਿਧੀਆਂ ਵਿੱਚ ਮੁਹਾਰਤ ਦਾ ਵਿਕਾਸ ਕਰੋ।
10. ਸਬੂਤ-ਆਧਾਰਿਤ ਪਹੁੰਚਾਂ ਨਾਲ ਗੁੰਝਲਦਾਰ ਸਮੱਸਿਆਵਾਂ ਨੂੰ ਹੱਲ ਕਰਨ ਲਈ ਅੰਤਰ-ਅਨੁਸ਼ਾਸਨੀ ਵਿਸ਼ਲੇਸ਼ਣ ਨੂੰ ਲਾਗੂ ਕਰੋ।

Syllabus of Under Graduate Course (Panjabi)

Session: 2023-24			
Part A - Introduction			
Subject	Panjabi		
Semester	1st		
Name of the Course	Bachelor of Arts		
Course Code	B23-PNB-101		
Name of the Paper	ਆਧੁਨਿਕ ਪੰਜਾਬੀ ਕਵਿਤਾ ਅਤੇ ਵਿਹਾਰਕ ਪੰਜਾਬੀ (Adhunik Panjabi Kavita Ate Viharak Punjabi)		
Course Type: (CC/MCC/MDC/CC-M/DSEC/VOC/DSE/PC/AEC/VAC)	CC-1 MCC-1		
Level of the course (As per Annexure-I	100-199		
Pre-requisite for the course (if any)	Senior Secondary (10+2) or Visharad or Equivalent inany Stream		
Course Learning Outcomes(CLO):	After completing this course, the learner will be able to: CLO-101-1 ਵਿਦਿਆਰਥੀਆਂ ਨੂੰ ਆਧੁਨਿਕ ਪੰਜਾਬੀ ਕਵਿਤਾ ਦੇ ਵਿਧਾਗਤ ਸਰੋਕਾਰਾਂ, ਇਤਿਹਾਸਕ ਵਿਕਾਸ, ਪ੍ਰਮੁੱਖ ਝੁਕਾਵਾਂ ਅਤੇ ਪ੍ਰਵਿਰਤੀਆਂ ਬਾਰੇ ਜਾਣਕਾਰੀ ਪ੍ਰਾਪਤ ਹੋਵੇਗੀ। CLO-101-2 ਸਿਲੇਬਸ ਵਿੱਚ ਲੱਗੇ ਕਾਵਿ ਸੰਗ੍ਰਹਿ ਦੇ ਅਧਿਐਨ ਦੁਆਰਾ ਕਾਵਿ ਪੁਸਤਕ ਦੀ ਪੜ੍ਹਤ/ ਮੁਲਾਂਕਣ ਦੀ ਸੂਝ ਅਤੇ ਸਮਝ ਪੈਦਾ ਹੋਵੇਗੀ। CLO-101-3 ਵਿਦਿਆਰਥੀਆਂ ਵਿੱਚ ਕਵਿਤਾ ਨੂੰ ਪੜ੍ਹਨ/ ਸਮਝਣ/ ਸਿਰਜਣ ਦੀ ਰੁਚੀ ਪੈਦਾ ਹੋਵੇਗੀ। CLO-101-4 ਵਿਹਾਰਕ ਪੰਜਾਬੀ ਦੀ ਪੜ੍ਹਾਈ ਰਾਹੀਂ ਪੰਜਾਬੀ ਭਾਸ਼ਾ ਦੀ ਸੰਰਚਨਾ ਅਤੇ ਵਰਤੋਂ ਵਿਹਾਰ ਬਾਰੇ ਸਮਝ ਅਤੇ ਮੁਹਾਰਤ ਪੈਦਾ ਹੋਵੇਗੀ।		

Credits	Theory + Tutorial	Practical	Total
	3+1	----------	4
Contact Hours	60	----------	60
Max. Marks : 100 Internal Assessment Marks : 30 End Term Exam Marks : 70		Time : 3 Hrs.	

Part B- Contents of The Course

Instruction for Paper Setter

1. ਪਹਿਲਾ ਪ੍ਰਸ਼ਨ ਲਾਜ਼ਮੀ ਹੈ। ਇਹ ਪ੍ਰਸ਼ਨ 14 ਨੰਬਰ ਦਾ ਹੋਵੇਗਾ। ਇਸ ਵਿੱਚ ਸਮੁੱਚੇ ਸਿਲੇਬਸ ਵਿੱਚੋਂ ਕੁੱਲ ਚਾਰ ਸੁਆਲ ਪੁੱਛੇ ਜਾਣਗੇ। ਵਿਦਿਆਰਥੀ ਲਈ ਇਹ ਸਾਰੇ ਸੁਆਲ ਕਰਨੇ ਲਾਜ਼ਮੀ ਹਨ। ਹਰ ਸੁਆਲ ਸਾਢੇ ਤਿੰਨ ਨੰਬਰ ਦਾ ਹੋਵੇਗਾ।

2. ਸਮੁੱਚਾ ਸਿਲੇਬਸ ਕੁੱਲ ਚਾਰ ਯੂਨਿਟਾਂ ਵਿੱਚ ਵੰਡਿਆ ਗਿਆ ਹੈ। ਹਰ ਯੂਨਿਟ 14 ਨੰਬਰਾਂ ਦਾ ਹੈ।

3. ਯੂਨਿਟ ਪਹਿਲਾ ਵਿੱਚ ਕਵਿਤਾ ਦੇ ਸਿਧਾਂਤ ਅਤੇ ਆਧੁਨਿਕ ਪੰਜਾਬੀ ਕਵਿਤਾ ਦੇ ਪ੍ਰਮੁੱਖ ਰੂਪਾਂ ਬਾਰੇ ਤਿੰਨ ਸੁਆਲ ਪੁੱਛੇ ਜਾਣਗੇ। ਵਿਦਿਆਰਥੀ ਨੇ ਇਹਨਾਂ ਵਿੱਚੋਂ ਕੋਈ ਦੋ ਸੁਆਲ ਕਰਨੇ ਹਨ। ਹਰ ਪ੍ਰਸ਼ਨ ਸੱਤ-ਸੱਤ ਨੰਬਰ ਦਾ ਹੋਵੇਗਾ।

4. ਯੂਨਿਟ ਦੂਜਾ ਵਿੱਚ ਆਧੁਨਿਕ ਪੰਜਾਬੀ ਕਵਿਤਾ ਦੇ ਨਿਕਾਸ, ਪ੍ਰਮੁੱਖ ਵਿਕਾਸ ਪੜਾਵਾਂ, ਆਧੁਨਿਕ ਪੰਜਾਬੀ ਕਵਿਤਾ ਦੀਆਂ ਪ੍ਰਵਿਰਤੀਆਂ ਅਤੇ ਕਵਿਤਾ ਦੇ ਪ੍ਰਮੁੱਖ ਰੁਝਾਨਾਂ ਬਾਰੇ ਤਿੰਨ ਸੁਆਲ ਪੁੱਛੇ ਜਾਣਗੇ। ਵਿਦਿਆਰਥੀ ਨੇ ਇਹਨਾਂ ਵਿੱਚੋਂ ਕੋਈ ਦੋ ਸੁਆਲ ਕਰਨੇ ਹਨ। ਹਰ ਪ੍ਰਸ਼ਨ ਸੱਤ-ਸੱਤ ਨੰਬਰ ਦਾ ਹੋਵੇਗਾ।

5. ਯੂਨਿਟ ਤੀਜਾ ਵਿੱਚ ਇੱਕ ਸੁਆਲ ਸਿਲੇਬਸ ਵਿੱਚ ਲੱਗੀਆਂ ਕਵਿਤਾਵਾਂ ਦੇ ਵਿਸ਼ੇ/ ਸਾਰ/ ਆਲੋਚਨਾਤਮਕ ਅਧਿਐਨ (ਦੋ ਵਿੱਚੋਂ ਇੱਕ) ਬਾਰੇ ਪੁਛਿਆ ਜਾਵੇਗਾ। ਇੱਕ ਸੁਆਲ ਸਿਲੇਬਸ ਵਿੱਚ ਲੱਗੇ ਕਿਸੇ ਕਵੀ ਦੇ ਜੀਵਨ ਪ੍ਰੀਚੈ ਅਤੇ ਸਾਹਿਤਕ ਯੋਗਦਾਨ (ਦੋ ਵਿੱਚੋਂ ਇੱਕ) ਬਾਰੇ ਪੁੱਛਿਆ ਜਾਵੇਗਾ। ਇਹ ਸੁਆਲ ਪੰਜ-ਪੰਜ ਨੰਬਰ ਦੇ ਹੋਣਗੇ। ਇੱਕ ਸੁਆਲ ਕਵਿਤਾ ਦੀ ਪ੍ਰਸੰਗ ਸਾਹਿਤ ਵਿਆਖਿਆ ਦਾ ਹੋਵੇਗਾ। ਵਿਦਿਆਰਥੀਆਂ ਨੂੰ ਦੋ ਕਾਵਿ ਟੁਕੜੀਆਂ ਦਿੱਤੀਆਂ ਜਾਣਗੀਆਂ ਜਿਸ ਵਿੱਚੋਂ ਵਿਦਿਆਰਵੀ ਨੇ ਕਿਸੇ ਇੱਕ ਦੀ ਪ੍ਰਸੰਗ ਸਾਹਿਤ ਵਿਆਖਿਆ ਕਰਨੀ ਹੋਵੇਗੀ। ਇਹ ਸੁਆਲ ਚਾਰ ਨੰਬਰ ਦਾ ਹੋਵੇਗਾ।

6. ਯੂਨਿਟ ਚੌਥਾ ਦੇ ਚਾਰ ਉਪ-ਭਾਗ ਹਨ। ਹਰ ਉਪ-ਭਾਗ ਦੇ $3\ ^1/_2$ ਨੰਬਰ ਹਨ। ਉਪ-ਭਾਗ ਪਹਿਲਾ ਅਤੇ ਦੂਜਾ ਵਿੱਚੋਂ ਦੋ-ਦੋ ਸੁਆਲ ਪੁੱਛੇ ਜਾਣਗੇ। ਜਿਹਨਾਂ ਵਿੱਚੋਂ ਵਿਦਿਆਰਥੀ ਨੇ ਇੱਕ ਸੁਆਲ ਕਰਨਾ ਹੈ। ਹਰ ਸੁਆਲ $3\ ^1/_2$ ਨੰਬਰ ਦਾ ਹੋਵੇਗਾ। ਭਾਗ ਤੀਜਾ ਵਿੱਚ ਇੱਕ ਸੁਆਲ ਅੰਦਰੂਨੀ ਚੋਣ ਤਹਿਤ ਮੁਹਾਵਰਿਆਂ ਬਾਰੇ ਸਿਧਾਂਤਕ ਪੁੱਛਿਆ ਜਾਵੇਗਾ। ਇਹ ਸੁਆਲ $1\ ^1/_2$ ਨੰਬਰ ਦਾ ਹੋਵੇਗਾ। ਦੂਜੇ ਸੁਆਲ ਵਿੱਚ ਚਾਰ ਮੁਹਾਵਰੇ ਪੁੱਛੇ ਜਾਣਗੇ ਜਿਹਨਾਂ ਵਿੱਚੋਂ ਦੋ ਮੁਹਾਵਰਿਆਂ ਦੇ ਅਰਥ ਦੱਸ ਕੇ ਵਾਕ ਬਣਾਉਣੇ ਹੋਣਗੇ। ਇਹ ਸੁਆਲ ਦੇ 2 ਨੰਬਰ ਹੋਣਗੇ। ਉਪ ਭਾਗ ਚੌਥਾ ਵਿੱਚ ਦਫ਼ਤਰੀ ਸ਼ਬਦਾਵਲੀ (ਦਿੱਤੇ ਗਏ ਦਸ ਸ਼ਬਦਾਂ ਵਿੱਚੋਂ ਕੋਈ ਸੱਤ ਸ਼ਬਦ ਕਰਨੇ ਹਨ) ਬਾਰੇ ਪ੍ਰਸ਼ਨ ਪੁੱਛੇ ਜਾਣਗੇ। ਹਰ ਸ਼ਬਦ ਦਾ ਅੱਧਾ ਨੰਬਰ ਹੋਏਗਾ।

Unit	Topics	Contact Hours
I	1. ਆਧੁਨਿਕ ਪੰਜਾਬੀ ਕਵਿਤਾ : ਸਿਧਾਂਤਕ ਪਰਿਪੇਖ ਅੰਕ : 14 1.1 ਕਵਿਤਾ ਦੀ ਪਰਿਭਾਸ਼ਾ, ਤੱਤ ਅਤੇ ਵਿਸ਼ੇਸ਼ਤਾਵਾਂ 1.2 ਆਧੁਨਿਕ ਪੰਜਾਬੀ ਕਵਿਤਾ ਦੇ ਪ੍ਰਮੁੱਖ ਰੂਪ	
II	2. ਆਧੁਨਿਕ ਪੰਜਾਬੀ ਕਵਿਤਾ : ਇਤਿਹਾਸਕ ਪਰਿਪੇਖ ਅੰਕ : 14 2.1 ਆਧੁਨਿਕ ਪੰਜਾਬੀ ਕਵਿਤਾ : ਇਤਿਹਾਸਕ ਪਿਛੋਕੜ ਅਤੇ ਨਿਕਾਸ 2.2 ਆਧੁਨਿਕ ਪੰਜਾਬੀ ਕਵਿਤਾ ਪ੍ਰਮੁੱਖ ਵਿਕਾਸ ਪੜਾਅ 2.3 ਆਧੁਨਿਕ ਪੰਜਾਬੀ ਕਵਿਤਾ : ਪ੍ਰਮੁੱਖ ਪ੍ਰਵਿਰਤੀਆਂ ਅਤੇ ਝੁਕਾਅ	
III	3. ***ਕਾਵਿ ਨਾਦ*** (ਚੋਣਵਾਂ ਕਾਵਿ ਸੰਗ੍ਰਹਿ) ਸੰਪਾਦਕ ਡਾ. ਸਾਹਿਬ ਸਿੰਘ ਅੰਕ : 14 ਅਰਸ਼ੀ ਅਤੇ ਡਾ. ਰਮੇਸ਼ ਕੁਮਾਰ, ਪਬਲੀਕੇਸ਼ਨ ਬਿਊਰੋ, ਕੁਰੂਕਸ਼ੇਤਰ ਯੂਨੀਵਰਸਿਟੀ, ਕੁਰੂਕਸ਼ੇਤਰ। (ਭਾਈ ਵੀਰ ਸਿੰਘ, ਅੰਮ੍ਰਿਤਾ ਪ੍ਰੀਤਮ, ਮੋਹਨ ਸਿੰਘ, ਬਾਵਾ ਬਲਵੰਤ, ਸ਼ਿਵ ਕੁਮਾਰ, ਸੰਤੋਖ ਸਿੰਘ ਧੀਰ, ਰਮੇਸ਼ ਕੁਮਾਰ, ਹਰਭਜਨ ਸਿੰਘ ਕੋਮਲ, ਪਾਸ਼, ਸ. ਸ. ਮੀਸ਼ਾ- ਸਿਰਫ਼ ਇਹ ਕਵੀ ਹੀ ਪੜ੍ਹਾਏ ਜਾਣ) 3.1 ਕਵਿਤਾ ਦਾ ਸਾਰ ਅਤੇ ਵਿਸ਼ਾ ਵਸਤੂ 3.2 ਕਵਿਤਾ ਦਾ ਕਲਾ ਪੱਖ 3.3 ਕਵਿਤਾ ਦਾ ਆਲੋਚਨਾਤਮਕ ਅਧਿਐਨ	

	3.4 ਪ੍ਰਸੰਗ ਸਹਿਤ ਵਿਆਖਿਆ 3.5 ਕਵੀਆਂ ਦਾ ਜੀਵਨ ਪ੍ਰੀਚੈ ਅਤੇ ਸਾਹਿਤਕ ਯੋਗਦਾਨ	
IV	4. ਵਿਹਾਰਕ ਪੰਜਾਬੀ ਅੰਕ : 14 4.1 ਨਾਂਵ ਅਤੇ ਪੜਨਾਂਵ : ਪਰਿਭਾਸ਼ਾ ਅਤੇ ਕਿਸਮਾਂ 4.2 ਕਿਰਿਆ : ਪਰਿਭਾਸ਼ਾ ਅਤੇ ਕਿਸਮਾਂ 4.3 ਮੁਹਾਵਰਾ : ਅਰਥ, ਪਰਿਭਾਸ਼ਾ, ਪ੍ਰਯੋਗ, ਮਹੱਤਵ ਅਤੇ ਪੰਜਾਬੀ ਮੁਹਾਵਰੇ, ਅਖਾਣਾਂ ਅਤੇ ਮੁਹਾਵਰਿਆਂ ਦੀ ਵਰਤੋਂ ਪ੍ਰਤੀ ਘੱਟ ਰਹੇ ਰੁਝਾਨ ਦੇ ਕਾਰਨ ਅਤੇ ਸੁਝਾਅ 4.4 ਦਫ਼ਤਰੀ ਸ਼ਬਦਾਵਲੀ (100 ਸ਼ਬਦ ਨਾਲ ਨੱਥੀ ਹਨ)	

Suggested Evaluation Method

Internal Assessment: 30 Marks ➢ **Theory** • Class Participation: 5 Marks • Seminar/presentation/assignment/quiz/class test etc.: 5+5=10 Marks • Mid-Term Exam: 15 Marks	**End Term Examination:** 70 Marks

Part C- Learning Resources

1. ਸ. ਸ. ਖਹਿਰਾ **ਪੰਜਾਬੀ ਭਾਸ਼ਾ : ਵਿਆਕਰਣ ਅਤੇ ਬਣਤਰ,** ਪੰਜਾਬੀ ਯੂਨੀਵਰਸਿਟੀ, ਪਟਿਆਲਾ

2. ਹਰਕੀਰਤ ਸਿੰਘ **ਪੰਜਾਬੀ ਸ਼ਬਦ ਰੂਪ ਅਤੇ ਸ਼ਬਦ ਜੋੜ ਕੋਸ਼**, ਪੰਜਾਬੀ ਯੂਨੀਵਰਸਿਟੀ, ਪਟਿਆਲਾ

3. ਹਰਬੰਸ ਸਿੰਘ ਧੀਮਾਨ **ਪੰਜਾਬੀ ਭਾਸ਼ਾ ਅਤੇ ਵਿਆਕਰਣ,** ਗਗਨ ਪ੍ਰਕਾਸ਼ਨ, ਰਾਜਪੁਰਾ, ਪਟਿਆਲਾ, 2006

Syllabus of Under Graduate Course (Panjabi)

Session: 2023-24	
Part A - Introduction	
Subject	Panjabi
Semester	1st
Name of the Course	Bachelor of Arts
Course Code	B23- PNB-102
Name of the Paper	ਹਰਿਆਣਾ ਦਾ ਪੰਜਾਬੀ ਸਾਹਿਤ (Haryana Da Punjabi Sahit)
Course Type: (CC/MCC/MDC/CC-M/DSEC/VOC/DSE/PC/AEC/VAC)	MCC-2
Level of the course (As per Annexure-I	100-199
Pre-requisite for the course (if any)	Senior Secondary (10+2) or Visharad or Equivalent inany Stream
Course Learning Outcomes(CLO):	After completing this course, the learner will be able to: CLO-102-1 ਹਰਿਆਣਾ ਵਿਚਲੇ ਵੱਖ-ਵੱਖ ਸਾਹਿਤਕਾਰਾਂ ਦੀਆਂ ਰਚਨਾਵਾਂ ਦੇ ਅਧਿਐਨ ਦੁਆਰਾ ਸਾਹਿਤ ਅਧਿਐਨ ਦੀ ਸੂਝ ਪੈਦਾ ਹੋਵੇਗੀ। CLO-102-2 ਹਰਿਆਣਾ ਦੇ ਪੰਜਾਬੀ ਸਾਹਿਤ ਦੇ ਅਧਿਐਨ ਦੁਆਰਾ ਹਰਿਆਣਾ ਵਿੱਚ ਵਸਦੇ ਪੰਜਾਬੀ ਲੋਕਾਂ ਦੀ ਜੀਵਨ-ਜਾਚ ਨੂੰ ਸਮਝਣ ਦੀ ਸੂਝ ਬਣੇਗੀ। CLO-102-3 ਹਰਿਆਣੇ ਦੀ ਪੰਜਾਬੀ ਕਵਿਤਾ, ਨਾਵਲ ਅਤੇ ਨਾਟਕ ਦੇ ਵਿਹਾਰਕ ਅਧਿਐਨ ਰਾਹੀਂ ਸਾਹਿਤ ਦੀ ਸਮਝ ਪੈਦਾ ਹੋਵੇਗੀ। CLO-102-4 ਵਿਦਿਆਰਥੀਆਂ ਵਿੱਚ ਖੇਤਰੀ ਸਾਹਿਤ ਨੂੰ ਪੜ੍ਹਨ, ਸਮਝਣ ਦੀ ਰੁਚੀ ਪੈਦਾ ਹੋਵੇਗੀ।

Credits	Theory + Tutorial	Practical	Total
	3+1	----------	4
Contact Hours	60	----------	60

Max. Marks : 100 Internal Assessment Marks : 30 End Term Exam Marks : 70	Time : 3 Hrs.

Part B- Contents of The Course

Instruction for Paper Setter

1. ਪਹਿਲਾ ਪ੍ਰਸ਼ਨ ਲਾਜ਼ਮੀ ਹੈ। ਇਹ ਪ੍ਰਸ਼ਨ 14 ਨੰਬਰ ਦਾ ਹੋਵੇਗਾ। ਇਸ ਵਿੱਚ ਸਮੁੱਚੇ ਸਿਲੇਬਸ ਵਿੱਚੋਂ ਕੁੱਲ ਚਾਰ ਸੁਆਲ ਪੁੱਛੇ ਜਾਣਗੇ। ਵਿਦਿਆਰਥੀ ਲਈ ਇਹ ਸਾਰੇ ਸੁਆਲ ਕਰਨੇ ਲਾਜ਼ਮੀ ਹਨ। ਹਰ ਸੁਆਲ ਸਾਢੇ ਤਿੰਨ ਨੰਬਰ ਦਾ ਹੋਵੇਗਾ।
2. ਸਮੁੱਚਾ ਸਿਲੇਬਸ ਕੁੱਲ ਚਾਰ ਯੂਨਿਟਾਂ ਵਿੱਚ ਵੰਡਿਆ ਗਿਆ ਹੈ। ਹਰ ਯੂਨਿਟ 14 ਨੰਬਰਾਂ ਦਾ ਹੈ।
3. ਯੂਨਿਟ ਪਹਿਲਾ ਹਰਿਆਣੇ ਦੇ ਪੰਜਾਬੀ ਸਾਹਿਤ ਦੇ ਸਿਧਾਂਤਕ, ਇਤਿਹਾਸਕ ਅਤੇ ਸਮਾਜ-ਸਭਿਆਚਾਰਕ ਪਿਛੋਕੜ ਬਾਰੇ ਤਿੰਨ ਸੁਆਲ ਪੁੱਛੇ ਜਾਣਗੇ। ਵਿਦਿਆਰਥੀ ਨੇ ਇਹਨਾਂ ਵਿੱਚੋਂ ਕੋਈ ਦੋ ਸੁਆਲ ਕਰਨੇ ਹਨ। ਹਰ ਪ੍ਰਸ਼ਨ ਸੱਤ-ਸੱਤ ਨੰਬਰ ਦਾ

ਹੋਵੇਗਾ।

4. ਯੂਨਿਟ ਦੂਜਾ ਵਿੱਚ ਸਿਲੇਬਸ ਵਿੱਚ ਲੱਗੀਆਂ ਕਵਿਤਾਵਾਂ ਦੇ ਵਿਸ਼ੇ/ ਸਾਰ/ ਆਲੋਚਨਾਤਮਕ ਅਧਿਐਨ ਅਤੇ ਕਵੀ ਦੇ ਜੀਵਨ ਪ੍ਰੀਚੈ ਅਤੇ ਸਾਹਿਤਕ ਯੋਗਦਾਨ ਆਦਿ ਬਾਰੇ ਤਿੰਨ ਸੁਆਲ ਪੁੱਛੇ ਜਾਣਗੇ। ਇਹਨਾਂ ਵਿੱਚੋਂ ਵਿਦਿਆਰਥੀ ਨੇ ਕੋਈ ਦੋ ਸੁਆਲ ਕਰਨੇ ਹਨ। ਹਰ ਸੁਆਲ ਪੰਜ ਨੰਬਰ ਦਾ ਹੈ। ਇੱਕ ਸੁਆਲ ਕਵਿਤਾ ਦੀ ਪ੍ਰਸੰਗ ਸਾਹਿਤ ਵਿਆਖਿਆ ਦਾ ਹੋਵੇਗਾ। ਵਿਦਿਆਰਥੀਆਂ ਨੂੰ ਦੋ ਕਾਵਿ ਟੁਕੜੀਆਂ ਦਿੱਤੀਆਂ ਜਾਣਗੀਆਂ ਜਿਸ ਵਿੱਚੋਂ ਵਿਦਿਆਰਥੀ ਨੇ ਕਿਸੇ ਇੱਕ ਦੀ ਪ੍ਰਸੰਗ ਸਾਹਿਤ ਵਿਆਖਿਆ ਕਰਨੀ ਹੋਵੇਗੀ। ਇਹ ਸੁਆਲ ਚਾਰ ਨੰਬਰ ਦਾ ਹੋਵੇਗਾ।

5. ਯੂਨਿਟ ਤੀਜਾ ਵਿੱਚ ਸਿਲੇਬਸ ਵਿੱਚ ਲੱਗੇ ਨਾਵਲ ਦੇ ਵਿਸ਼ੇ, ਸਾਰ, ਆਲੋਚਨਾਤਮਕ ਅਧਿਐਨ, ਪਾਤਰ ਵਿਧਾਨ ਅਤੇ ਨਾਵਲ ਦੀਆਂ ਬਿਰਤਾਂਤਕ ਜੁਗਤਾਂ ਆਦਿ ਬਾਰੇ ਤਿੰਨ ਸੁਆਲ ਪੁੱਛੇ ਜਾਣਗੇ। ਇਹਨਾਂ ਵਿੱਚੋਂ ਵਿਦਿਆਰਥੀ ਨੇ ਕੋਈ ਦੋ ਸੁਆਲ ਕਰਨੇ ਹਨ। ਹਰ ਸੁਆਲ ਸੱਤ-ਸੱਤ ਨੰਬਰ ਦਾ ਹੈ।

6. ਯੂਨਿਟ ਚੌਥਾ ਵਿੱਚ ਸਿਲੇਬਸ ਵਿੱਚ ਲੱਗੇ ਨਾਟਕ ਦੇ ਵਿਸ਼ੇ, ਸਾਰ, ਆਲੋਚਨਾਤਮਕ ਅਧਿਐਨ, ਪਾਤਰ ਵਿਧਾਨ ਨਾਟਕੀ ਜੁਗਤਾਂ ਅਤੇ ਰੰਗਮੰਚੀ ਸਾਰਥਕਤਾ ਆਦਿ ਬਾਰੇ ਤਿੰਨ ਸੁਆਲ ਪੁੱਛੇ ਜਾਣਗੇ। ਇਹਨਾਂ ਵਿੱਚੋਂ ਵਿਦਿਆਰਥੀ ਨੇ ਕੋਈ ਦੋ ਸੁਆਲ ਕਰਨੇ ਹਨ। ਹਰ ਸੁਆਲ ਸੱਤ-ਸੱਤ ਨੰਬਰ ਦਾ ਹੈ।

Unit	Topics	Contact Hours
I	1. ਹਰਿਆਣਾ ਵਿੱਚ ਪੰਜਾਬੀ ਸਾਹਿਤ : ਸਿਧਾਂਤ, ਇਤਿਹਾਸ ਅਤੇ ਪ੍ਰਵਿਰਤੀਆਂ ਅੰਕ:14 1.1 ਹਰਿਆਣਵੀ ਅਤੇ ਪੰਜਾਬੀ ਭਾਸ਼ਾ : ਅੰਤਰ ਸਬੰਧ 1.2 ਹਰਿਆਣਾ ਰਾਜ ਦਾ ਸਮਾਜਿਕ ਸਭਿਆਚਾਰਕ ਪਿਛੋਕੜ	
II	2. ***ਪਰਵਾਜ਼***, ਰਤਨ ਸਿੰਘ ਢਿੱਲੋਂ, ਚੇਤਨਾ ਪ੍ਰਕਾਸ਼ਨ, ਲੁਧਿਆਣਾ, 2012 ਅੰਕ:14 2.1 ਕਵਿਤਾਵਾਂ ਦਾ ਸਾਰ, ਵਿਸ਼ਾ ਅਤੇ ਕਲਾ ਪੱਖ 2.2 ਕਵਿਤਾਵਾਂ ਦਾ ਆਲੋਚਨਾਤਮਕ ਅਧਿਐਨ 2.3 ਪ੍ਰਸੰਗ ਸਾਹਿਤ ਵਿਆਖਿਆ	
III	3. ਸੋਹਣ ਸਿੰਘ ਹੰਸ, ***ਕਾਰੇ ਹੱਥੀਂ***, ਬਲਰਾਜ ਸਾਹਨੀ ਯਾਦਗਾਰੀ ਪ੍ਰਕਾਸ਼ਨ, 1986 ਅੰਕ:14 3.1 ਨਾਵਲ ਦਾ ਵਿਸ਼ਾ ਵਸਤੂ ਅਤੇ ਸਰੋਕਾਰ 3.2 ਆਲੋਚਨਾਤਕ ਅਧਿਐਨ 3.3 ਪਾਤਰ ਵਿਧਾਨ 3.4 ਬਿਰਤਾਂਤਕ ਜੁਗਤਾਂ 3.5 ਕਵੀਆਂ ਦਾ ਜੀਵਨ ਪ੍ਰੀਚੈ ਅਤੇ ਸਾਹਿਤਕ ਯੋਗਦਾਨ	
IV	4. ***ਤੂੰ ਮੇਰਾ ਕੀ ਲੱਗਦੈਂ,*** ਕੁਲਦੀਪ ਸਿੰਘ ਦੀਪ, ਅਦਬੀ ਪ੍ਰਵਾਜ਼ ਪ੍ਰਕਾਸ਼ਨ, ਮਾਨਸਾ, 2016 ਅੰਕ:14 4.1 ਨਾਟਕ ਦਾ ਵਿਸ਼ਾ ਵਸਤੂ ਅਤੇ ਸਰੋਕਾਰ 4.2 ਆਲੋਚਨਾਤਕ ਅਧਿਐਨ 4.3 ਪਾਤਰ ਵਿਧਾਨ 4.4 ਨਾਟਕੀ ਜੁਗਤਾਂ/ ਰੰਗਮੰਚੀ ਸਾਰਥਕਤਾ	

Suggested Evaluation Method	
Internal Assessment: 30 Marks ➢ **Theory** • Class Participation: 5 Marks • Seminar/presentation/assignment/quiz/class test etc.: 5+5=10 Marks • Mid-Term Exam: 15 Marks	**End Term Examination:** 70 Marks

Part C- Learning Resources

1. ਅਮਰਜੀਤ ਸਿੰਘ ਕਾਂਗ, **ਹਰਿਆਣਾ ਦਾ ਪੰਜਾਬੀ ਸਾਹਿਤ**, ਪੰਜਾਬੀ ਅਕਾਦਮੀ, ਦਿੱਲੀ
2. ਅਮਰਜੀਤ ਸਿੰਘ ਕਾਂਗ ਅਤੇ ਹਿੰਮਤ ਸਿੰਘ ਸੋਢੀ (ਸੰਪਾ.), **ਹਰਿਆਣਾ ਦਾ ਪੰਜਾਬੀ ਸਾਹਿਤ ਨੂੰ ਯੋਗਦਾਨ** ਹਰਿਆਣਾ ਸਾਹਿਤ ਅਕਾਦਮੀ, ਚੰਡੀਗੜ੍ਹ
3. ਸ. ਸ. ਖਹਿਰਾ, **ਪੰਜਾਬੀ ਭਾਸ਼ਾ : ਵਿਆਕਰਣ ਅਤੇ ਬਣਤਰ,** ਪੰਜਾਬੀ ਯੂਨੀਵਰਸਿਟੀ, ਪਟਿਆਲਾ
4. ਹਰਕੀਰਤ ਸਿੰਘ, **ਪੰਜਾਬੀ ਸ਼ਬਦ ਰੂਪ ਅਤੇ ਸ਼ਬਦ ਜੋੜ ਕੋਸ਼**, ਪੰਜਾਬੀ ਯੂਨੀਵਰਸਿਟੀ, ਪਟਿਆਲਾ
5. ਹਰਬੰਸ ਸਿੰਘ ਧੀਮਾਨ, **ਪੰਜਾਬੀ ਭਾਸ਼ਾ ਅਤੇ ਵਿਆਕਰਣ,** ਗਗਨ ਪ੍ਰਕਾਸ਼ਨ, ਰਾਜਪੁਰਾ, ਪਟਿਆਲਾ, 2006
6. ਗੁਰਦਿਆਲ ਸਿੰਘ , **ਹਰਿਆਣਾ ਦੀ ਪੰਜਾਬੀ ਕਵਿਤਾ ਦਾ ਆਲੋਚਨਾਤਮਕ ਅਧਿਐਨ,** ਨਾਨਕ ਸਿੰਘ ਪੁਸਤਕਮਾਲਾ, ਅੰਮ੍ਰਿਤਸਰ, 2011

Syllabus of Under Graduate Course (Panjabi)

Session: 2023-24	
Part A - Introduction	
Subject	Panjabi
Semester	1st
Name of the Course	Bachelor of Arts
Course Code	B23- PNB -103
Name of the Paper	**ਪੰਜਾਬੀ ਭਾਸ਼ਾ : ਮੁੱਢਲੀ ਜਾਣ-ਪਛਾਣ** **Punjabi Bhasha : Mudhli Jaan-Pachhan**
Course Type: (CC/MCC/MDC/CC-M/DSEC/VOC/DSE/PC/AEC/VAC)	CC-M1
Level of the course (As per Annexure-I	0-99
Pre-requisite for the course (if any)	----------
Course Learning Outcomes(CLO):	After completing this course, the learner will be able to: CLO-103-1 ਵਿਦਿਆਰਥੀਆਂ ਨੂੰ ਪੰਜਾਬੀ ਸ਼ਬਦ ਰਚਨਾ, ਲਗਾਂ ਮਾਤਰਾ ਅਤੇ ਸ਼ਬਦ-ਜੋੜ ਨੇਮਾਂ ਦਾ ਗਿਆਨ ਪ੍ਰਾਪਤ ਹੋਵੇਗਾ। CLO-103-2 ਵਿਦਿਆਰਥੀਆਂ ਨੂੰ ਪੰਜਾਬੀ ਦੀਆਂ ਵਿਆਕਰਣਿਕ ਸ਼੍ਰੇਣੀਆਂ ਬਾਰੇ ਗਿਆਨ ਪ੍ਰਾਪਤ ਹੋਵੇਗਾ। CLO-103-3 ਵਿਦਿਆਰਥੀਆਂ ਨੂੰ ਪੰਜਾਬੀ ਵਾਕ, ਵਾਕ ਰਚਨਾ, ਅਰਥ ਬੋਧ ਅਤੇ ਪੰਜਾਬੀ ਅਰਥ ਵਿਗਿਆਨ ਦੀ ਮੁੱਢਲੀ ਜਾਣਕਾਰੀ ਪ੍ਰਾਪਤ ਹੋਵੇਗੀ। CLO-103-4 ਪੰਜਾਬੀ ਵਿੱਚ ਪੱਤਰ ਲੇਖਣ ਅਤੇ ਸੰਖੇਪ ਰਚਨਾ ਦੀ ਜਾਣਕਾਰੀ, ਪੱਤਰ ਲੇਖਣ ਅਤੇ ਸੰਖੇਪ ਰਚਨਾ ਵਿੱਚ ਮੁਹਾਰਤ ਹਾਸਿਲ ਹੋਵੇਗੀ।

Credits	Theory + Tutorial	Practical	Total
	2	----------	2
Contact Hours	30	----------	30
Max. Marks : 50 Internal Assessment Marks : 15 End Term Exam Marks : 35		Time : 2 Hrs.	

Part B- Contents of The Course

Instruction for Paper Setter

1. ਪਹਿਲਾ ਪ੍ਰਸ਼ਨ ਲਾਜ਼ਮੀ ਹੈ। ਇਹ ਪ੍ਰਸ਼ਨ 7 ਨੰਬਰ ਦਾ ਹੋਵੇਗਾ। ਇਸ ਵਿੱਚ ਸਮੁੱਚੇ ਸਿਲੇਬਸ ਵਿੱਚੋਂ ਕੁੱਲ ਸੱਤ ਸੁਆਲ ਪੁੱਛੇ ਜਾਣਗੇ। ਵਿਦਿਆਰਥੀ ਲਈ ਇਹ ਸਾਰੇ ਸੁਆਲ ਕਰਨੇ ਲਾਜ਼ਮੀ ਹਨ। ਹਰ ਸੁਆਲ ਇੱਕ ਨੰਬਰ ਦਾ ਹੋਵੇਗਾ।
2. ਸਮੁੱਚਾ ਸਿਲੇਬਸ ਕੁੱਲ ਚਾਰ ਯੂਨਿਟਾਂ ਵਿੱਚ ਵੰਡਿਆ ਗਿਆ ਹੈ। ਹਰ ਯੂਨਿਟ 7 ਨੰਬਰਾਂ ਦਾ ਹੈ।
3. ਯੂਨਿਟ ਪਹਿਲਾ ਵਿੱਚ ਧੁਨੀ/ ਅੱਖਰ ਬੋਧ ਬਾਰੇ ਤਿੰਨ ਸੁਆਲ ਪੁੱਛੇ ਜਾਣਗੇ। ਵਿਦਿਆਰਥੀ ਨੇ ਇਹਨਾਂ ਵਿੱਚੋਂ ਕੋਈ ਦੋ

ਸੁਆਲ ਕਰਨੇ ਹਨ। ਹਰ ਸੁਆਲ ਸਾਢੇ ਤਿੰਨ ਨੰਬਰ ਦਾ ਹੈ।

4. ਯੂਨਿਟ ਦੂਜਾ ਸ਼ਬਦ ਬੋਧ ਅਤੇ ਵਿਆਕਰਣਿਕ ਸ਼੍ਰੇਣੀਆਂ ਸਬੰਧੀ ਤਿੰਨ ਸੁਆਲ ਪੁੱਛੇ ਜਾਣਗੇ। ਵਿਦਿਆਰਥੀ ਨੇ ਇਹਨਾਂ ਵਿੱਚੋਂ ਕੋਈ ਦੋ ਸੁਆਲ ਕਰਨੇ ਹਨ। ਹਰ ਸੁਆਲ ਸਾਢੇ ਤਿੰਨ ਨੰਬਰ ਦਾ ਹੈ।

5. ਯੂਨਿਟ ਤੀਜਾ ਪੰਜਾਬੀ ਵਾਕ ਅਤੇ ਅਰਥ-ਬੋਧ ਬਾਰੇ ਤਿੰਨ ਸੁਆਲ ਪੁੱਛੇ ਜਾਣਗੇ। ਵਿਦਿਆਰਥੀ ਨੇ ਇਹਨਾਂ ਵਿੱਚੋਂ ਕੋਈ ਦੋ ਸੁਆਲ ਕਰਨੇ ਹਨ। ਹਰ ਸੁਆਲ ਸਾਢੇ ਤਿੰਨ ਨੰਬਰ ਦਾ ਹੈ।

6. ਯੂਨਿਟ ਚੌਥਾ ਵਿੱਚ ਚਿੱਠੀ ਪੱਤਰ (ਦੋ ਵਿੱਚੋਂ ਇੱਕ) ਅਤੇ ਸੰਖੇਪ ਰਚਨਾ ਬਾਰੇ ਸੁਆਲ ਪੁੱਛੇ ਜਾਣਗੇ। ਦੋਵੇਂ ਸੁਆਲ ਜ਼ਰੂਰੀ ਹਨ। ਹਰ ਸੁਆਲ ਸਾਢੇ ਤਿੰਨ ਨੰਬਰ ਦਾ ਹੈ।

Unit	Topics	Contact Hours
I	1. ਧੁਨੀ/ ਅੱਖਰ ਬੋਧ ਅੰਕ : 7 1.1 ਅੱਖਰਾਂ/ ਵਰਣਾਂ ਦੀ ਪਛਾਣ, ਅੱਖਰ ਉਚਾਰਣ 1.2 ਲਗਾਂ ਮਾਤਰਾਵਾਂ ਅਤੇ ਲਗਾਖਰ 1.3 ਸਵਰ-ਵਿਅੰਜਨ 1.4 ਸ਼ਬਦ ਜੋੜ ਨਿਯਮ	
II	2. ਸ਼ਬਦ ਬੋਧ ਤੇ ਵਿਆਕਰਣਕ ਸ਼੍ਰੇਣੀਆਂ ਅੰਕ : 7 2.1 ਸ਼ਬਦ : ਪਰਿਭਾਸ਼ਾ ਅਤੇ ਸ਼ਬਦ ਬਣਤਰ, 2.2 ਸ਼ਬਦ ਰਚਨਾ (ਅਗੇਤਰ, ਪਿਛੇਤਰ) 2.3 ਵਿਆਕਰਣਕ ਸ਼ਬਦ ਸ਼੍ਰੇਣੀਆਂ-ਨਾਂਵ, ਪੜਨਾਂਵ, ਵਿਸ਼ੇਸ਼ਣ, ਕਿਰਿਆ ਵਿਸ਼ੇਸ਼ਣ, ਸਬੰਧਕ, ਯੋਜਕ, ਵਿਸਮਿਕ ਅਤੇ ਪਾਰਟੀਕਲਜ਼ (ਨਿਪਾਤ) ਦੀ ਸੰਖੇਪ ਜਾਣਕਾਰੀ	
III	3. ਵਾਕ ਬੋਧ ਅਤੇ ਅਰਥ ਬੋਧ ਅੰਕ : 7 3.1 ਵਾਕ : ਅਰਥ, ਪਰਿਭਾਸ਼ਾ, ਵਾਕ ਰਚਨਾ ਅਤੇ ਵਾਕ ਵੰਡ 3.2 ਅਰਥ : ਅਰਥ, ਪਰਿਭਾਸ਼ਾ ਅਤੇ ਪੰਜਾਬੀ ਅਰਥਾਵਲੀ (ਸਮਾਨਾਰਥਕ ਸ਼ਬਦ, ਬਹੁਅਰਥਕ ਸ਼ਬਦ, ਵਿਰੋਧਾਰਥਕ ਸ਼ਬਦ, ਵਿਪਰੀਤਆਰਥਕ ਸ਼ਬਦ	
IV	4.1 ਚਿੱਠੀ ਪੱਤਰ ਲੇਖਣ : ਅਰਥ, ਕਿਸਮਾਂ ਅਤੇ ਨਿਯਮ ਅੰਕ : 7 4.2 ਸੰਖੇਪ ਰਚਨਾ	

Suggested Evaluation Method

Internal Assessment: 15 Marks ➢ **Theory** • Class Participation: 4 Marks • Seminar/presentation/assignment/quiz/class test etc.: 4 Marks • Mid-Term Exam: 7 Marks	**End Term Examination:** 35 Marks

Part C- Learning Resources

1. ਸ. ਸ. ਖਹਿਰਾ **ਪੰਜਾਬੀ ਭਾਸ਼ਾ : ਵਿਆਕਰਣ ਅਤੇ ਬਣਤਰ,** ਪੰਜਾਬੀ ਯੂਨੀਵਰਸਿਟੀ, ਪਟਿਆਲਾ

2. ਹਰਕੀਰਤ ਸਿੰਘ **ਪੰਜਾਬੀ ਸ਼ਬਦ ਰੂਪ ਅਤੇ ਸ਼ਬਦ ਜੋੜ ਕੋਸ਼**, ਪੰਜਾਬੀ ਯੂਨੀਵਰਸਿਟੀ, ਪਟਿਆਲਾ

3. ਹਰਬੰਸ ਸਿੰਘ ਧੀਮਾਨ **ਪੰਜਾਬੀ ਭਾਸ਼ਾ ਅਤੇ ਵਿਆਕਰਣ,** ਗਗਨ ਪ੍ਰਕਾਸ਼ਨ, ਰਾਜਪੁਰਾ, ਪਟਿਆਲਾ, 2006

4. Gurinder Singh Mann **An Introduction to Punjabi,** Punjabi University, Patiala

Syllabus of Under Graduate Course (Panjabi)

Session: 2023-24			
Part A - Introduction			
Subject	Panjabi		
Semester	1st		
Name of the Course	Bachelor of Arts		
Course Code	B23- PNB -104		
Name of the Paper	ਪੰਜਾਬੀ ਭਾਸ਼ਾ, ਗੁਰਮੁਖੀ ਲਿੱਪੀ ਅਤੇ ਪੰਜਾਬੀ ਦਾ ਕੰਪਿਊਟਰੀਕਰਨ Punjabi Bhasha, Gurmukhi Lipi Ate Punjabi Da Computerikaran		
Course Type: (CC/MCC/MDC/CC-M/DSEC/VOC/DSE/PC/AEC/VAC)	MDC-1		
Level of the course (As per Annexure-I	100-199		
Pre-requisite for the course (if any)	Senior Secondary (10+2) or Visharad or Equivalent inany Stream		
Course Learning Outcomes(CLO):	After completing this course, the learner will be able to: CLO-104-1 ਵਿਦਿਆਰਥੀ ਪੰਜਾਬੀ ਭਾਸ਼ਾ ਦੇ ਨਿਕਾਸ ਅਤੇ ਵਿਕਾਸ ਪੜਾਵਾਂ ਤੋਂ ਜਾਣੂ ਹੋਣਗੇ। CLO-104-2 ਵਿਦਿਆਰਥੀਆਂ ਨੂੰ ਗੁਰਮੁਖੀ ਲਿੱਪੀ ਦੇ ਜਨਮ ਅਤੇ ਵਿਕਾਸ ਬਾਰੇ ਜਾਣਕਾਰੀ ਦੇ ਨਾਲ–ਨਾਲ ਉਹ ਗੁਰਮੁਖੀ ਲਿੱਪੀ ਦੀ ਪ੍ਰਾਚੀਨਤਾ ਅਤੇ ਪੰਜਾਬੀ ਲਈ ਗੁਰਮੁਖੀ ਦੀ ਉਚਿਤਤਾ ਤੋਂ ਜਾਣੂ ਹੋਣਗੇ। CLO-104-3 ਵਿਦਿਆਰਥੀ ਪੰਜਾਬੀ ਭਾਸ਼ਾ ਵਿੱਚ ਕੰਪਿਊਟਰ ਅਤੇ ਇੰਟਰਨੈੱਟ ਦੀ ਵਰਤੋਂ ਕਰਨ ਦੇ ਸਮਰੱਥ ਹੋ ਸਕੇਗਾ। CLO-104-4 ਵਿਦਿਆਰਥੀ ਵਿਭਿੰਨ ਪੰਜਾਬੀ ਫੌਂਟਾਂ ਵਿੱਚ ਟਾਈਪਿੰਗ ਕਰਨ ਦੀ ਮੁਹਾਰਤ ਹਾਸਲ ਕਰਨਗੇ।		

Credits	Theory + Tutorial	Practical	Total
	2+1	----------	3
Contact Hours	45	----------	45

Max. Marks : 75 Internal Assessment Marks : 25 End Term Exam Marks : 50	Time : 3 Hrs.

Part B- Contents of The Course

Instruction for Paper Setter

1. ਪਹਿਲਾ ਪ੍ਰਸ਼ਨ ਲਾਜ਼ਮੀ ਹੈ। ਇਹ ਪ੍ਰਸ਼ਨ 10 ਨੰਬਰ ਦਾ ਹੋਵੇਗਾ। ਇਸ ਵਿੱਚ ਸਮੁੱਚੇ ਸਿਲੇਬਸ ਵਿੱਚੋਂ ਕੁੱਲ ਚਾਰ ਸੁਆਲ ਪੁੱਛੇ ਜਾਣਗੇ। ਵਿਦਿਆਰਥੀ ਲਈ ਇਹ ਸਾਰੇ ਸੁਆਲ ਕਰਨੇ ਲਾਜ਼ਮੀ ਹਨ। ਹਰ ਸੁਆਲ ਢਾਈ ਨੰਬਰ ਦਾ ਹੋਵੇਗਾ।
2. ਸਮੁੱਚਾ ਸਿਲੇਬਸ ਕੁੱਲ ਚਾਰ ਯੂਨਿਟਾਂ ਵਿੱਚ ਵੰਡਿਆ ਗਿਆ ਹੈ। ਹਰ ਯੂਨਿਟ 10 ਨੰਬਰਾਂ ਦਾ ਹੈ।

3. ਯੂਨਿਟ ਪਹਿਲਾ ਵਿੱਚ ਪੰਜਾਬੀ ਭਾਸ਼ਾ ਦੇ ਇਤਿਹਾਸਕ ਪਰਿਪੇਖ ਬਾਰੇ ਤਿੰਨ ਸੁਆਲ ਪੁੱਛੇ ਜਾਣਗੇ। ਵਿਦਿਆਰਥੀ ਨੇ ਇਹਨਾਂ ਵਿੱਚੋਂ ਕੋਈ ਦੋ ਸੁਆਲ ਕਰਨੇ ਹਨ। ਹਰ ਸੁਆਲ ਪੰਜ ਨੰਬਰ ਦਾ ਹੈ।

4. ਯੂਨਿਟ ਦੂਜਾ ਵਿੱਚ ਗੁਰਮੁਖੀ ਲਿੱਪੀ ਬਾਰੇ ਤਿੰਨ ਸੁਆਲ ਪੁੱਛੇ ਜਾਣਗੇ। ਵਿਦਿਆਰਥੀ ਨੇ ਇਹਨਾਂ ਵਿੱਚੋਂ ਕੋਈ ਦੋ ਸੁਆਲ ਕਰਨੇ ਹਨ। ਹਰ ਸੁਆਲ ਪੰਜ ਨੰਬਰ ਦਾ ਹੈ।

5. ਯੂਨਿਟ ਤੀਜਾ ਵਿੱਚ ਪੰਜਾਬੀ ਭਾਸ਼ਾ ਦੇ ਕੰਪਿਊਟਰੀਕਰਨ ਅਤੇ ਪੰਜਾਬੀ ਟਾਈਪਿੰਗ ਬਾਰੇ ਤਿੰਨ ਸੁਆਲ ਪੁੱਛੇ ਜਾਣਗੇ। ਇਹਨਾਂ ਵਿੱਚੋਂ ਵਿਦਿਆਰਥੀ ਨੇ ਕੋਈ ਦੋ ਸੁਆਲ ਕਰਨੇ ਹਨ। ਹਰ ਸੁਆਲ ਪੰਜ ਨੰਬਰ ਦਾ ਹੈ।

6. ਯੂਨਿਟ ਚੌਥਾ ਵਿੱਚ ਤਿੰਨ ਸੁਆਲ ਪੰਜਾਬੀ ਸਾਫ਼ਟਵੇਅਰਜ਼ ਅਤੇ ਇੰਟਰਨੈੱਟ ਉੱਤੇ ਪੰਜਾਬੀ ਦੀ ਵਰਤੋਂ ਬਾਰੇ ਪੁੱਛੇ ਜਾਣਗੇ। ਇਹਨਾਂ ਵਿੱਚੋਂ ਵਿਦਿਆਰਥੀ ਨੇ ਕੋਈ ਦੋ ਸੁਆਲ ਕਰਨੇ ਹਨ। ਹਰ ਸੁਆਲ ਪੰਜ ਨੰਬਰ ਦਾ ਹੈ।

Unit	Topics	Contact Hours
I	1. ਪੰਜਾਬੀ ਭਾਸ਼ਾ : ਇਤਿਹਾਸਕ ਪਰਿਪੇਖ ਅੰਕ : 10 1.1 ਪੰਜਾਬੀ ਭਾਸ਼ਾ ਦੇ ਨਿਕਾਸ ਬਾਰੇ ਮਿਲਦੇ ਵਿਭਿੰਨ ਮਤ 1.2 ਪੰਜਾਬੀ ਭਾਸ਼ਾ ਦੇ ਵਿਕਾਸ ਪੜਾਅ 1.3 ਪੰਜਾਬੀ ਭਾਸ਼ਾ ਉੱਤੇ ਪਏ ਦੂਜੀਆਂ ਬੋਲੀਆਂ ਦੇ ਪ੍ਰਭਾਵ 1.4 ਸਵਰ ਅਤੇ ਵਿਅੰਜਨ	
II	2. ਗੁਰਮੁਖੀ ਲਿੱਪੀ : ਮੁੱਢਲੀ ਜਾਣ ਪਛਾਣ ਅੰਕ : 10 2.1 ਗੁਰਮੁਖੀ ਲਿਪੀ ਦਾ ਜਨਮ ਅਤੇ ਵਿਕਾਸ 2.2 ਗੁਰਮੁਖੀ ਦੀ ਪੰਜਾਬੀ ਲਈ ਉੱਚਿਤਤਾ 2.3 ਗੁਰਮੁਖੀ ਦੀ ਪ੍ਰਾਚੀਨਤਾ 2.4 ਲਗਾਂ ਅਤੇ ਲਗਾਖਰ	
III	3. ਪੰਜਾਬੀ ਭਾਸ਼ਾ ਦਾ ਕੰਪਿਊਟਰੀਕਰਨ ਅੰਕ : 10 3.1 ਪੰਜਾਬੀ ਫੌਂਟ ਅਤੇ ਕੀ-ਬੋਰਡ : ਪਰਿਭਾਸ਼ਾ, ਕਿਸਮਾਂ, ਸਮੱਸਿਆਵਾਂ ਅਤੇ ਵਰਤੋਂ-ਵਿਉਂਤ 3.2 ਪੰਜਾਬੀ ਟਾਈਪਿੰਗ : ਕੀ-ਬੋਰਡ ਉੱਤੇ ਉਂਗਲਾਂ ਦੀ ਸਥਿਤੀ, ਫੁੱਟ ਨੋਟ ਲਗਾਉਣੇ, ਫੌਂਟ ਬਦਲਣ ਦਾ ਕੀ-ਬੋਰਡ ਸ਼ਾਰਟਕੱਟ ਬਣਾਉਣਾ, ਸ਼ਬਦ ਦੇ ਪਹਿਲੇ ਅੱਖਰ ਦੇ ਬਦਲਣ ਦੀ ਸਮੱਸਿਆ ਨੂੰ ਹੱਲ ਕਰਨਾ, ਹੋੜਾ ਅਤੇ ਪੁੱਠੇ ਕਾਮੇ ਦੀ ਸਮੱਸਿਆ ਦਾ ਹੱਲ ਅਤੇ ਆਟੋ ਕ੍ਰੈਕਟ ਬਣਾਉਣਾ।	
IV	4. ਪੰਜਾਬੀ ਸਾਫ਼ਟਵੇਅਰਜ਼ ਅਤੇ ਇੰਟਰਨੈੱਟ 'ਤੇ ਪੰਜਾਬੀ ਦੀ ਵਰਤੋਂ ਅੰਕ : 10 4.1 ਪੰਜਾਬੀ ਵਰਡ ਪ੍ਰੋਸੈੱਸਰ ਅੱਖਰ, ਫੌਂਟ ਕਨਵਰਟਰ ਅਤੇ ਪੰਜਾਬੀ ਦਾ ਸਪੈੱਲ ਚੈੱਕਰ, ਯੂਨੀਕੋਡ ਬਾਰੇ ਜਾਣ-ਪਛਾਣ, ਯੂਨੀਕੋਡ ਦੀ ਲੋੜ, ਪੰਜਾਬੀ ਯੂਨੀਕੋਡ ਫੌਂਟ ਕਨਵਰਟਰ 4.2 ਸੋਧਕ ਟਾਈਪਿੰਗ ਪੈਡ, ਈਸ਼ਰ ਮਾਈਕਰੋਮੀਡੀਆ, ਕਿਸ਼ਨ ਮਾਈਕਰੋਮੀਡੀਆ, ਪੰਜਾਬੀ ਪੀਡੀਆ, ਗੁਰਮੁਖੀ ਓ. ਸੀ. ਆਰ. ਦੀ ਵਰਤੋਂ 4.3 ਇੰਟਰਨੈੱਟ 'ਤੇ ਪੰਜਾਬੀ ਦੀ ਵਰਤੋਂ: ਈ ਮੇਲ : ਈ ਮੇਲ ਖਾਤਾ ਬਣਾਉਣਾ, ਪੰਜਾਬੀ ਵਿੱਚ ਈ ਮੇਲ ਸੰਦੇਸ਼ ਤਿਆਰ ਕਰਨਾ, ਭੇਜਣਾ, ਪ੍ਰਾਪਤ ਕਰਨਾ/ ਪੜ੍ਹਨਾ, ਰਿਪਲਾਈ ਕਰਨਾ, ਫਾਰਵਰਡ ਕਰਨਾ ਅਤੇ ਫਾਈਲ ਅਟੈਚ ਕਰਨਾ 4.4 ਪੰਜਾਬੀ ਅਧਿਅਨ/ ਅਧਿਆਪਨ ਵੈੱਬਸਾਈਟਾਂ : ਆਨ-ਲਾਈਨ ਸ਼ਬਦ ਕੋਸ਼, ਗੁਰਮੁਖੀ, ਸ਼ਾਹਮੁਖੀ, ਦੇਵਨਾਗਰੀ, ਰੋਮਨ ਦਰਮਿਆਨ ਲਿਪੀਅੰਤਰਣ, ਪੰਜਾਬੀ, ਹਿੰਦੀ ਅਤੇ ਅੰਗਰੇਜ਼ੀ ਦਰਮਿਆਨ ਅਨੁਵਾਦ	

Suggested Evaluation Method	
Internal Assessment: 25 Marks ➢ **Theory** • Class Participation: 5 Marks • Seminar/presentation/assignment/quiz/class test etc.: 7 Marks • Mid-Term Exam: 13 Marks	**End Term Examination:** 50 Marks

Part C- Learning Resources

1. ਹਰਕੀਰਤ ਸਿੰਘ, ਭਾਸ਼ਾ ਅਤੇ ਭਾਸ਼ਾ ਵਿਗਿਆਨ, ਲਾਹੌਰ ਬੁੱਕ ਸ਼ਾਪ, ਲੁਧਿਆਣਾ, 1983
2. ਜੇ. ਬੀ. ਸਿੰਘ, ਗੁਰਮੁਖੀ ਲਿਪੀ ਦਾ ਜਨਮ ਤੇ ਵਿਕਾਸ, ਪੰਜਾਬ ਯੂਨੀਵਰਸਿਟੀ, ਚੰਡੀਗੜ੍ਹ, 1972 (ਦੂਜਾ ਐਡੀਸ਼ਨ)
3. ਜੁਗਿੰਦਰ ਸਿੰਘ ਪੁਆਰ, ਭਾਸ਼ਾ ਵਿਗਿਆਨ : ਸੰਕਲਪ ਤੇ ਦਿਸ਼ਾਵਾਂ, ਪੰਜਾਬੀ ਭਾਸ਼ਾ ਅਕਾਡਮੀ, ਜਲੰਧਰ, 1988
4. ਸੀ. ਪੀ. ਕੰਬੋਜ, **ਮਾਈਕਰੋਸਾਫ਼ਟ ਵਿੰਡੋਜ਼,** ਲੋਕਗੀਤ ਪ੍ਰਕਾਸ਼ਨ, ਚੰਡੀਗੜ੍ਹ, 2012
5. –ਉਹੀ–, **ਸਾਈਬਰ ਸੰਸਾਰ ਅਤੇ ਪੰਜਾਬੀ ਭਾਸ਼ਾ,** ਲੋਕਗੀਤ ਪ੍ਰਕਾਸ਼ਨ, ਚੰਡੀਗੜ੍ਹ, 2010
6. –ਉਹੀ–, **ਕੰਪਿਊਟਰ ਵਿਗਿਆਨ,** ਪੰਜਾਬੀ ਯੂਨੀਵਰਸਿਟੀ, ਪਟਿਆਲਾ, 2012
7. –ਉਹੀ–, **ਪੰਜਾਬੀ ਭਾਸ਼ਾ ਦਾ ਕੰਪਿਊਟਰੀਕਰਨ,** ਕੰਪਿਊਟਰ ਵਿਗਿਆਨ ਪ੍ਰਕਾਸ਼ਨ, ਫ਼ਾਜ਼ਿਲਕਾ, 2015
8. ਕਿਰਪਾਲ ਸਿੰਘ ਪੰਨੂੰ, **ਆਓ ਕੰਪਿਊਟਰ ਸਿੱਖੀਏ,** ਚੇਤਨਾ ਪ੍ਰਕਾਸ਼ਨ, ਲੁਧਿਆਣਾ, 2012
9. ਜਗਮੋਹਨ ਸਿੰਘ, **ਕੰਪਿਊਟਰ : ਮੁੱਢਲੀ ਜਾਣਕਾਰੀ ਅਤੇ ਉਪਯੋਗ,** ਪੰਜਾਬੀ ਯੂਨੀਵਰਸਿਟੀ, ਪਟਿਆਲਾ, 2006

Syllabus of Under Graduate Course (Panjabi)

Session: 2023-24			
Part A - Introduction			
Subject	Panjabi		
Semester	IInd		
Name of the Course	Bachelor of Arts		
Course Code	B23- PNB -201		
Name of the Paper	**ਆਧੁਨਿਕ ਪੰਜਾਬੀ ਗਲਪ ਅਤੇ ਵਿਹਾਰਕ ਪੰਜਾਬੀ** **Adhunik Panjabi Galap Ate Viharak Punjabi**		
Course Type: (CC/MCC/MDC/CC-M/DSEC/VOC/DSE/PC/AEC/VAC)	CC-2 MCC-3		
Level of the course (As per Annexure-I	200-299		
Pre-requisite for the course (if any)	----------		
Course Learning Outcomes(CLO):	After completing this course, the learner will be able to: CLO-201-1 ਵਿਦਿਆਰਥੀਆਂ ਨੂੰ ਆਧੁਨਿਕ ਪੰਜਾਬੀ ਗਲਪ ਦੇ ਪ੍ਰਮੁੱਖ ਰੂਪਾਂ (ਨਾਵਲ, ਕਹਾਣੀ) ਦੇ ਵਿਧਾਗਤ ਪ੍ਰਤੀਮਾਨਾਂ ਬਾਰੇ ਜਾਣਕਾਰੀ ਪ੍ਰਾਪਤ ਹੋਵੇਗੀ। CLO-201-2 ਵਿਦਿਆਰਥੀਆਂ ਵਿੱਚ ਪੰਜਾਬੀ ਨਾਵਲ ਅਤੇ ਕਹਾਣੀ ਦੇ ਇਤਿਹਾਸ, ਪ੍ਰਮੁੱਖ ਝੁਕਾਵਾਂ, ਪ੍ਰਵਿਰਤੀਆਂ ਅਤੇ ਵਿਸ ਨਾਵਲਕਾਰਾਂ ਦੇ ਜੀਵਨ ਅਤੇ ਸਿਰਜਣ ਪ੍ਰਕ੍ਰਿਆ ਬਾਰੇ ਜਾਣਕਾਰੀ ਪ੍ਰਾਪਤ ਹੋਵੇਗੀ। CLO-201-3 ਵਿਸ਼ੇਸ਼ ਨਾਵਲ ਅਤੇ ਕਹਾਣੀਆਂ ਦੀ ਪੜ੍ਹਤ ਦੁਆਰਾ ਗਲਪ ਅਧਿਐਨ ਦੀ ਸੂਝ ਅਤੇ ਸਮਝ ਪੈਦਾ ਹੋਵੇਗੀ। CLO-201-4 ਵਿਹਾਰਕ ਪੰਜਾਬੀ ਦੀ ਪੜ੍ਹਾਈ ਰਾਹੀਂ ਪੰਜਾਬੀ ਭਾਸ਼ਾ ਦੀ ਸੰਰਚਨਾ ਅਤੇ ਵਰਤੋਂ ਵਿਹਾਰ ਬਾਰੇ ਸਮਝ ਅਤੇ ਮੁਹਾਰਤ ਪੈਦਾ ਹੋਵੇਗੀ।		

Credits	Theory + Tutorial	Practical	Total
	3+1	----------	4
Contact Hours	60	----------	60
Max. Marks : 100 Internal Assessment Marks : 30 End Term Exam Marks : 70		Time : 3 Hrs.	

Part B- Contents of The Course

Instruction for Paper Setter

1. ਪਹਿਲਾ ਪ੍ਰਸ਼ਨ ਲਾਜ਼ਮੀ ਹੈ। ਇਹ ਪ੍ਰਸ਼ਨ 14 ਨੰਬਰ ਦਾ ਹੋਵੇਗਾ। ਇਸ ਵਿੱਚ ਸਮੁੱਚੇ ਸਿਲੇਬਸ ਵਿੱਚੋਂ ਕੁੱਲ ਚਾਰ ਸੁਆਲ ਪੁੱਛੇ ਜਾਣਗੇ। ਵਿਦਿਆਰਥੀ ਲਈ ਇਹ ਸਾਰੇ ਸੁਆਲ ਕਰਨੇ ਲਾਜ਼ਮੀ ਹਨ। ਹਰ ਸੁਆਲ ਸਾਢੇ ਤਿੰਨ ਨੰਬਰ ਦਾ ਹੋਵੇਗਾ।
2. ਸਮੁੱਚਾ ਸਿਲੇਬਸ ਕੁੱਲ ਚਾਰ ਯੂਨਿਟਾਂ ਵਿੱਚ ਵੰਡਿਆ ਗਿਆ ਹੈ। ਹਰ ਯੂਨਿਟ 14 ਨੰਬਰਾਂ ਦਾ ਹੈ।

3. ਯੂਨਿਟ ਪਹਿਲਾ ਵਿੱਚ ਤਿੰਨ ਸੁਆਲ ਪੰਜਾਬੀ ਗਲਪ, ਨਾਵਲ ਅਤੇ ਕਹਾਣੀ ਦੇ ਸਿਧਾਂਤਕ ਅਤੇ ਇਤਿਹਾਸਕ ਪਰਿਪੇਖ ਬਾਰੇ ਪੁੱਛੇ ਜਾਣਗੇ। ਵਿਦਿਆਰਥੀ ਨੇ ਇਹਨਾਂ ਵਿੱਚੋਂ ਕੋਈ ਦੋ ਸੁਆਲ ਕਰਨੇ ਹਨ। ਹਰ ਪ੍ਰਸ਼ਨ ਸੱਤ-ਸੱਤ ਨੰਬਰ ਦਾ ਹੋਵੇਗਾ।

4. ਯੂਨਿਟ ਦੂਜਾ ਵਿੱਚ ਸਿਲੇਬਸ ਵਿੱਚ ਲੱਗੇ ਨਾਵਲ ਦੇ ਸਾਰ, ਵਿਸ਼ੇ ਵਸਤੂ, ਕਲਾ ਪੱਖ, ਆਲੋਚਨਾਤਮਕ ਅਧਿਐਨ, ਪਾਤਰ ਵਿਧਾਨ ਅਤੇ ਲੇਖਕ ਦੇ ਜੀਵਨ ਅਤੇ ਸਾਹਿਤਕ ਯੋਗਦਾਨ ਆਦਿ ਬਾਰੇ ਤਿੰਨ ਸੁਆਲ ਪੁੱਛੇ ਜਾਣਗੇ। ਵਿਦਿਆਰਥੀ ਨੇ ਇਹਨਾਂ ਵਿੱਚੋਂ ਕੋਈ ਦੋ ਸੁਆਲ ਕਰਨੇ ਹਨ। ਹਰ ਪ੍ਰਸ਼ਨ ਸੱਤ-ਸੱਤ ਨੰਬਰ ਦਾ ਹੋਵੇਗਾ।

5. ਯੂਨਿਟ ਤੀਜਾ ਵਿੱਚ ਸਿਲੇਬਸ ਵਿੱਚ ਲੱਗੀਆਂ ਕਹਾਣੀਆਂ ਦੇ ਸਾਰ, ਵਿਸ਼ੇ ਵਸਤੂ, ਕਲਾ ਪੱਖ, ਆਲੋਚਨਾਤਮਕ ਅਧਿਐਨ, ਪਾਤਰ ਵਿਧਾਨ ਅਤੇ ਕਹਾਣੀਕਾਰਾਂ ਦੇ ਜੀਵਨ ਅਤੇ ਸਾਹਿਤਕ ਯੋਗਦਾਨ ਆਦਿ ਬਾਰੇ ਤਿੰਨ ਸੁਆਲ ਪੁੱਛੇ ਜਾਣਗੇ। ਵਿਦਿਆਰਥੀ ਨੇ ਇਹਨਾਂ ਵਿੱਚੋਂ ਕੋਈ ਦੋ ਸੁਆਲ ਕਰਨੇ ਹਨ। ਹਰ ਪ੍ਰਸ਼ਨ ਸੱਤ-ਸੱਤ ਨੰਬਰ ਦਾ ਹੋਵੇਗਾ।

6. ਯੂਨਿਟ ਚੌਥਾ ਦੇ ਚਾਰ ਉਪ-ਭਾਗ ਹਨ। ਹਰ ਉਪ-ਭਾਗ ਦੇ $3\ ^1/_2$ ਨੰਬਰ ਹਨ। ਉਪ-ਭਾਗ ਪਹਿਲਾ ਅਤੇ ਦੂਜਾ ਵਿੱਚੋਂ ਦੋ-ਦੋ ਸੁਆਲ ਪੁੱਛੇ ਜਾਣਗੇ। ਜਿਹਨਾਂ ਵਿੱਚੋਂ ਵਿਦਿਆਰਥੀ ਨੇ ਇੱਕ ਸੁਆਲ ਕਰਨਾ ਹੈ। ਹਰ ਸੁਆਲ $3\ ^1/_2$ ਨੰਬਰ ਦਾ ਹੋਵੇਗਾ। ਭਾਗ ਤੀਜਾ ਵਿੱਚ ਅਗੇਤਰ (ਪੰਜ ਵਿੱਚੋਂ ਤਿੰਨ) ਅਤੇ ਪਿਛੇਤਰ (ਪੰਜ ਵਿੱਚੋਂ ਤਿੰਨ) ਲਾ ਕੇ ਦੋ-ਦੋ ਸ਼ਬਦ ਬਣਾਉਣ ਲਈ ਕਿਹਾ ਜਾਵੇਗਾ। ਇਹ ਸੁਆਲ ਵੀ $3\ ^1/_2$ ਨੰਬਰ ਦਾ ਹੋਵੇਗਾ। ਉਪ ਭਾਗ ਚੌਥਾ ਵਿੱਚ ਦਫ਼ਤਰੀ ਸ਼ਬਦਾਵਲੀ (ਦਿੱਤੇ ਗਏ ਦਸ ਸ਼ਬਦਾਂ ਵਿੱਚੋਂ ਕੋਈ ਸੱਤ ਸ਼ਬਦ ਕਰਨੇ ਹਨ) ਬਾਰੇ ਪ੍ਰਸ਼ਨ ਪੁੱਛੇ ਜਾਣਗੇ। ਹਰ ਸ਼ਬਦ ਦਾ ਅੱਧਾ ਨੰਬਰ ਹੋਏਗਾ।

Unit	Topics		Contact Hours
I	1.	ਗਲਪ ਅਤੇ ਪੰਜਾਬੀ ਗਲਪ : ਸਿਧਾਂਤਕ ਇਤਿਹਾਸਕ ਪਰਿਪੇਖ ਅੰਕ 14	
	1.1	ਗਲਪ : ਪਰਿਭਾਸ਼ਾ, ਪ੍ਰਕ੍ਰਿਤੀ ਤੇ ਤੱਤ	
	1.2	ਨਾਵਲ ਅਤੇ ਨਿੱਕੀ ਕਹਾਣੀ : ਪਰਿਭਾਸ਼ਾ, ਤੱਤ ਅਤੇ ਵਿਸ਼ੇਸ਼ਤਾਵਾਂ	
	1.3	ਪੰਜਾਬੀ ਨਾਵਲ : ਨਿਕਾਸ, ਵਿਕਾਸ ਅਤੇ ਪ੍ਰਮੁੱਖ ਪ੍ਰਵਿਰਤੀਆਂ	
	1.4	ਪੰਜਾਬੀ ਨਿੱਕੀ ਕਹਾਣੀ : ਨਿਕਾਸ, ਵਿਕਾਸ ਅਤੇ ਪ੍ਰਵਿਰਤੀਆਂ	
II	2.	***ਏਹੁ ਹਮਾਰਾ ਜੀਵਣਾ***, ਦਲੀਪ ਕੌਰ ਟਿਵਾਣਾ, ਆਰਸੀ ਪ੍ਰਕਾਸ਼ਨ, ਦਿੱਲੀ ਅੰਕ 14	
	2.1	ਨਾਵਲ ਦਾ ਵਿਸ਼ਾ ਵਸਤੂ ਅਤੇ ਆਲੋਚਨਾਤਮਕ ਅਧਿਐਨ	
	2.2	ਨਾਰੀ ਸੰਵੇਦਨਾ	
	2.3	ਪਾਤਰ ਚਿੱਤਰਣ	
	2.4	ਪੰਜਾਬੀ ਜਗੀਰੂ ਸਮਾਜ ਅਤੇ ਔਰਤ ਦੀ ਸਥਿਤੀ	
	2.5	ਲੇਖਿਕਾ ਦਾ ਜੀਵਨ ਪ੍ਰੀਚੈ ਅਤੇ ਸਾਹਿਤਕ ਯੋਗਦਾਨ	
III	3.	***ਕਥਾ ਯਾਤਰਾ*** (ਚੋਣਵਾਂ ਕਹਾਣੀ ਸੰਗ੍ਰਿਹ), ਸੰਪਾਦਕ ਡਾ. ਗੁਰਦੇਵ ਸਿੰਘ ਅਤੇ ਹਰਸ਼ਰਨ ਕੌਰ, ਪਬਲੀਕੇਸ਼ਨ ਬਿਊਰੋ, ਕੁਰੂਕਸ਼ੇਤਰ ਯੂਨੀਵਰਸਿਟੀ, ਕੁਰੂਕਸ਼ੇਤਰ। ਅੰਕ 14	
	3.1	ਕਥਾਨਕ ਸਾਰ ਅਤੇ ਸਮੱਸਿਆ	
	3.2	ਵਿਸ਼ਾ ਵਸਤੂ ਅਤੇ ਆਲੋਚਨਾਤਮਕ ਅਧਿਐਨ	
	3.3	ਪਾਤਰ ਚਿੱਤਰਣ	
	3.4	ਕਹਾਣੀ ਜੁਗਤਾਂ	
	3.5	ਕਹਾਣੀਕਾਰਾਂ ਦਾ ਜੀਵਨ ਪ੍ਰੀਚੈ ਅਤੇ ਸਾਹਿਤਕ ਯੋਗਦਾਨ	
IV	4.	ਵਿਹਾਰਕ ਪੰਜਾਬੀ ਅੰਕ 14	
	4.1	ਵਿਸ਼ੇਸ਼ਣ ਅਤੇ ਕਿਰਿਆ ਵਿਸ਼ੇਸ਼ਣ	
	4.2	ਸਬੰਧਕ : ਪਰਿਭਾਸ਼ਾ ਅਤੇ ਕਿਸਮਾਂ	

	4.3 ਅਗੇਤਰ ਪਿਛੇਤਰ 4.4 ਦਫ਼ਤਰੀ ਸ਼ਬਦਾਵਲੀ (100 ਸ਼ਬਦ ਨਾਲ ਨੱਥੀ ਹਨ)	

Suggested Evaluation Method

Internal Assessment: 30 Marks ➢ **Theory** • Class Participation: 5 Marks • Seminar/presentation/assignment/quiz/class test etc.: 5+5=10 Marks • Mid-Term Exam: 15 Marks	**End Term Examination:** 70 Marks

Part C- Learning Resources

1. ਸਵਿੰਦਰ ਸਿੰਘ ਉੱਪਲ — **ਪੰਜਾਬੀ ਕਹਾਣੀ,** ਪੰਜਾਬੀ ਯੂਨੀਵਰਸਿਟੀ, ਪਟਿਆਲਾ, 1995
2. ਸੁਖਦੇਵ ਸਿੰਘ ਖਾਹਰਾ — **ਪੰਜਾਬੀ ਨਾਵਲ ਦਾ ਸੰਸਕ੍ਰਿਤਕ ਅਧਿਐਨ,** ਗੁਰੂ ਨਾਨਕ ਦੇਵ ਯੂਨੀਵਰਸਿਟੀ, ਅੰਮ੍ਰਿਤਸਰ, 1986
3. ਸੁਰਿੰਦਰ ਕੁਮਾਰ ਦਵੇਸ਼ਵਰ — **ਨਾਵਲ ਸ਼ਾਸਤਰ ਤੇ ਪੰਜਾਬੀ ਨਾਵਲ,** ਲੋਕਗੀਤ ਪ੍ਰਕਾਸ਼ਨ, ਚੰਡੀਗੜ੍ਹ, 2002
4. ਹਰਸਿਮਰਨ ਸਿੰਘ ਰੰਧਾਵਾ — **ਬਿਰਤਾਂਤਕ ਗਲਪ ਪ੍ਰਬੰਧ,** ਨਾਨਕ ਸਿੰਘ ਪੁਸਤਕਮਾਲਾ, ਅੰਮ੍ਰਿਤਸਰ, 1993
5. ਕਰਨੈਲ ਸਿੰਘ ਥਿੰਦ (ਸੰਪਾ.) — **ਪੰਜਾਬੀ ਨਾਵਲ : ਸਰਵੇਖਣ ਤੇ ਮੁਲਾਂਕਣ,** ਗੁਰੂ ਨਾਨਕ ਦੇਵ ਯੂਨੀਵਰਸਿਟੀ, ਅੰਮ੍ਰਿਤਸਰ, 1974
6. ਗੁਰਪਾਲ ਸਿੰਘ ਸੰਧੂ — **ਪੰਜਾਬੀ ਨਾਵਲ ਦਾ ਇਤਿਹਾਸ,** ਪੰਜਾਬੀ ਅਕਾਦਮੀ, ਦਿੱਲੀ, 2005
7. ਗੁਰਬਖਸ਼ ਸਿੰਘ ਫ਼ਰੈਂਕ — **ਨਿੱਕੀ ਕਹਾਣੀ ਅਤੇ ਪੰਜਾਬੀ ਨਿੱਕੀ ਕਹਾਣੀ,** ਪੰਜਾਬੀ ਰਾਈਟਰਜ਼ ਕੋਆਪਰੇਟਿਵ ਸੁਸਾਇਟੀ ਲਿਮ., ਲੁਧਿਆਣਾ, 1988
8. ਜਸਪਾਲ ਕੌਰ ਕਾਂਗ — **ਪੰਜਾਬੀ ਨਾਵਲ ਦਾ ਗਲਪ ਸ਼ਾਸਤਰ,** ਨਾਨਕ ਸਿੰਘ ਪੁਸਤਕਮਾਲਾ, ਅੰਮ੍ਰਿਤਸਰ, 1995
9. ਜੋਰਿੰਦਰ ਸਿੰਘ ਨਹਿਰੂ — **ਨਾਵਲ ਦੀ ਵਿਧਾ,** ਲੋਕਗੀਤ ਪ੍ਰਕਾਸ਼ਨ, ਚੰਡੀਗੜ੍ਹ
10. –ਉਹੀ– — **ਕਹਾਣੀ ਦੀ ਵਿਧਾ,** ਲੋਕਗੀਤ ਪ੍ਰਕਾਸ਼ਨ, ਚੰਡੀਗੜ੍ਹ
11. ਜੋਰਿੰਦਰ ਸਿੰਘ ਰਾਹੀ — **ਪੰਜਾਬੀ ਨਾਵਲ,** ਨਾਨਕ ਸਿੰਘ ਪੁਸਤਕਮਾਲਾ, ਅੰਮ੍ਰਿਤਸਰ, 1978
12. ਟੀ. ਆਰ. ਵਿਨੋਦ — **ਪੰਜਾਬੀ ਕਹਾਣੀ ਅਧਿਐਨ,** ਰਵੀ ਸਾਹਿਤ ਪ੍ਰਕਾਸ਼ਨ, ਅੰਮ੍ਰਿਤਸਰ, 1988
13. ਧਨਵੰਤ ਕੌਰ — **ਪੰਜਾਬੀ ਕਹਾਣੀ : ਬਿਰਤਾਂਤ ਸ਼ਾਸਤਰੀ ਅਧਿਐਨ**, ਆਰਸੀ ਪਬਲੀਕੇਸ਼ਨ, ਦਿੱਲੀ
14. –ਉਹੀ– — **ਪੰਜਾਬੀ ਕਹਾਣੀ ਸ਼ਾਸਤਰ,** ਚੇਤਨਾ ਪ੍ਰਕਾਸ਼ਨ, 2014
15. ਬਲਦੇਵ ਸਿੰਘ ਧਾਲੀਵਾਲ — **ਪੰਜਾਬੀ ਕਹਾਣੀ ਦਾ ਇਤਿਹਾਸ,** ਪੰਜਾਬੀ ਅਕਾਦਮੀ, ਦਿੱਲੀ, 2005
16. ਪਰਮਜੀਤ ਕੌਰ ਸਿੱਧੂ — **ਪੰਜਾਬੀ ਨਾਵਲ : ਸਿਧਾਂਤ ਤੇ ਸਮੀਖਿਆ,** ਚੇਤਨਾ ਪ੍ਰਕਾਸ਼ਨ, ਲੁਧਿਆਣਾ, 2013
17. ਰਜਨੀਸ਼ ਬਹਾਦਰ ਸਿੰਘ — **ਪੰਜਾਬੀ ਨਾਵਲ : ਵਿਰਾਸਤ ਅਤੇ ਵਰਤਮਾਨ,** ਚੇਤਨਾ ਪ੍ਰਕਾਸ਼ਨ, ਲੁਧਿਆਣਾ, 2020
18. ਰਤਨ ਸਿੰਘ ਜੱਗੀ — **ਖੋਜ ਪਤ੍ਰਿਕਾ (ਗਲਪ ਵਿਸ਼ੇਸ਼ ਅੰਕ) ਅੰਕ 19,** ਪੰਜਾਬੀ ਯੂਨੀਵਰਸਿਟੀ, ਪਟਿਆਲਾ, 1982
19. ਸ. ਸ. ਖਹਿਰਾ — **ਪੰਜਾਬੀ ਭਾਸ਼ਾ : ਵਿਆਕਰਣ ਅਤੇ ਬਣਤਰ,** ਪੰਜਾਬੀ ਯੂਨੀਵਰਸਿਟੀ, ਪਟਿਆਲਾ
20. ਹਰਕੀਰਤ ਸਿੰਘ — **ਪੰਜਾਬੀ ਸ਼ਬਦ ਰੂਪ ਅਤੇ ਸ਼ਬਦ ਜੋੜ ਕੋਸ਼**, ਪੰਜਾਬੀ ਯੂਨੀਵਰਸਿਟੀ, ਪਟਿਆਲਾ
21. ਹਰਬੰਸ ਸਿੰਘ ਧੀਮਾਨ — **ਪੰਜਾਬੀ ਭਾਸ਼ਾ ਅਤੇ ਵਿਆਕਰਣ,** ਗਗਨ ਪ੍ਰਕਾਸ਼ਨ, ਰਾਜਪੁਰਾ, ਪਟਿਆਲਾ, 2006

Syllabus of Under Graduate Course (Panjabi)

Session: 2023-24	
Part A - Introduction	
Subject	Panjabi
Semester	IInd
Name of the Course	Bachelor of Arts
Course Code	B23-PNB-203
Name of the Paper	**ਵਿਹਾਰਕ ਪੰਜਾਬੀ** **Viharak Punjabi**
Course Type: (CC/MCC/MDC/CC-M/DSEC/VOC/DSE/PC/AEC/VAC)	CC-M2
Level of the course (As per Annexure-I	0-99
Pre-requisite for the course (if any)	----------
Course Learning Outcomes(CLO):	After completing this course, the learner will be able to: CLO-203.1 **ਵਿਦਿਆਰਥੀ ਸਹੀ ਪੰਜਾਬੀ ਭਾਸ਼ਾ ਬੋਲਣ ਅਤੇ ਲਿਖਣ ਦੇ ਯੋਗ ਹੋਣਗੇ।** CLO-203.2 **ਵਿਦਿਆਰਥੀ ਪੰਜਾਬ ਰਾਜ ਵਿੱਚ ਆਸਾਨੀ ਨਾਲ ਜਾ ਸਕਦੇ ਹਨ ਅਤੇ ਆਸਾਨੀ ਨਾਲ ਰੁਜ਼ਗਾਰ ਪ੍ਰਾਪਤ ਕਰ ਸਕਦੇ ਹਨ ਕਿਉਂਕਿ ਪੰਜਾਬੀ ਉੱਥੇ ਅਤੇ ਦੂਜੇ ਰਾਜਾਂ ਅਤੇ ਦੇਸ਼ਾਂ ਵਿੱਚ ਵੀ ਵਿਆਪਕ ਤੌਰ 'ਤੇ ਬੋਲੀ ਜਾਣ ਵਾਲੀ ਭਾਸ਼ਾ ਹੈ।** CLO-203.3 **ਜਿਵੇਂ ਕਿ ਉਹਨਾਂ ਨੇ ਪੰਜਾਬੀ ਭਾਸ਼ਾ ਸਿੱਖੀ ਹੈ, ਉਹ ਪੰਜਾਬੀ ਤੋਂ ਅੰਗਰੇਜ਼ੀ ਅਤੇ ਅੰਗਰੇਜ਼ੀ ਤੋਂ ਪੰਜਾਬੀ ਵਿੱਚ ਅਨੁਵਾਦ ਦੀਆਂ ਨੌਕਰੀਆਂ ਲੈ ਸਕਦੇ ਹਨ, ਉਹ ਕੇਂਦਰੀ ਸਰਕਾਰ ਵਿੱਚ ਅਨੁਵਾਦਕ ਬਣ ਸਕਦੇ ਹਨ। ਪੰਜਾਬ ਅਤੇ ਭਾਰਤ ਦੇ ਹੋਰ ਰਾਜਾਂ ਅਤੇ ਵਿਦੇਸ਼ਾਂ ਵਿੱਚ ਦਫਤਰ।** CLO-203.4 **ਵਿਦਿਆਰਥੀ ਪੰਜਾਬੀ ਭਾਸ਼ਾ ਦੇ ਕਾਰਜਾਤਮਕ ਪਹਿਲੂ ਸਿੱਖਣਗੇ।**

Credits	Theory + Tutorial	Practical	Total
	2	----------	2
Contact Hours	30	----------	30
Max. Marks : 50 Internal Assessment Marks : 15 End Term Exam Marks : 35		Time : 2 Hrs.	

Part B- Contents of The Course

Instruction for Paper Setter

1. ਪਹਿਲਾ ਪ੍ਰਸ਼ਨ ਲਾਜ਼ਮੀ ਹੈ। ਇਹ ਪ੍ਰਸ਼ਨ 7 ਨੰਬਰ ਦਾ ਹੋਵੇਗਾ। ਇਸ ਵਿੱਚ ਸਮੁੱਚੇ ਸਿਲੇਬਸ ਵਿੱਚੋਂ ਕੁੱਲ ਸੱਤ ਸੁਆਲ ਪੁੱਛੇ ਜਾਣਗੇ। ਵਿਦਿਆਰਥੀ ਲਈ ਇਹ ਸਾਰੇ ਸੁਆਲ ਕਰਨੇ ਲਾਜ਼ਮੀ ਹਨ। ਹਰ ਸੁਆਲ ਇੱਕ ਨੰਬਰ ਦਾ ਹੋਵੇਗਾ।

2. ਸਮੁੱਚਾ ਸਿਲੇਬਸ ਕੁੱਲ ਚਾਰ ਯੂਨਿਟਾਂ ਵਿੱਚ ਵੰਡਿਆ ਗਿਆ ਹੈ। ਹਰ ਯੂਨਿਟ 7 ਨੰਬਰਾਂ ਦਾ ਹੈ।
3. ਯੂਨਿਟ ਪਹਿਲਾ ਵਿੱਚ ਧੁਨੀ/ ਅੱਖਰ ਬੋਧ ਬਾਰੇ ਤਿੰਨ ਸੁਆਲ ਪੁੱਛੇ ਜਾਣਗੇ। ਵਿਦਿਆਰਥੀ ਨੇ ਇਹਨਾਂ ਵਿੱਚੋਂ ਕੋਈ ਦੋ ਸੁਆਲ ਕਰਨੇ ਹਨ। ਹਰ ਸੁਆਲ ਸਾਢੇ ਤਿੰਨ ਨੰਬਰ ਦਾ ਹੈ।
4. ਯੂਨਿਟ ਦੂਜਾ ਸ਼ਬਦ ਬੋਧ ਅਤੇ ਵਿਆਕਰਣਿਕ ਸ਼੍ਰੇਣੀਆਂ ਸਬੰਧੀ ਤਿੰਨ ਸੁਆਲ ਪੁੱਛੇ ਜਾਣਗੇ। ਵਿਦਿਆਰਥੀ ਨੇ ਇਹਨਾਂ ਵਿੱਚੋਂ ਕੋਈ ਦੋ ਸੁਆਲ ਕਰਨੇ ਹਨ। ਹਰ ਸੁਆਲ ਸਾਢੇ ਤਿੰਨ ਨੰਬਰ ਦਾ ਹੈ।
5. ਯੂਨਿਟ ਤੀਜਾ ਪੰਜਾਬੀ ਵਾਕ ਅਤੇ ਅਰਥ-ਬੋਧ ਬਾਰੇ ਤਿੰਨ ਸੁਆਲ ਪੁੱਛੇ ਜਾਣਗੇ। ਵਿਦਿਆਰਥੀ ਨੇ ਇਹਨਾਂ ਵਿੱਚੋਂ ਕੋਈ ਦੋ ਸੁਆਲ ਕਰਨੇ ਹਨ। ਹਰ ਸੁਆਲ ਸਾਢੇ ਤਿੰਨ ਨੰਬਰ ਦਾ ਹੈ।
6. ਯੂਨਿਟ ਚੌਥਾ ਵਿੱਚ ਚਿੱਠੀ ਪੱਤਰ (ਦੋ ਵਿੱਚੋਂ ਇੱਕ) ਅਤੇ ਸੰਖੇਪ ਰਚਨਾ ਬਾਰੇ ਸੁਆਲ ਪੁੱਛੇ ਜਾਣਗੇ। ਦੋਵੇਂ ਸੁਆਲ ਜ਼ਰੂਰੀ ਹਨ। ਹਰ ਸੁਆਲ ਸਾਢੇ ਤਿੰਨ ਨੰਬਰ ਦਾ ਹੈ।

Unit	Topics	Contact Hours
I	**1 ਪੰਜਾਬੀ ਭਾਸ਼ਾ ਦਾ ਗਿਆਨ** ਅੰਕ : 14 **1.1 ਸ਼ਬਦ ਜੋੜਾਂ ਦੇ ਨਿਯਮ ਅਤੇ ਸ਼ਬਦ ਜੋੜ ਸ਼ੁੱਧੀ** **1.2 ਵਾਕਾਂ ਦੇ ਨਿਯਮ ਅਤੇ ਵਾਕ ਸ਼ੁੱਧੀ** **1.3 ਨਾਂਵ, ਪੜਨਾਂਵ, ਵਿਸ਼ੇਸ਼ਣ, ਕਿਰਿਆ ਅਤੇ ਕਿਰਿਆ ਵਿਸ਼ੇਸ਼ਣ ਦੀ ਵਰਤੋਂ** **1.4 ਸੰਬੰਧਕ ਅਤੇ ਯੋਜਕ ਦੀ ਵਰਤੋਂ**	
II	2. **ਸ਼ਬਦ ਰਚਨਾ** ਅੰਕ : 14 **2.1 ਅਗੇਤਰ ਅਤੇ ਪਿਛੇਤਰ** **2.2 ਸਮਾਸ** **2.3 ਲਿੰਗ ਅਤੇ ਵਚਨ** **2.4 ਤਦਭਵ ਤਤਸਮ**	
III	**3. ਵਾਕ ਰਚਨਾ** ਅੰਕ : 14 **3.1 ਕਾਰਕ ਦੀ ਸਮਝ** **3.2 ਕਰਤਰੀਵਾਚ ਅਤੇ ਕਰਮਣੀਵਾਚ ਵਾਕ ਰਚਨਾ** **3.3 ਅਖਾਣਾਂ ਦੀ ਵਾਕਾਂ ਵਿਚ ਵਰਤੋਂ** **3.4 ਮੁਹਾਵਰਿਆਂ ਦੀ ਵਾਕਾਂ ਵਿਚ ਵਰਤੋਂ**	
IV	**4. ਭਾਸ਼ਾ ਦਾ ਵਿਹਾਰਕ ਪੱਖ** ਅੰਕ : 14 **4.1 ਅਣਡਿੱਠਾ ਪੈਰਾ** **4.2 ਚਿੱਠੀ ਪੱਤਰ** **4.3 ਚਲੰਤ ਵਿਸ਼ੇ ਉੱਤੇ ਪੈਰਾ ਰਚਨਾ** **4.4 ਛੋਟੇ ਆਕਾਰ ਦੀ ਕਵਿਤਾ ਅਤੇ ਨਿੱਕੀ ਕਹਾਣੀ ਦੀ ਸਿਰਜਣਾ**	

Suggested Evaluation Method

Internal Assessment: 15 Marks ➢ **Theory** • Class Participation: 4 Marks • Seminar/presentation/assignment/quiz/class test etc.: 4 Marks	**End Term Examination:** 35 Marks

• Mid-Term Exam: 7 Marks	

Part C- Learning Resources

1. ਧੀਮਾਨ, ਹਰਬੰਸ ਸਿੰਘ (ਡਾ.) (2009), ਵਿਹਾਰਕ ਪੰਜਾਬੀ ਭਾਸ਼ਾ ਤੇ ਵਿਆਕਰਨ (ਭਾਗ-1), ਮਨਪ੍ਰੀਤ ਪ੍ਰਕਾਸ਼ਨ, ਦਿੱਲੀ।
2. ਧੀਮਾਨ, ਹਰਬੰਸ ਸਿੰਘ (ਡਾ.) (2010), ਵਿਹਾਰਕ ਪੰਜਾਬੀ ਭਾਸ਼ਾ ਤੇ ਵਿਆਕਰਨ (ਭਾਗ-2), ਮਨਪ੍ਰੀਤ ਪ੍ਰਕਾਸ਼ਨ, ਦਿੱਲੀ
3. ਦੁੱਗਲ, ਨਰਿੰਦਰ ਸਿੰਘ (2016), ਪੰਜਾਬੀ ਵਿਆਕਰਨ ਤੇ ਰਚਨਾਵਲੀ, ਨਿਊ ਬੁੱਕ ਕੰਪਨੀ, ਦਿੱਲੀ

Syllabus of Under Graduate Course (Panjabi)

Session: 2023-24	
Part A - Introduction	
Subject	Panjabi
Semester	IInd
Name of the Course	Bachelor of Arts
Course Code	B23-PNB-202
Name of the Paper	ਪੰਜਾਬੀ ਵਿੱਚ ਅਨੁਵਾਦਿਤ ਹਿੰਦੀ ਸਾਹਿਤ Punjabi Vich Anuvadit Hindi Sahit
Course Type: (CC/MCC/MDC/CC-M/DSEC/VOC/DSE/PC/AEC/VAC)	DSEC-1
Level of the course (As per Annexure-I	200-299
Pre-requisite for the course (if any)	----------
Course Learning Outcomes(CLO):	After completing this course, the learner will be able to: CLO-202-1 ਵਿਦਿਆਰਥੀ ਸਾਹਿਤਕ ਅਨੁਵਾਦ ਦੇ ਸੰਕਲਪ ਅਤੇ ਇਸਦੇ ਮਹੱਤਵ ਤੋਂ ਜਾਣੂ ਹੋਣਗੇ। CLO-202-2 ਵਿਦਿਆਰਥੀਆਂ ਨੂੰ ਪੰਜਾਬੀ ਵਿੱਚ ਅਨੁਵਾਦਿਤ ਹਿੰਦੀ ਸਾਹਿਤ ਦੇ ਇਤਿਹਾਸ, ਇਸਦੇ ਝੁਕਾਵਾਂ ਅਤੇ ਪ੍ਰਮੁੱਖ ਸਾਹਿਤਕਾਰਾਂ ਬਾਰੇ ਜਾਣਕਾਰੀ ਪ੍ਰਾਪਤ ਹੋਵੇਗੀ। CLO-202-3 ਪੰਜਾਬੀ ਵਿੱਚ ਅਨੁਵਾਦਿਤ ਹਿੰਦੀ ਸਾਹਿਤ ਦੇ ਮੁੱਖ ਸਰੋਕਾਰਾਂ ਦਾ ਗਿਆਨ ਪ੍ਰਾਪਤ ਹੋਵੇਗਾ। CLO-202-4 ਵਿਦਿਆਰਥੀ ਪੰਜਾਬੀ ਵਿੱਚ ਅਨੁਵਾਦਿਤ ਹਿੰਦੀ ਸਾਹਿਤ ਦੀਆਂ ਵਿਸ਼ੇਸ਼ ਪੁਸਤਕਾਂ ਦੇ ਅਧਿਐਨ ਵਿਸ਼ਲੇਸ਼ਣ ਰਾਹੀਂ ਦੋਵਾਂ ਭਾਸ਼ਾਵਾਂ ਦੇ ਸਾਹਿਤ ਦਾ ਤੁਲਨਾਤਮਕ ਅਧਿਐਨ ਕਰਨ ਦੇ ਯੋਗ ਹੋਣਗੇ।

Credits	Theory + Tutorial	Practical	Total
	3+1	----------	4
Contact Hours	60	----------	60
Max. Marks : 100 Internal Assessment Marks : 30 End Term Exam Marks : 70		Time : 3 Hrs.	

Part B- Contents of The Course

Instruction for Paper Setter

1. ਪਹਿਲਾ ਪ੍ਰਸ਼ਨ ਲਾਜ਼ਮੀ ਹੈ। ਇਹ ਪ੍ਰਸ਼ਨ 14 ਨੰਬਰ ਦਾ ਹੋਵੇਗਾ। ਇਸ ਵਿੱਚ ਸਮੁੱਚੇ ਸਿਲੇਬਸ ਵਿੱਚੋਂ ਕੁੱਲ ਚਾਰ ਸੁਆਲ ਪੁੱਛੇ ਜਾਣਗੇ। ਵਿਦਿਆਰਥੀ ਲਈ ਇਹ ਸਾਰੇ ਸੁਆਲ ਕਰਨੇ ਲਾਜ਼ਮੀ ਹਨ। ਹਰ ਸੁਆਲ ਸਾਢੇ ਤਿੰਨ ਨੰਬਰ ਦਾ ਹੋਵੇਗਾ।
2. ਸਮੁੱਚਾ ਸਿਲੇਬਸ ਕੁੱਲ ਚਾਰ ਯੂਨਿਟਾਂ ਵਿੱਚ ਵੰਡਿਆ ਗਿਆ ਹੈ। ਹਰ ਯੂਨਿਟ 14 ਨੰਬਰਾਂ ਦਾ ਹੈ।
3. ਯੂਨਿਟ ਪਹਿਲਾ ਵਿੱਚ ਤਿੰਨ ਸੁਆਲ ਅਨੁਵਾਦ ਦੇ ਸਿਧਾਂਤਕ ਪਰਿਪੇਖ ਬਾਰੇ ਪੁੱਛੇ ਜਾਣਗੇ। ਵਿਦਿਆਰਥੀ ਨੇ ਇਹਨਾਂ ਵਿੱਚੋਂ

ਕੋਈ ਦੋ ਸੁਆਲ ਕਰਨੇ ਹਨ। ਹਰ ਪ੍ਰਸ਼ਨ ਸੱਤ-ਸੱਤ ਨੰਬਰ ਦਾ ਹੋਵੇਗਾ।

4. ਯੂਨਿਟ ਦੂਜਾ ਵਿੱਚ ਤਿੰਨ ਸੁਆਲ ਹਿੰਦੀ ਤੋਂ ਪੰਜਾਬੀ ਵਿੱਚ ਨਾਵਲ ਅਤੇ ਕਵਿਤਾ ਦੇ ਅਨੁਵਾਦ ਦੇ ਇਤਿਹਾਸਕ ਪਰਿਪੇਖ ਬਾਰੇ ਪੁੱਛੇ ਜਾਣਗੇ। ਵਿਦਿਆਰਥੀ ਨੇ ਇਹਨਾਂ ਵਿੱਚੋਂ ਕੋਈ ਦੋ ਸੁਆਲ ਕਰਨੇ ਹਨ। ਹਰ ਪ੍ਰਸ਼ਨ ਸੱਤ-ਸੱਤ ਨੰਬਰ ਦਾ ਹੋਵੇਗਾ।

5. ਯੂਨਿਟ ਤੀਜਾ ਵਿੱਚ ਸਿਲੇਬਸ ਵਿੱਚ ਲੱਗੇ ਨਾਵਲ ਦੇ ਸਾਰ, ਵਿਸ਼ੇ ਵਸਤੂ, ਕਲਾ ਪੱਖ, ਆਲੋਚਨਾਤਮਕ ਅਧਿਐਨ, ਪਾਤਰ ਵਿਧਾਨ ਅਤੇ ਲੇਖਕ ਦੇ ਜੀਵਨ ਅਤੇ ਸਾਹਿਤਕ ਯੋਗਦਾਨ ਆਦਿ ਬਾਰੇ ਤਿੰਨ ਸੁਆਲ ਪੁੱਛੇ ਜਾਣਗੇ। ਵਿਦਿਆਰਥੀ ਨੇ ਇਹਨਾਂ ਵਿੱਚੋਂ ਕੋਈ ਦੋ ਸੁਆਲ ਕਰਨੇ ਹਨ। ਹਰ ਪ੍ਰਸ਼ਨ ਸੱਤ-ਸੱਤ ਨੰਬਰ ਦਾ ਹੋਵੇਗਾ।

6. ਯੂਨਿਟ ਚੌਥਾ ਵਿੱਚ ਸਿਲੇਬਸ ਵਿੱਚ ਲੱਗੀਆਂ ਕਵਿਤਾਵਾਂ ਦੇ ਵਿਸ਼ੇ/ ਸਾਰ/ ਆਲੋਚਨਾਤਮਕ ਅਧਿਐਨ ਅਤੇ ਕਵੀ ਦੇ ਜੀਵਨ ਪ੍ਰੀਚੈ ਅਤੇ ਸਾਹਿਤਕ ਯੋਗਦਾਨ ਬਾਰੇ ਤਿੰਨ ਸੁਆਲ ਪੁੱਛੇ ਜਾਣਗੇ। ਇਹਨਾਂ ਸੁਆਲਾਂ ਵਿੱਚੋਂ ਵਿਦਿਆਰਥੀ ਨੇ ਕੋਈ ਦੋ ਸੁਆਲ ਕਰਨੇ ਹਨ। ਹਰ ਸੁਆਲ ਪੰਜ ਨੰਬਰ ਦਾ ਹੋਵੇਗਾ। ਇੱਕ ਸੁਆਲ ਕਵਿਤਾ ਦੀ ਪ੍ਰਸੰਗ ਸਾਹਿਤ ਵਿਆਖਿਆ ਦਾ ਹੋਵੇਗਾ। ਵਿਦਿਆਰਥੀਆਂ ਨੂੰ ਦੋ ਕਾਵਿ ਟੁਕੜੀਆਂ ਦਿੱਤੀਆਂ ਜਾਣਗੀਆਂ ਜਿਸ ਵਿੱਚੋਂ ਵਿਦਿਆਰਥੀ ਨੇ ਕਿਸੇ ਇੱਕ ਦੀ ਪ੍ਰਸੰਗ ਸਾਹਿਤ ਵਿਆਖਿਆ ਕਰਨੀ ਹੋਵੇਗੀ। ਇਹ ਸੁਆਲ ਚਾਰ ਨੰਬਰ ਦਾ ਹੋਵੇਗਾ।

Unit	Topics	Contact Hours
I	1. ਅਨੁਵਾਦ ਅਤੇ ਹਿੰਦੀ ਤੋਂ ਪੰਜਾਬੀ ਅਨੁਵਾਦ : ਸਿਧਾਂਤਕ ਇਤਿਹਾਸਕ ਪਰਿਪੇਖ ਅੰਕ: 14 1.1 ਅਨੁਵਾਦ ਦੀ ਪਰਿਭਾਸ਼ਾ ਅਤੇ ਪ੍ਰਕ੍ਰਿਆ 1.2 ਸਾਹਿਤਕ ਅਨੁਵਾਦ : ਭਾਵ ਅਰਥ ਅਤੇ ਪ੍ਰਕ੍ਰਿਤੀ 1.3 ਸਾਹਿਤਕ ਅਨੁਵਾਦ : ਸਮੱਸਿਆਵਾਂ ਅਤੇ ਸੰਭਾਵਨਾਵਾਂ 1.4 ਸਾਹਿਤਕ ਅਨੁਵਾਦਕ ਦੇ ਪ੍ਰਮੁੱਖ ਗੁਣ/ ਸਾਹਿਤਕ ਅਨੁਵਾਦਕ ਲਈ ਜ਼ਰੂਰੀ ਸ਼ਰਤਾਂ	
II	2. ਪੰਜਾਬੀ ਵਿੱਚ ਹਿੰਦੀ ਸਾਹਿਤਕ ਅਨੁਵਾਦ : ਇਤਿਹਾਸਕ ਪਰਿਪੇਖ ਅੰਕ: 14 2.1 ਪੰਜਾਬੀ ਵਿੱਚ ਪ੍ਰਾਪਤ ਹਿੰਦੀ ਨਾਵਲ ਅਨੁਵਾਦ 2.4 ਪੰਜਾਬੀ ਵਿੱਚ ਪ੍ਰਾਪਤ ਹਿੰਦੀ ਕਾਵਿ ਅਨੁਵਾਦ	
III	3. ਭੀਸ਼ਮ ਸਾਹਨੀ, ***ਤਮਸ,*** ਆਰਸੀ ਪਬਲਿਸ਼ਰਜ਼, ਦਿੱਲੀ ਅੰਕ: 14 3.1 ਨਾਵਲ ਦਾ ਵਿਸ਼ਾ ਵਸਤੂ ਅਤੇ ਆਲੋਚਨਾਤਮਕ ਅਧਿਐਨ 3.2 ਨਾਵਲ ਦੀਆਂ ਬਿਰਤਾਂਤਕ ਜੁਗਤਾਂ 3.3 ਪਾਤਰ ਚਿੱਤਰਣ 3.4 ਲੇਖਿਕਾ ਦਾ ਜੀਵਨ ਪ੍ਰੀਚੈ ਅਤੇ ਸਾਹਿਤਕ ਯੋਗਦਾਨ	
IV	4 ਅਲੋਕ ਧਨਵਾ, ਦੁਨੀਆਂ ਰੋਜ਼ ਬਣਦੀ ਹੈ, ਨਵਯੁਗ ਪਬਲਿਸ਼ਰਜ਼, ਦਿੱਲੀ ਅੰਕ: 14 4.1 ਕਵਿਤਾ ਦਾ ਸਾਰ ਅਤੇ ਵਿਸ਼ਾ ਵਸਤੂ 4.2 ਕਵਿਤਾ ਦਾ ਕਲਾ ਪੱਖ 4.3 ਕਵਿਤਾ ਦਾ ਆਲੋਚਨਾਤਮਕ ਅਧਿਐਨ 4.4 ਪ੍ਰਸੰਗ ਸਹਿਤ ਵਿਆਖਿਆ 4.5 ਕਵੀ ਦਾ ਜੀਵਨ ਪ੍ਰੀਚੈ ਅਤੇ ਸਾਹਿਤਕ ਯੋਗਦਾਨ	

Suggested Evaluation Method

Internal Assessment: 30 Marks ➢ **Theory** • Class Participation: 5 Marks	**End Term Examination:** 70 Marks

• Seminar/presentation/assignment/quiz/class test etc.: 5+5=10 Marks • Mid-Term Exam: 15 Marks	

Part C- Learning Resources

1. ਆਚਾਰਯ ਰਾਮ ਚੰਦਰ ਸ਼ੁਕਲ — **ਹਿੰਦੀ ਸਾਹਿਤਯ ਕਾ ਇਤਿਹਾਸ**, ਲੋਕਭਾਰਤੀ ਪ੍ਰਕਾਸ਼ਨ, ਇਲਾਹਾਬਾਦ, 2009
2. ਸਰੋਜਨੀ ਸ਼ਰਮਾ (ਸੰਪਾ.) — **ਸਮਕਾਲੀਨ ਹਿੰਦੀ ਕਵਿਤਾ ਕੇ ਵਿਵਿਧ ਆਯਾਮ**, ਸੁਕੀਰਤ ਪ੍ਰਕਾਸ਼ਨ, ਕੈਥਲ, 2012
3. ਸੁਭਾਸ਼ ਚੰਦਰ — **ਭੀਸ਼ਮ ਸਾਹਨੀ : ਸਾਹਿਤਯ ਔਰ ਜੀਵਨ ਦਰਸ਼ਨ,** ਜਤਿਨ ਪ੍ਰਕਾਸ਼ਨ, ਕੁਰੁਕਸ਼ੇਤਰ
4. ਹਰਦਿਆਲ — **ਹਿੰਦੀ ਕਹਾਨੀ ਪਰੰਪਰਾ ਔਰ ਪ੍ਰਗਤੀ,** ਬਾਣੀ ਪ੍ਰਕਾਸ਼ਨ, ਨਈ ਦਿੱਲੀ, 2005
5. ਦੁਆਰਕਾ ਪ੍ਰਸਾਦਿ ਸਕਸੈਨਾ — **ਹਿੰਦੀ ਕੇ ਸ੍ਰੇਸ਼ਠ ਉਪਨਿਆਸ ਔਰ ਉਪਨਿਆਸਕਾਰ,** ਸ਼ਿਵ ਭਾਰਤੀ ਪਬਲੀਕੇਸ਼ਨ, ਨਈ ਦਿੱਲੀ, 2004
6. ਨਾਮਵਰ ਸਿੰਘ — **ਕਵਿਤਾ ਕੇ ਨਏ ਪ੍ਰਤਿਮਾਨ,** ਰਾਜ ਕਮਲ ਪ੍ਰਕਾਸ਼ਨ, ਨਈ ਦਿੱਲੀ
7. ਪਰਮਾਨੰਦ ਸ਼੍ਰੀਵਾਸਤਵ — **ਸਮਕਾਲੀਨ ਕਵਿਤਾ ਕਾ ਯਥਾਰਥ,** ਬਾਣੀ ਪ੍ਰਕਾਸ਼ਨ, ਨਈ ਦਿੱਲੀ
8. ਮਧੁਰੇਸ਼ — **ਹੋਨਾ ਭੀਸ਼ਮ ਸਾਹਨੀ ਕਾ,** ਸਾਹਿਤਯ ਭੰਡਾਰ, ਇਲਾਹਾਬਾਦ
9. ਰਾਜੇਸ਼ ਰਾਣੀ — **ਹਿੰਦੀ ਉਪਨਿਆਸੋਂ ਮੇਂ ਸਮਾਜਿਕ ਚੇਤਨਾ,** ਕੇ. ਕੇ. ਪਬਲੀਕੇਸ਼ਨਜ਼, ਦਿੱਲੀ, 2009
10 ਰਾਮ ਵਿਨੇਯ ਸ਼ਰਮਾ — **ਭੀਸ਼ਮ ਸਾਹਨੀ ਕੇ ਸਾਹਿਤਯ ਸਰੋਕਾਰ,** ਨਯੀ ਕਿਤਾਬ ਪ੍ਰਕਾਸ਼ਨ, ਦਿੱਲੀ
11. ਵਿਸ਼ਵ ਨਾਥ ਪ੍ਰਸਾਦ ਤਿਵਾੜੀ — **ਆਧੁਨਿਕ ਹਿੰਦੀ ਕਵਿਤਾ**, ਲੋਕ ਭਾਰਤੀ ਪ੍ਰਕਾਸ਼ਨ, ਇਲਾਹਾਬਾਦ
12. ਸ਼ਯਾਮ ਕਸ਼ਯਪ — **ਭੀਸ਼ਮ ਸਾਹਨੀ,** ਬਾਣੀ ਪ੍ਰਕਾਸ਼ਨ, ਦਿੱਲੀ
13. ਬਨਾਸ ਜਨ (ਹਿੰਦੀ ਤ੍ਰੈਮਾਸਿਕ ਸਾਹਿਤਕ ਪੱਤ੍ਰਿਕਾ), **ਭੀਸ਼ਮ ਸਾਹਨੀ ਜਨਮ ਸ਼ਤਾਬਦੀ ਵਿਸ਼ੇਸ਼ ਅੰਕ**
14. ਬਨਾਸ ਜਨ (ਹਿੰਦੀ ਤ੍ਰੈਮਾਸਿਕ ਸਾਹਿਤਕ ਪੱਤ੍ਰਿਕਾ), **ਹਿੰਦੀ ਉਪਨਿਆਸ ਕੀ ਨਈ ਜ਼ਮੀਨ** (ਸਾਹਨੀ ਵਿਸ਼ੇਸ਼ ਅੰਕ)
15. ਕੇ. ਵਨੇਜਾ (ਸੰਪਾ.), **ਭੀਸ਼ਮ ਸਾਹਨੀ ਵਿਸ਼ੇਸ਼ ਅੰਕ**, ਅਨੁਸ਼ੀਲਨ ਅੰਕ 43, ਜੁਲਾਈ 2015 (ਤ੍ਰੈਮਾਸਿਕ ਸ਼ੋਧ ਪੱਤ੍ਰਿਕਾ), ਭਾਰਤੀ ਹਿੰਦੀ ਪ੍ਰੀਸ਼ਦ ਪ੍ਰਯਾਗ

Syllabus of Under Graduate Course (Panjabi)

Session: 2023-24			
Part A - Introduction			
Subject	Panjabi		
Semester	IInd		
Name of the Course	Bachelor of Arts		
Course Code	B23-PNB-204		
Name of the Paper	ਲੋਕਧਾਰਾ ਅਤੇ ਪੰਜਾਬੀ ਲੋਕਧਾਰਾ Lokdhara Ate Punjabi Lokdhara		
Course Type: (CC/MCC/MDC/CC-M/DSEC/VOC/DSE/PC/AEC/VAC)	MDC-2		
Level of the course (As per Annexure-I	200-299		
Pre-requisite for the course (if any)	----------		
Course Learning Outcomes(CLO):	After completing this course, the learner will be able to: CLO-204-1 ਵਿਦਿਆਰਥੀਆਂ ਨੂੰ ਪੰਜਾਬੀ ਲੋਕਧਾਰਾ ਦੀ ਅਮੀਰ ਵਿਰਾਸਤ ਅਤੇ ਇਸਦੇ ਵਿਸ਼ਾਲ ਖੇਤਰ ਬਾਰੇ ਜਾਣਕਾਰੀ ਪ੍ਰਾਪਤ ਹੋਵੇਗੀ। CLO-202-2 ਵਿਦਿਆਰਥੀ ਪੰਜਾਬੀ ਲੋਕਧਾਰਾ ਦੀਆਂ ਵਿਭਿੰਨ ਪ੍ਰਗਟਾ ਵਿਧੀਆਂ ਤੋਂ ਜਾਣੂ ਹੋਣਗੇ। CLO-202-3 ਪੰਜਾਬੀ ਲੋਕਧਾਰਾ ਦੀਆਂ ਪ੍ਰਮੁੱਖ ਵਿਧਾਵਾਂ ਦੇ ਅਧਿਐਨ ਦੇ ਜ਼ਰੀਏ ਪੰਜਾਬੀ ਲੋਕ ਮਨ ਨੂੰ ਸਮਝਣ ਦੀ ਰੁਚੀ ਪੈਦਾ ਹੋਵੇਗੀ। CLO-202-4 ਪੰਜਾਬੀ ਲੋਕਧਾਰਾਈ ਸਮੱਗਰੀ ਦੀ ਪੰਜਾਬੀ ਜਨ-ਜੀਵਨ ਵਿੱਚ ਅਹਿਮੀਅਤ ਬਾਰੇ ਜਾਣਕਾਰੀ ਪ੍ਰਾਪਤ ਹੋਵੇਗੀ।		
Credits	Theory + Tutorial	Practical	Total
	2+1	----------	3
Contact Hours	45	----------	45
Max. Marks : 75 Internal Assessment Marks : 25 End Term Exam Marks : 50		Time : 3 Hrs.	

Part B- Contents of The Course

Instruction for Paper Setter

1. ਪਹਿਲਾ ਪ੍ਰਸ਼ਨ ਲਾਜ਼ਮੀ ਹੈ। ਇਹ ਪ੍ਰਸ਼ਨ 10 ਨੰਬਰ ਦਾ ਹੋਵੇਗਾ। ਇਸ ਵਿੱਚ ਸਮੁੱਚੇ ਸਿਲੇਬਸ ਵਿੱਚੋਂ ਕੁੱਲ ਚਾਰ ਸੁਆਲ ਪੁੱਛੇ ਜਾਣਗੇ। ਵਿਦਿਆਰਥੀ ਲਈ ਇਹ ਸਾਰੇ ਸੁਆਲ ਕਰਨੇ ਲਾਜ਼ਮੀ ਹਨ। ਹਰ ਸੁਆਲ ਢਾਈ ਨੰਬਰ ਦਾ ਹੋਵੇਗਾ।
2. ਸਮੁੱਚਾ ਸਿਲੇਬਸ ਕੁੱਲ ਚਾਰ ਯੂਨਿਟਾਂ ਵਿੱਚ ਵੰਡਿਆ ਗਿਆ ਹੈ। ਹਰ ਯੂਨਿਟ 10 ਨੰਬਰਾਂ ਦਾ ਹੈ।
3. ਯੂਨਿਟ ਪਹਿਲਾ ਵਿੱਚ ਤਿੰਨ ਸੁਆਲ ਲੋਕਧਾਰਾ ਦੇ ਸਿਧਾਂਤਕ ਪੱਖ ਬਾਰੇ ਪੁੱਛੇ ਜਾਣਗੇ। ਵਿਦਿਆਰਥੀ ਨੇ ਇਹਨਾਂ ਵਿੱਚੋਂ ਕੋਈ ਦੋ ਸੁਆਲ ਕਰਨੇ ਹਨ। ਹਰ ਪ੍ਰਸ਼ਨ ਸੱਤ-ਸੱਤ ਨੰਬਰ ਦਾ ਹੋਵੇਗਾ।
4. ਯੂਨਿਟ ਦੂਜਾ ਵਿੱਚ ਤਿੰਨ ਸੁਆਲ ਲੋਕਧਾਰਾ ਦੇ ਵਿਭਿੰਨ ਪ੍ਰਗਟਾ ਰੂਪਾਂ ਦੀ ਬਣਤਰ, ਵਿਸ਼ੇਸ਼ਤਾਵਾਂ ਅਤੇ ਤੱਤਾਂ ਸਬੰਧੀ ਪੁੱਛੇ

ਜਾਣਗੇ। ਵਿਦਿਆਰਥੀ ਨੇ ਇਹਨਾਂ ਵਿੱਚੋਂ ਕੋਈ ਦੋ ਸੁਆਲ ਕਰਨੇ ਹਨ। ਹਰ ਪ੍ਰਸ਼ਨ ਸੱਤ-ਸੱਤ ਨੰਬਰ ਦਾ ਹੋਵੇਗਾ।

5. ਯੂਨਿਟ ਤੀਜਾ ਵਿੱਚ ਤਿੰਨ ਸੁਆਲ ਪੰਜਾਬੀ ਲੋਕਧਾਰਾ ਦੀਆਂ ਵਿਭਿੰਨ ਵੰਨਗੀਆਂ, ਇਹਨਾਂ ਦੇ ਸੁਭਾਅ, ਪ੍ਰਮੁੱਖ ਰੂਪਾਂ ਅਤੇ ਇਹਨਾਂ ਦੇ ਵਰਗੀਕਰਨ ਸਬੰਧੀ ਪੁੱਛੇ ਜਾਣਗੇ। ਵਿਦਿਆਰਥੀ ਨੇ ਇਹਨਾਂ ਵਿੱਚੋਂ ਕੋਈ ਦੋ ਸੁਆਲ ਕਰਨੇ ਹਨ। ਹਰ ਪ੍ਰਸ਼ਨ ਸੱਤ-ਸੱਤ ਨੰਬਰ ਦਾ ਹੋਵੇਗਾ।

6. ਯੂਨਿਟ ਚੌਥਾ ਵਿੱਚ ਆਧੁਨਿਕਤਾ ਦੇ ਪੰਜਾਬੀ ਲੋਕਧਾਰਾਈ ਵਰਤਾਰਿਆਂ ਉੱਪਰ ਪੈਣ ਵਾਲੇ ਪ੍ਰਭਾਵਾਂ ਸਬੰਧੀ ਤਿੰਨ ਸੁਆਲ ਪੁੱਛੇ ਜਾਣਗੇ। ਵਿਦਿਆਰਥੀ ਨੇ ਇਹਨਾਂ ਵਿੱਚੋਂ ਕੋਈ ਦੋ ਸੁਆਲ ਕਰਨੇ ਹਨ। ਹਰ ਪ੍ਰਸ਼ਨ ਸੱਤ-ਸੱਤ ਨੰਬਰ ਦਾ ਹੋਵੇਗਾ।

Unit	Topics	Contact Hours
I	1. ਲੋਕਧਾਰਾ : ਸਿਧਾਂਤਕ ਪਰਿਪੇਖ ਅੰਕ : 10 1.1 ਲੋਕਧਾਰਾ : ਪਰਿਭਾਸ਼ਾ, ਪ੍ਰਕ੍ਰਿਤੀ ਅਤੇ ਪ੍ਰਮੁੱਖ ਤੱਤ 1.2 ਲੋਕਧਾਰਾ ਦੀਆਂ ਵਿਸ਼ੇਸ਼ਤਾਵਾਂ 1.3 ਲੋਕਧਾਰਾ ਦਾ ਮਹੱਤਵ	
II	2. ਲੋਕਧਾਰਾ ਦੀਆਂ ਦੇ ਵਿਭਿੰਨ ਪ੍ਰਗਟਾਅ ਰੂਪ ਅੰਕ : 10 2.1 ਲੋਕ ਗੀਤ : ਪਰਿਭਾਸ਼ਾ ਤੇ ਵਿਸ਼ੇਸ਼ਤਾਵਾਂ 2.2 ਲੋਕ ਕਥਾ : ਪਰਿਭਾਸ਼ਾ, ਵਿਸ਼ੇਸ਼ਤਾਵਾਂ ਤੇ ਤੱਤ 2.3 ਲੋਕ ਨਾਟਕ : ਪਰਿਭਾਸ਼ਾ, ਪ੍ਰਕ੍ਰਿਤੀ ਅਤੇ ਵਿਸ਼ੇਸ਼ਤਾਵਾਂ 2.4 ਲੋਕ ਨ੍ਰਿਤ : ਪਰਿਭਾਸ਼ਾ ਅਤੇ ਲੱਛਣ	
III	3. ਸੋਹਿੰਦਰ ਸਿੰਘ ਵਣਜਾਰਾ ਬੇਦੀ, ***ਪੰਜਾਬ ਦੀ ਲੋਕਧਾਰਾ***, ਨੈਸ਼ਨਲ ਬੁੱਕ ਟਰੱਸਟ, ਦਿੱਲੀ, 2011 ਅੰਕ : 10 3.1 ਪੰਜਾਬ ਦੇ ਲੋਕ ਗੀਤ 3.2 ਪੰਜਾਬ ਦੀਆਂ ਲੋਕ ਕਥਾਵਾਂ 3.3 ਪੰਜਾਬ ਦੇ ਲੋਕ ਨਾਟ 3.4 ਪੰਜਾਬ ਦੇ ਲੋਕ ਨਾਚ 3.5 ਲੋਕਾਚਾਰ ਤੇ ਰੀਤੀ ਰਿਵਾਜ	
IV	4. ਲੋਕਧਾਰਾ ਅਤੇ ਆਧੁਨਿਕਤਾ ਅੰਕ : 10 4.1 ਵਰਤਮਾਨ ਦੌਰ ਵਿੱਚ ਪੰਜਾਬੀ ਲੋਕਧਾਰਾਈ ਵਰਤਾਰਿਆਂ ਦਾ ਬਦਲ ਰਿਹਾ ਸਰੂਪ 4.2 ਵਿਸ਼ਵੀਕਰਨ ਦੇ ਦੌਰ ਵਿੱਚ ਖੇਤਰੀ ਲੋਕਧਾਰਾਈ ਵਰਤਾਰਿਆਂ ਉੱਪਰ ਪੈ ਰਹੇ ਵਿਦੇਸ਼ੀ/ ਪੱਛਮੀ ਪ੍ਰਭਾਵ	

Suggested Evaluation Method

Internal Assessment: 25 Marks ➢ **Theory** • Class Participation: 5 Marks • Seminar/presentation/assignment/quiz/class test etc.: 7Marks • Mid-Term Exam: 13 Marks	**End Term Examination:** 50 Marks

Part C- Learning Resources

1. ਸੋਹਿੰਦਰ ਸਿੰਘ ਬੇਦੀ **ਪੰਜਾਬ ਦੀ ਲੋਕਧਾਰਾ,** ਨੈਸ਼ਨਲ ਬੁੱਕ ਟ੍ਰੱਸਟ, ਇੰਡੀਆ, 1999

2. ਕਰਮਜੀਤ ਸਿੰਘ **ਪੰਜਾਬੀ ਲੋਕਧਾਰਾ ਸਮੀਖਿਆ,** ਚੇਤਨਾ ਪ੍ਰਕਾਸ਼ਨ, ਲੁਧਿਆਣਾ, 2012

3. ਕਰਨੈਲ ਸਿੰਘ ਥਿੰਦ **ਲੋਕਯਾਨ ਅਧਿਐਨ,** ਗੁਰੂ ਨਾਨਕ ਦੇਵ ਯੂਨੀਵਰਸਿਟੀ, ਅੰਮ੍ਰਿਤਸਰ

4. –ਉਹੀ–	**ਪੰਜਾਬ ਦਾ ਲੋਕ ਵਿਰਸਾ,** ਪੰਜਾਬੀ ਯੂਨੀਵਰਸਿਟੀ, ਪਟਿਆਲਾ, 1996
5. ਕੰਵਰਜੀਤ ਸਿੰਘ ਕੰਗ	**ਪੰਜਾਬ ਦੇ ਕੰਧ ਚਿੱਤਰ,** ਪੰਜਾਬੀ ਯੂਨੀਵਰਸਿਟੀ, ਪਟਿਆਲਾ, 1996
6. ਗੁਰਨਾਮ ਸਿੰਘ	**ਪੰਜਾਬ ਦੇ ਲੋਕ ਨਾਚ,** ਪੰਜਾਬੀ ਯੂਨੀਵਰਸਿਟੀ, ਪਟਿਆਲਾ, 1996
7. ਗੁਰਮੀਤ ਸਿੰਘ	**ਲੋਕਧਾਰਾ : ਪਰੰਪਰਾ ਤੇ ਆਧੁਨਿਕਤਾ,** ਨਾਨਕ ਸਿੰਘ ਪੁਸਤਕਮਾਲਾ, ਅੰਮ੍ਰਿਤਸਰ
8. ਜਸਵਿੰਦਰ ਸਿੰਘ	**ਪੰਜਾਬੀ ਲੋਕ ਸਾਹਿਤ ਸ਼ਾਸਤਰ,** ਪੰਜਾਬੀ ਯੂਨੀਵਰਸਿਟੀ, ਪਟਿਆਲਾ, 2003
9. ਜਗਦੀਸ਼ ਸਿੰਘ	**ਸਾਡੇ ਰਸਮ ਰਿਵਾਜ,** ਪੰਜਾਬੀ ਯੂਨੀਵਰਸਿਟੀ, ਪਟਿਆਲਾ, 1996
10. ਜੀਤ ਸਿੰਘ ਜੋਸ਼ੀ	**ਲੋਕਧਾਰਾ ਤੇ ਪੰਜਾਬੀ ਲੋਕਧਾਰਾ**, ਵਾਰਿਸ ਸ਼ਾਹ ਫ਼ਾਊਂਡੇਸ਼ਨ, ਅੰਮ੍ਰਿਤਸਰ
11. ਜੋਗਿੰਦਰ ਸਿੰਘ ਕੈਰੋਂ	**ਲੋਕਯਾਨ ਸ਼ਾਸਤਰ,** ਪੰਜਾਬੀ ਯੂਨੀਵਰਸਿਟੀ, ਪਟਿਆਲਾ
12. –ਉਹੀ–	**ਪੰਜਾਬੀ ਸਾਹਿਤ ਦਾ ਲੋਕਧਾਰਾਈ ਪਿਛੋਕੜ,** ਪੰਜਾਬੀ ਅਕਾਦਮੀ, ਦਿੱਲੀ, 2006
13. ਭੁਪਿੰਦਰ ਸਿੰਘ ਖਹਿਰਾ	**ਲੋਕਧਾਰਾ ਭਾਸ਼ਾ ਅਤੇ ਸਭਿਆਚਾਰ,** ਪੈਪਸੂ ਬੁੱਕ ਡਿਪੂ, ਪਟਿਆਲਾ, 1998
14. ਮਨਜੀਤ ਸਿੰਘ (ਸੰਪਾ.)	**ਪੰਜਾਬੀ ਲੋਕ ਪਰੰਪਰਾ,** ਪੰਜਾਬੀ ਅਕਾਦਮੀ, ਦਿੱਲੀ, 1987
15. ਰਾਜਿੰਦਰ ਸਿੰਘ ਲਾਂਬਾ (ਸੰਪਾ.)	**ਖੋਜ ਪਤ੍ਰਿਕਾ (ਲੋਕਧਾਰਾ ਵਿਸ਼ੇਸ਼ ਅੰਕ),** ਪੰਜਾਬੀ ਯੂਨੀਵਰਸਿਟੀ, ਪਟਿਆਲਾ, 1995
16. ਰਵਿੰਦਰ ਭੱਠਲ ਅਤੇ ਲਾਭ ਸਿੰਘ ਖੀਵਾ	**ਪੰਜਾਬੀ ਸਭਿਆਚਾਰ ਅਤੇ ਲੋਕਧਾਰਾ,** ਪੰਜਾਬੀ ਸਾਹਿਤ ਅਕਾਦਮੀ, ਲੁਧਿਆਣਾ, 2003
17. Alan Dundes	**The Study of Folklore**, Inc. Englewood Cliffs, Prentic Hall, N.J., 1965
18. Alan Dundes	**Essays in Folklore,** Folklore institute, Kailash Puri, Meerut, 1978

Syllabus of Under Graduate Course (Panjabi)

Session: 2023-24	
Part A - Introduction	
Subject	Panjabi
Semester	IIIrd
Name of the Course	Bachelor of Arts
Course Code	B23-PNB-301
Name of the Paper	ਆਧੁਨਿਕ ਪੰਜਾਬੀ ਵਾਰਤਕ ਅਤੇ ਵਿਹਾਰਕ ਪੰਜਾਬੀ Aadhunik Punjabi Vartak Ate Viharak Punjabi
Course Type: (CC/MCC/MDC/CC-M/DSEC/VOC/DSE/PC/AEC/VAC)	CC-3 MCC-4
Level of the course (As per Annexure-I	300-399
Pre-requisite for the course (if any)	----------
Course Learning Outcomes(CLO):	After completing this course, the learner will be able to: CLO-301-1 ਵਿਦਿਆਰਥੀ ਆਧੁਨਿਕ ਪੰਜਾਬੀ ਕਵਿਤਾ ਦੇ ਵਿਭਿੰਨ ਰੂਪਾਂ ਤੋਂ ਜਾਣੂ ਹੋਣਗੇ। CLO-301-2 ਵਿਦਿਆਰਥੀਆਂ ਅੰਦਰ ਪੰਜਾਬੀ ਨਿਬੰਧਾਂ ਦੀ ਪੜ੍ਹਤ ਦੁਆਰਾ ਨਿਬੰਧ ਅਧਿਐਨ ਦੀ ਸੂਝ ਅਤੇ ਸਮਝ ਪੈਦਾ ਹੋਵੇਗੀ। CLO-301-3 ਵਿਦਿਆਰਥੀਆਂ ਅੰਦਰ ਸਵੈਜੀਵਨੀ ਅਤੇ ਪੰਜਾਬੀ ਸਵੈਜੀਵਨੀ ਦੀ ਪੜ੍ਹਤ ਦੁਆਰਾ ਸਵੈਜੀਵਨੀ ਅਧਿਐਨ ਦੀ ਸੂਝ ਅਤੇ ਸਮਝ ਪੈਦਾ ਹੋਵੇਗੀ। CLO-301-4 ਵਿਹਾਰਕ ਪੰਜਾਬੀ ਦੀ ਪੜ੍ਹਾਈ ਰਾਹੀਂ ਪੰਜਾਬੀ ਭਾਸ਼ਾ ਦੀ ਸੰਰਚਨਾ ਅਤੇ ਵਰਤੋਂ ਵਿਹਾਰ ਬਾਰੇ ਸਮਝ ਅਤੇ ਮੁਹਾਰਤ ਪੈਦਾ ਹੋਵੇਗੀ

Credits	Theory + Tutorial	Practical	Total
	3+1	----------	4
Contact Hours	60	----------	60
Max. Marks : 100 Internal Assessment Marks : 30 End Term Exam Marks : 70		Time : 3 Hrs.	

Part B- Contents of The Course

Instruction for Paper Setter

ਪਹਿਲਾ ਪ੍ਰਸ਼ਨ ਲਾਜ਼ਮੀ ਹੈ। ਇਹ ਪ੍ਰਸ਼ਨ 14 ਨੰਬਰ ਦਾ ਹੋਵੇਗਾ। ਇਸ ਵਿੱਚ ਸਮੁੱਚੇ ਸਿਲੇਬਸ ਵਿੱਚੋਂ ਕੁੱਲ ਚਾਰ ਸੁਆਲ ਪੁੱਛੇ ਜਾਣਗੇ। ਵਿਦਿਆਰਥੀ ਲਈ ਇਹ ਸਾਰੇ ਸੁਆਲ ਕਰਨੇ ਲਾਜ਼ਮੀ ਹਨ। ਹਰ ਸੁਆਲ ਸਾਢੇ ਤਿੰਨ ਨੰਬਰ ਦਾ ਹੋਵੇਗਾ।

2. ਸਮੁੱਚਾ ਸਿਲੇਬਸ ਕੁੱਲ ਚਾਰ ਯੂਨਿਟਾਂ ਵਿੱਚ ਵੰਡਿਆ ਗਿਆ ਹੈ। ਹਰ ਯੂਨਿਟ 14 ਨੰਬਰਾਂ ਦਾ ਹੈ।

3. ਯੂਨਿਟ ਪਹਿਲਾ ਵਿੱਚ ਤਿੰਨ ਸੁਆਲ ਆਧੁਨਿਕ ਪੰਜਾਬੀ ਵਾਰਤਕ ਦੇ ਸਿਧਾਂਤਕ ਅਤੇ ਇਤਿਹਾਸਕ ਪਰਿਪੇਖ ਬਾਰੇ ਪੁੱਛੇ ਜਾਣਗੇ। ਵਿਦਿਆਰਥੀ ਨੇ ਇਹਨਾਂ ਵਿੱਚੋਂ ਕੋਈ ਦੋ ਸੁਆਲ ਕਰਨੇ ਹਨ। ਹਰ ਪ੍ਰਸ਼ਨ ਸੱਤ-ਸੱਤ ਨੰਬਰ ਦਾ ਹੋਵੇਗਾ।

4. ਯੂਨਿਟ ਦੂਜਾ ਵਿੱਚ ਸਿਲੇਬਸ ਵਿੱਚ ਲੱਗੇ ਨਿਬੰਧਾਂ ਦੇ ਵਿਸ਼ੇ, ਸਾਰ, ਆਲੋਚਨਾਤਮਕ ਅਧਿਐਨ, ਸਾਹਿਤਕ ਪਰਖ, ਭਾਸ਼ਾ, ਵਾਰਤਕ ਸ਼ੈਲੀ ਅਤੇ ਨਿਬੰਧਕਾਰਾਂ ਦੇ ਜੀਵਨ ਅਤੇ ਸਾਹਿਤਕ ਯੋਗਦਾਨ ਬਾਰੇ ਕੋਈ ਤਿੰਨ ਸੁਆਲ ਪੁੱਛੇ ਜਾਣਗੇ। ਵਿਦਿਆਰਥੀ ਨੇ ਇਹਨਾਂ ਵਿੱਚੋਂ ਕੋਈ ਦੋ ਸੁਆਲ ਕਰਨੇ ਹਨ। ਹਰ ਪ੍ਰਸ਼ਨ ਸੱਤ-ਸੱਤ ਨੰਬਰ ਦਾ ਹੋਵੇਗਾ।

5. ਯੂਨਿਟ ਤੀਜਾ ਵਿੱਚ ਸਿਲੇਬਸ ਵਿੱਚ ਲੱਗੀ ਸਵੈਜੀਵਨੀ ਅਤੇ ਸਵੈਜੀਵਨੀਕਾਰ ਦੇ ਜੀਵਨ ਅਤੇ ਸਾਹਿਤਕ ਯੋਗਦਾਨ ਬਾਰੇ ਕੋਈ ਤਿੰਨ ਸੁਆਲ ਪੁੱਛੇ ਜਾਣਗੇ। ਵਿਦਿਆਰਥੀ ਨੇ ਇਹਨਾਂ ਵਿੱਚੋਂ ਕੋਈ ਦੋ ਸੁਆਲ ਕਰਨੇ ਹਨ। ਹਰ ਪ੍ਰਸ਼ਨ ਸੱਤ-ਸੱਤ ਨੰਬਰ ਦਾ ਹੋਵੇਗਾ।

6. ਯੂਨਿਟ ਚੌਥਾ ਦੇ ਚਾਰ ਉਪ-ਭਾਗ ਹਨ। ਹਰ ਉਪ-ਭਾਗ ਦੇ 3 $^{1}/_{2}$ ਨੰਬਰ ਹਨ। ਉਪ-ਭਾਗ ਪਹਿਲਾ ਅਤੇ ਦੂਜਾ ਵਿੱਚੋਂ ਦੋ-ਦੋ ਸੁਆਲ ਪੁੱਛੇ ਜਾਣਗੇ। ਜਿਹਨਾਂ ਵਿੱਚੋਂ ਵਿਦਿਆਰਥੀ ਨੇ ਇੱਕ ਸੁਆਲ ਕਰਨਾ ਹੈ। ਹਰ ਸੁਆਲ 3 $^{1}/_{2}$ ਨੰਬਰ ਦਾ ਹੋਵੇਗਾ। ਭਾਗ ਤੀਜਾ ਵਿੱਚ ਵਿਦਿਆਰਥੀ ਨੇ ਬਹੁਤੇ ਸ਼ਬਦਾਂ ਦੀ ਥਾਂ ਇੱਕ ਸ਼ਬਦ (ਅੱਠ ਵਿੱਚੋਂ ਸੱਤ) ਲਿਖਣੇ ਹੋਣਗੇ। ਇੱਕ ਸ਼ਬਦ $^{1}/_{2}$ ਨੰਬਰ ਦਾ ਹੋਵੇਗਾ। ਉਪ ਭਾਗ ਚੌਥਾ ਵਿੱਚ ਦਫ਼ਤਰੀ ਸ਼ਬਦਾਵਲੀ (ਦਿੱਤੇ ਗਏ ਦਸ ਸ਼ਬਦਾਂ ਵਿੱਚੋਂ ਕੋਈ ਸੱਤ ਸ਼ਬਦ ਕਰਨੇ ਹਨ) ਬਾਰੇ ਪ੍ਰਸ਼ਨ ਪੁੱਛੇ ਜਾਣਗੇ। ਹਰ ਸ਼ਬਦ ਦਾ ਅੱਧਾ ਨੰਬਰ ਹੋਏਗਾ।

Unit	Topics	Contact Hours
I	1. ਆਧੁਨਿਕ ਪੰਜਾਬੀ ਵਾਰਤਕ : ਸਿਧਾਂਤਕ-ਇਤਿਹਾਸਕ ਪਰਿਪੇਖ ਅੰਕ : 14 1.1 ਵਾਰਤਕ : ਪਰਿਭਾਸ਼ਾ, ਪ੍ਰਕ੍ਰਿਤੀ ਅਤੇ ਤੱਤ 1.2 ਆਧੁਨਿਕ ਪੰਜਾਬੀ ਵਾਰਤਕ : ਪ੍ਰਮੁੱਖ ਰੂਪਾਕਾਰ (ਨਿਬੰਧ, ਜੀਵਨੀ, ਸਵੈਜੀਵਨੀ, ਸਫ਼ਰਨਾਮਾ, ਡਾਇਰੀ) 1.3 ਆਧੁਨਿਕ ਪੰਜਾਬੀ ਨਿਬੰਧ : ਨਿਕਾਸ ਤੇ ਵਿਕਾਸ 1.4 ਪੰਜਾਬੀ ਸਵੈਜੀਵਨੀ : ਆਰੰਭ ਤੇ ਵਿਕਾਸ	
II	2. ਗੱਦ ਦਰਪਣ, ਦਰਸ਼ਨ ਸਿੰਘ ਅਤੇ ਲਲਿਤ ਕੁਮਾਰ ਜੈਨ ਅੰਕ : 14 ਪਬਲੀਕੇਸ਼ਨ ਬਿਊਰੋ, ਕੁਰੂਕਸ਼ੇਤਰ ਯੂਨੀਵਰਸਿਟੀ, ਕੁਰੂਕਸ਼ੇਤਰ 2.1 ਨਿਬੰਧਾਂ ਦਾ ਸਾਰ, ਵਿਸ਼ਾ, ਆਲੋਚਨਾਤਮਕ ਅਧਿਐਨ 2.3 ਭਾਸ਼ਾ ਸ਼ੈਲੀ/ ਵਾਰਤਕ ਸ਼ੈਲੀ 2.4 ਨਿਬੰਧਕਾਰਾਂ ਦਾ ਜੀਵਨ ਪ੍ਰੀਚੈ ਅਤੇ ਸਾਹਿਤਕ ਯੋਗਦਾਨ	
III	3. ***ਮੈਂ ਸਾਂ ਜੱਜ ਦਾ ਅਰਦਲੀ***, ਨਿੰਦਰ ਘੁੰਗਿਆਣਵੀ, ਅੰਕ : 14 ਚੇਤਨਾ ਪ੍ਰਕਾਸ਼ਨ, ਲੁਧਿਆਣਾ, 2004 3.1 ਸਵੈਜੀਵਨੀ ਦਾ ਆਲੋਚਨਾਤਮਕ ਅਧਿਐਨ 3.2 ਸਫ਼ਲ ਸਵੈਜੀਵਨੀ ਦੇ ਤੌਰ 'ਤੇ ਪਰਖ 3.3 ਵਾਰਤਕ ਸ਼ੈਲੀ 3.4 ਭਾਸ਼ਾ ਸ਼ੈਲੀ 3.5 ਸਵੈਜੀਵਨੀਕਾਰ ਦਾ ਜੀਵਨ ਅਤੇ ਸਾਹਿਤਕ ਯੋਗਦਾਨ	
IV	4. ਵਿਹਾਰਕ ਪੰਜਾਬੀ ਅੰਕ : 14 4.1 ਸ਼ਬਦ ਜੋੜਾਂ ਦੇ ਨੇਮ ਅਤੇ ਸ਼ੁੱਧ ਅਸ਼ੁੱਧ ਸ਼ਬਦ ਬੋਧ 4.2 ਛੰਦ : ਅਰਥ, ਪਰਿਭਾਸ਼ਾ, ਤੱਤ ਅਤੇ ਕਿਸਮਾਂ 4.3 ਬਹੁਤੇ ਸ਼ਬਦਾਂ ਦੀ ਥਾਂ ਇੱਕ ਸ਼ਬਦ 4.4 ਸਾਹਿਤਕ ਸ਼ਬਦਾਵਲੀ (100 ਸ਼ਬਦ ਨਾਲ ਨੱਥੀ ਹਨ)	

Suggested Evaluation Method	
Internal Assessment: 30 Marks ➢ **Theory** • Class Participation: 5 Marks • Seminar/presentation/assignment/quiz/class test etc.: 5+5=10 Marks • Mid-Term Exam: 15 Marks	**End Term Examination:** 70 Marks

Part C- Learning Resources

1. ਸ. ਸ. ਖਹਿਰਾ — **ਪੰਜਾਬੀ ਭਾਸ਼ਾ : ਵਿਆਕਰਣ ਅਤੇ ਬਣਤਰ,** ਪੰਜਾਬੀ ਯੂਨੀਵਰਸਿਟੀ, ਪਟਿਆਲਾ
2. ਹਰਕੀਰਤ ਸਿੰਘ — **ਪੰਜਾਬੀ ਸ਼ਬਦ ਰੂਪ ਅਤੇ ਸ਼ਬਦ ਜੋੜ ਕੋਸ਼**, ਪੰਜਾਬੀ ਯੂਨੀਵਰਸਿਟੀ, ਪਟਿਆਲਾ
3. ਹਰਬੰਸ ਸਿੰਘ ਧੀਮਾਨ — **ਪੰਜਾਬੀ ਭਾਸ਼ਾ ਅਤੇ ਵਿਆਕਰਣ,** ਗਗਨ ਪ੍ਰਕਾਸ਼ਨ, ਰਾਜਪੁਰਾ, ਪਟਿਆਲਾ, 2006
4. ਕਿਰਪਾਲ ਸਿੰਘ ਕਸੇਲ — **ਆਧੁਨਿਕ ਗੱਦਕਾਰ,** ਕੁਲਦੀਪ ਪ੍ਰੈਸ, ਅੰਮ੍ਰਿਤਸਰ
5. ਕੁਲਵੰਤ ਸਿੰਘ — **ਪੰਜਾਬੀ ਵਾਰਤਕ : ਸੰਚਾਰ ਤੇ ਵਿਹਾਰ,** ਰਵੀ ਸਾਹਿਤ ਪ੍ਰਕਾਸ਼ਨ, ਅੰਮ੍ਰਿਤਸਰ
6. ਧਰਮਪਾਲ ਸਿੰਗਲ — **ਵਾਰਤਕ ਸ਼ੈਲੀ,** ਭਾਸ਼ਾ ਵਿਭਾਗ ਪੰਜਾਬ, ਪਟਿਆਲਾ
7. ਧਰਮ ਚੰਦ ਬਾਤਿਸ਼ — **ਸਵੈਜੀਵਨੀ ਸ਼ਾਸਤਰ,** ਪੁਨੀਤ ਪਬਲਿਸ਼ਰ, ਮਲੇਰਕੋਟਲਾ, 1999
8. ਬਲਵੀਰ ਸਿੰਘ ਦਿਲ — **ਪੰਜਾਬੀ ਨਿਬੰਧ : ਸਰੂਪ ਸਿਧਾਂਤ ਤੇ ਵਿਕਾਸ,** ਪੰਜਾਬੀ ਯੂਨੀਵਰਸਿਟੀ, ਪਟਿਆਲਾ, 1991
9. ਰਤਨ ਸਿੰਘ ਜੱਗੀ — **ਪੰਜਾਬੀ ਸਵੈਜੀਵਨੀ ਸਾਹਿਤ : ਇੱਕ ਮੁਲਾਂਕਣ**
ਭਾਸ਼ਾ ਵਿਭਾਗ ਪੰਜਾਬ, ਪਟਿਆਲਾ, 1986

Syllabus of Under Graduate Course (Panjabi)

Session: 2023-24	
Part A - Introduction	
Subject	Panjabi
Semester	IInd
Name of the Course	Bachelor of Arts
Course Code	B23-PNB-302
Name of the Paper	ਪੰਜਾਬੀ ਵਿੱਚ ਅਨੁਵਾਦਿਤ ਅੰਗਰੇਜ਼ੀ ਸਾਹਿਤ Punjabi Vich Anuvadit Angrezi Sahit
Course Type: (CC/MCC/MDC/CC-M/DSEC/VOC/DSE/PC/AEC/VAC)	MCC-5
Level of the course (As per Annexure-I	300-399
Pre-requisite for the course (if any)	----------
Course Learning Outcomes(CLO):	After completing this course, the learner will be able to: CLO-302-1 ਵਿਦਿਆਰਥੀ ਸਾਹਿਤਕ ਅਨੁਵਾਦ ਦੇ ਸੰਕਲਪ ਅਤੇ ਇਸਦੇ ਮਹੱਤਵ ਤੋਂ ਜਾਣੂ ਹੋਣਗੇ। CLO-302-2 ਵਿਦਿਆਰਥੀਆਂ ਨੂੰ ਪੰਜਾਬੀ ਵਿੱਚ ਅਨੁਵਾਦਿਤ ਅੰਗਰੇਜ਼ੀ ਸਾਹਿਤ ਦੇ ਇਤਿਹਾਸ, ਇਸਦੇ ਝੁਕਾਵਾਂ ਅਤੇ ਪ੍ਰਮੁੱਖ ਸਾਹਿਤਕਾਰਾਂ ਬਾਰੇ ਜਾਣਕਾਰੀ ਪ੍ਰਾਪਤ ਹੋਵੇਗੀ। CLO-302-3 ਪੰਜਾਬੀ ਵਿੱਚ ਅਨੁਵਾਦਿਤ ਅੰਗਰੇਜ਼ੀ ਸਾਹਿਤ ਦੇ ਮੁੱਖ ਸਰੋਕਾਰਾਂ ਗਿਆਨ ਪ੍ਰਾਪਤ ਹੋਵੇਗਾ। CLO-302-4 ਵਿਦਿਆਰਥੀ ਪੰਜਾਬੀ ਵਿੱਚ ਅਨੁਵਾਦਿਤ ਅੰਗਰੇਜ਼ੀ ਸਾਹਿਤ ਦੀਆਂ ਵਿਸ਼ੇਸ਼ ਪੁਸਤਕਾਂ ਦੇ ਅਧਿਐਨ ਵਿਸ਼ਲੇਸ਼ਣ ਰਾਹੀਂ ਦੋਵਾਂ ਭਾਸ਼ਾਵਾਂ ਦੇ ਸਾਹਿਤ ਦਾ ਤੁਲਨਾਤਮਕ ਅਧਿਐਨ ਕਰਨ ਦੇ ਯੋਗ ਹੋਣਗੇ।

Credits	Theory + Tutorial	Practical	Total
	3+1	----------	4
Contact Hours	60	----------	60
Max. Marks : 100 Internal Assessment Marks : 30 End Term Exam Marks : 70		Time : 3 Hrs.	

Part B- Contents of The Course

Instruction for Paper Setter

1. ਪਹਿਲਾ ਪ੍ਰਸ਼ਨ ਲਾਜ਼ਮੀ ਹੈ। ਇਹ ਪ੍ਰਸ਼ਨ 14 ਨੰਬਰ ਦਾ ਹੋਵੇਗਾ। ਇਸ ਵਿੱਚ ਸਮੁੱਚੇ ਸਿਲੇਬਸ ਵਿੱਚੋਂ ਕੁੱਲ ਚਾਰ ਸੁਆਲ ਪੁੱਛੇ ਜਾਣਗੇ। ਵਿਦਿਆਰਥੀ ਲਈ ਇਹ ਸਾਰੇ ਸੁਆਲ ਕਰਨੇ ਲਾਜ਼ਮੀ ਹਨ। ਹਰ ਸੁਆਲ ਸਾਢੇ ਤਿੰਨ ਨੰਬਰ ਦਾ ਹੋਵੇਗਾ।
2. ਸਮੁੱਚਾ ਸਿਲੇਬਸ ਕੁੱਲ ਚਾਰ ਯੂਨਿਟਾਂ ਵਿੱਚ ਵੰਡਿਆ ਗਿਆ ਹੈ। ਹਰ ਯੂਨਿਟ 14 ਨੰਬਰਾਂ ਦਾ ਹੈ।

3. ਯੂਨਿਟ ਪਹਿਲਾ ਵਿੱਚ ਤਿੰਨ ਸੁਆਲ ਅਨੁਵਾਦ ਦੇ ਸਿਧਾਂਤਕ ਪਰਿਪੇਖ ਬਾਰੇ ਪੁੱਛੇ ਜਾਣਗੇ। ਵਿਦਿਆਰਥੀ ਨੇ ਇਹਨਾਂ ਵਿੱਚੋਂ ਕੋਈ ਦੋ ਸੁਆਲ ਕਰਨੇ ਹਨ। ਹਰ ਪ੍ਰਸ਼ਨ ਸੱਤ-ਸੱਤ ਨੰਬਰ ਦਾ ਹੋਵੇਗਾ।

4. ਯੂਨਿਟ ਦੂਜਾ ਵਿੱਚ ਤਿੰਨ ਸੁਆਲ ਅੰਗਰੇਜ਼ੀ ਤੋਂ ਪੰਜਾਬੀ ਵਿੱਚ ਨਾਵਲ ਅਤੇ ਨਾਟਕ ਦੇ ਅਨੁਵਾਦ ਦੇ ਇਤਿਹਾਸਕ ਪਰਿਪੇਖ ਬਾਰੇ ਪੁੱਛੇ ਜਾਣਗੇ। ਵਿਦਿਆਰਥੀ ਨੇ ਇਹਨਾਂ ਵਿੱਚੋਂ ਕੋਈ ਦੋ ਸੁਆਲ ਕਰਨੇ ਹਨ। ਹਰ ਪ੍ਰਸ਼ਨ ਸੱਤ-ਸੱਤ ਨੰਬਰ ਦਾ ਹੋਵੇਗਾ।

5. ਯੂਨਿਟ ਤੀਜਾ ਵਿੱਚ ਸਿਲੇਬਸ ਵਿੱਚ ਲੱਗੇ ਨਾਵਲ ਦੇ ਸਾਰ, ਵਿਸ਼ੇ ਵਸਤੂ, ਕਲਾ ਪੱਖ, ਆਲੋਚਨਾਤਮਕ ਅਧਿਐਨ, ਪਾਤਰ ਵਿਧਾਨ ਅਤੇ ਲੇਖਕ ਦੇ ਜੀਵਨ ਅਤੇ ਸਾਹਿਤਕ ਯੋਗਦਾਨ ਆਦਿ ਬਾਰੇ ਤਿੰਨ ਸੁਆਲ ਪੁੱਛੇ ਜਾਣਗੇ। ਵਿਦਿਆਰਥੀ ਨੇ ਇਹਨਾਂ ਵਿੱਚੋਂ ਕੋਈ ਦੋ ਸੁਆਲ ਕਰਨੇ ਹਨ। ਹਰ ਪ੍ਰਸ਼ਨ ਸੱਤ-ਸੱਤ ਨੰਬਰ ਦਾ ਹੋਵੇਗਾ।

6. ਯੂਨਿਟ ਚੌਥਾ ਵਿੱਚ ਸਿਲੇਬਸ ਵਿੱਚ ਲੱਗੇ ਨਾਟਕ ਦੇ ਸਾਰ, ਵਿਸ਼ੇ ਵਸਤੂ, ਕਲਾ ਪੱਖ, ਆਲੋਚਨਾਤਮਕ ਅਧਿਐਨ, ਰੰਗਮੰਚੀ ਸਾਰਥਕਤਾ, ਪਾਤਰ ਵਿਧਾਨ ਅਤੇ ਲੇਖਕ ਦੇ ਜੀਵਨ ਅਤੇ ਸਾਹਿਤਕ ਯੋਗਦਾਨ ਆਦਿ ਬਾਰੇ ਤਿੰਨ ਸੁਆਲ ਪੁੱਛੇ ਜਾਣਗੇ। ਵਿਦਿਆਰਥੀ ਨੇ ਇਹਨਾਂ ਵਿੱਚੋਂ ਕੋਈ ਦੋ ਸੁਆਲ ਕਰਨੇ ਹਨ। ਹਰ ਪ੍ਰਸ਼ਨ ਸੱਤ-ਸੱਤ ਨੰਬਰ ਦਾ ਹੋਵੇਗਾ।

Unit	Topics	Contact Hours
I	1. ਅਨੁਵਾਦ ਅਤੇ ਹਿੰਦੀ ਤੋਂ ਪੰਜਾਬੀ ਅਨੁਵਾਦ : ਸਿਧਾਂਤਕ ਇਤਿਹਾਸਕ ਪਰਿਪੇਖ ਅੰਕ: 14 1.1 ਅਨੁਵਾਦ ਦੀ ਪਰਿਭਾਸ਼ਾ ਅਤੇ ਪ੍ਰਕ੍ਰਿਆ 1.2 ਸਾਹਿਤਕ ਅਨੁਵਾਦ : ਭਾਵ ਅਰਥ ਅਤੇ ਪ੍ਰਕ੍ਰਿਤੀ 1.3 ਸਾਹਿਤਕ ਅਨੁਵਾਦ : ਸਮੱਸਿਆਵਾਂ ਅਤੇ ਸੰਭਾਵਨਾਵਾਂ 1.4 ਸਾਹਿਤਕ ਅਨੁਵਾਦਕ ਦੇ ਪ੍ਰਮੁੱਖ ਗੁਣ/ ਸਾਹਿਤਕ ਅਨੁਵਾਦਕ ਲਈ ਜ਼ਰੂਰੀ ਸ਼ਰਤਾਂ	
II	2. ਪੰਜਾਬੀ ਵਿੱਚ ਅੰਗਰੇਜ਼ੀ ਸਾਹਿਤਕ ਅਨੁਵਾਦ : ਇਤਿਹਾਸਕ ਪਰਿਪੇਖ ਅੰਕ: 14 2.1 ਪੰਜਾਬੀ ਵਿੱਚ ਪ੍ਰਾਪਤ ਅੰਗਰੇਜ਼ੀ ਨਾਵਲ ਅਨੁਵਾਦ 2.4 ਪੰਜਾਬੀ ਵਿੱਚ ਪ੍ਰਾਪਤ ਅੰਗਰੇਜ਼ੀ ਕਾਵਿ ਅਨੁਵਾਦ	
III	3. ਅਰਨੈਸਟ ਹੈਮਿੰਗਵੇ, ***ਬੁੱਢਾ ਆਦਮੀ ਤੇ ਸਮੁੰਦਰ*** , (ਅਨੁ. ਪ੍ਰੋ. ਅੱਛਰੂ ਸਿੰਘ ਅਤੇ ਧਰਮਿੰਦਰ ਸਿੰਘ ਉੱਭਾ), ਲੋਕਗੀਤ ਪ੍ਰਕਾਸ਼ਨ, ਚੰਡੀਗੜ੍ਹ ਅੰਕ: 14 3.1 ਨਾਵਲ ਦਾ ਵਿਸ਼ਾ ਵਸਤੂ ਅਤੇ ਆਲੋਚਨਾਤਮਕ ਅਧਿਐਨ 3.2 ਨਾਵਲ ਦੀਆਂ ਬਿਰਤਾਂਤਕ ਜੁਗਤਾਂ 3.3 ਪਾਤਰ ਚਿੱਤਰਣ 3.4 ਲੇਖਿਕ ਦਾ ਜੀਵਨ ਪ੍ਰੀਚੈ ਅਤੇ ਸਾਹਿਤਕ ਯੋਗਦਾਨ	
IV	4 ਵਿਲੀਅਮ ਸ਼ੈਕਸਪੀਅਰ, ਜੁਲਿਸ ਸੀਜ਼ਰ (ਅਨੁ. ਸੁਰਜੀਤ ਹਾਂਸ), ਪਬਲੀਕੇਸ਼ਨ ਬਿਊਰੋ, ਪੰਜਾਬੀ ਯੂਨੀਵਰਸਿਟੀ, ਪਟਿਆਲਾ ਅੰਕ: 14 4.1 ਨਾਟਕ ਦਾ ਸਾਰ ਅਤੇ ਵਿਸ਼ਾ ਵਸਤੂ 4.2 ਨਾਟਕ ਦਾ ਕਲਾ ਪੱਖ 4.3 ਨਾਟਕ ਦਾ ਆਲੋਚਨਾਤਮਕ ਅਧਿਐਨ 4.4 ਨਾਟਕ ਦੀ ਰੰਗਮੰਚੀ ਸਾਰਥਕਤਾ 4.5 ਪਾਤਰ ਵਿਧਾਨ 4.6 ਨਾਟਕਕਾਰ ਦਾ ਜੀਵਨ ਪ੍ਰੀਚੈ ਅਤੇ ਸਾਹਿਤਕ ਯੋਗਦਾਨ	

Suggested Evaluation Method	
Internal Assessment: 30 Marks ➢ **Theory** • Class Participation: 5 Marks • Seminar/presentation/assignment/quiz/class test etc.: 5+5=10 Marks • Mid-Term Exam: 15 Marks	**End Term Examination:** 70 Marks

Part C- Learning Resources

1. I for Evans	**A Short History of English Literature,** Penguin Books, 1990
2. Bhim Singh Dahiya (Ed.)	**Shakespeare's Intellectual Background**, Viva Books, New Delhi
3. Clifford Leach	**Shakespeare's Tragedies,** Chatto and Windus, London
4. David Trotter	**The English Novel History,** Routledge, London, 1993
5. H. B. Charlton	**Shakespeare Comedy,** Psychology Press, 2004
6. George Monteiro	**Critical Essays on Ernest Hamingway's A farewell to Arms,** G. K. Hall & Company, 1994
7. Granville Barker	**Preface to Shakespeare,** Anlantic Publishers and Distributors Pvt. Ltd, Delhi, 2007
8. Ivor Brown	**Shakespear in His Time,** Thomas Nelson & Sons Ltd., London
9. Jackson J. Benson (ed.)	**New Critical Approach to the Short Stories of Ernest Hamingway,** Duke University Press, 1990
10. James Nagel (Ed.)	**Critical Essays on Ernest Hamingway's The Sun Also rises,** G. K. Hall, 1995
11. John Arthos	**The Art of Shakespeare,** Bowes and Bowes, London, 1964
12. Michael Taylor	**Shakespeare Criticism in Twentieth Century,** Oxford University Press, Canada, 2001
13. Mirian Allott	**Novelists and the Novel,** Routledge, Kegan Paul, London
14. Robert O.Stephens (Ed.)	**Ernest Hemingway : The Critical Reception,** B. Franklin & Co., Inc, 1977
15. Linda Wagner Martin	**Ernest Hamingway : Seven Dacades of Criticism** Michhigan State University Press, 1998
16. Terry Eaglton	**The English Novel : An Introduction,** Blackwell Publishing Ltd., 2005

Syllabus of Under Graduate Course (Panjabi)

Session: 2023-24	
Part A - Introduction	
Subject	Panjabi
Semester	IIIrd
Name of the Course	Bachelor of Arts
Course Code	B23-PNB-303
Name of the Paper	ਸਭਿਆਚਾਰ ਅਤੇ ਪੰਜਾਬੀ ਸਭਿਆਚਾਰ Sabhyachar Ate Punjabi Sabhyachar
Course Type: (CC/MCC/MDC/CC-M/DSEC/VOC/DSE/PC/AEC/VAC)	MDC-3
Level of the course (As per Annexure-I	300-399
Pre-requisite for the course (if any)	----------
Course Learning Outcomes(CLO):	After completing this course, the learner will be able to: CLO-303-1 ਵਿਦਿਆਰਥੀਆਂ ਨੂੰ ਸਭਿਆਚਾਰ ਦੇ ਸੁਭਾਅ ਅਤੇ ਇਸਦੇ ਪ੍ਰਮੁੱਖ ਪੱਖਾਂ ਅਤੇ ਅੰਗਾਂ, ਬਾਰੇ ਜਾਣਕਾਰੀ ਪ੍ਰਾਪਤ ਹੋਵੇਗੀ। CLO-303-2 ਵਿਦਿਆਰਥੀ ਸਭਿਆਚਾਰ ਦੀ ਬਾਕੀ ਅਨੁਸ਼ਾਸ਼ਨਾਂ ਨਾਲ ਸਬੰਧਤਤਾ ਸਥਾਪਿਤ ਅੰਤਰ–ਅਨੁਸ਼ਾਸਨੀ ਸਮਝ ਬਣਾਉਣ ਦੇ ਕਾਬਿਲ ਹੋਣਗੇ। CLO-303-3 ਵਿਦਿਆਰਥੀਆਂ ਨੂੰ ਪੰਜਾਬੀ ਸਭਿਆਚਾਰ ਦੇ ਵਿਲੱਖਣ ਅਤੇ ਨਿਵੇਕਲੇ ਸਰੂਪ ਬਾਰੇ ਵਿਸਤ੍ਰਿਤ ਜਾਣਕਾਰੀ ਪ੍ਰਾਪਤ ਹੋਵੇਗੀ। CLO-303-4 ਵਿਦਿਆਰਥੀ ਵਰਤਮਾਨ ਸਮੇਂ ਵਿੱਚ ਪੰਜਾਬੀ ਸਭਿਆਚਾਰ ਨੂੰ ਦਰਪੇਸ਼ ਚੁਣੌਤੀਆਂ ਬਾਰੇ ਗਿਆਨ ਹਾਸਲ ਕਰਨਗੇ।

Credits	Theory + Tutorial	Practical	Total
	2+1	----------	3
Contact Hours	45	----------	45

Max. Marks : 75 Internal Assessment Marks : 25 End Term Exam Marks : 50	Time : 3 Hrs.

Part B- Contents of The Course

Instruction for Paper Setter

1. ਪਹਿਲਾ ਪ੍ਰਸ਼ਨ ਲਾਜ਼ਮੀ ਹੈ। ਇਹ ਪ੍ਰਸ਼ਨ 10 ਨੰਬਰ ਦਾ ਹੋਵੇਗਾ। ਇਸ ਵਿੱਚ ਸਮੁੱਚੇ ਸਿਲੇਬਸ ਵਿੱਚੋਂ ਕੁੱਲ ਚਾਰ ਸੁਆਲ ਪੁੱਛੇ ਜਾਣਗੇ। ਵਿਦਿਆਰਥੀ ਲਈ ਇਹ ਸਾਰੇ ਸੁਆਲ ਕਰਨੇ ਲਾਜ਼ਮੀ ਹਨ। ਹਰ ਸੁਆਲ ਢਾਈ ਨੰਬਰ ਦਾ ਹੋਵੇਗਾ।
2. ਸਮੁੱਚਾ ਸਿਲੇਬਸ ਕੁੱਲ ਚਾਰ ਯੂਨਿਟਾਂ ਵਿੱਚ ਵੰਡਿਆ ਗਿਆ ਹੈ। ਹਰ ਯੂਨਿਟ 10 ਨੰਬਰਾਂ ਦਾ ਹੈ।
3. ਯੂਨਿਟ ਪਹਿਲਾ ਵਿੱਚ ਤਿੰਨ ਸੁਆਲ ਸਭਿਆਚਾਰ ਦੇ ਸਿਧਾਂਤਕ ਪੱਖ ਬਾਰੇ ਪੁੱਛੇ ਜਾਣਗੇ। ਵਿਦਿਆਰਥੀ ਨੇ ਇਹਨਾਂ ਵਿੱਚੋਂ ਕੋਈ ਦੋ ਸੁਆਲ ਕਰਨੇ ਹਨ। ਹਰ ਪ੍ਰਸ਼ਨ ਸੱਤ–ਸੱਤ ਨੰਬਰ ਦਾ ਹੋਵੇਗਾ।

4. ਯੂਨਿਟ ਦੂਜਾ ਵਿੱਚ ਤਿੰਨ ਸੁਆਲ ਸਭਿਆਚਾਰ ਦੀ ਦੂਜੇ ਅਨੁਸ਼ਾਸਨਾਂ ਨਾਲ ਅੰਤਰ ਸਬੰਧਤਤਾ ਸਬੰਧੀ ਪੁੱਛੇ ਜਾਣਗੇ। ਵਿਦਿਆਰਥੀ ਨੇ ਇਹਨਾਂ ਵਿੱਚੋਂ ਕੋਈ ਦੋ ਸੁਆਲ ਕਰਨੇ ਹਨ। ਹਰ ਪ੍ਰਸ਼ਨ ਸੱਤ-ਸੱਤ ਨੰਬਰ ਦਾ ਹੋਵੇਗਾ।

5. ਯੂਨਿਟ ਤੀਜਾ ਵਿੱਚ ਤਿੰਨ ਸੁਆਲ ਪੰਜਾਬੀ ਸਭਿਆਚਾਰ ਦੇ ਸੁਭਾਅ, ਨਿੱਖੜਵੇਂ ਲੱਛਣਾਂ, ਪੰਜਾਬੀ ਸਭਿਆਚਾਰ ਦੇ ਸੋਮਿਆਂ ਅਤੇ ਪੰਜਾਬੀ ਸਭਿਆਚਾਰ ਨੂੰ ਪ੍ਰਭਾਵਿਤ ਕਰਨ ਵਾਲੇ ਇੱਥੋਂ ਦੇ ਭੂਗੋਲ ਅਤੇ ਆਰਥਿਕਤਾ ਸਬੰਧੀ ਪੁੱਛੇ ਜਾਣਗੇ। ਵਿਦਿਆਰਥੀ ਨੇ ਇਹਨਾਂ ਵਿੱਚੋਂ ਕੋਈ ਦੋ ਸੁਆਲ ਕਰਨੇ ਹਨ। ਹਰ ਪ੍ਰਸ਼ਨ ਸੱਤ-ਸੱਤ ਨੰਬਰ ਦਾ ਹੋਵੇਗਾ।

6. ਯੂਨਿਟ ਚੌਥਾ ਵਿੱਚ ਪੰਜਾਬੀ ਸਭਿਆਚਾਰ ਦੀ ਇਤਿਹਾਸਕ ਰੇਖਾ ਅਤੇ ਇਸਦੇ ਵਰਤਮਾਨ ਸਰੂਪ ਅਤੇ ਇਸ ਉੱਪਰ ਪੈਣ ਵਾਲੇ ਪ੍ਰਭਾਵਾਂ ਸਬੰਧੀ ਤਿੰਨ ਸੁਆਲ ਪੁੱਛੇ ਜਾਣਗੇ। ਵਿਦਿਆਰਥੀ ਨੇ ਇਹਨਾਂ ਵਿੱਚੋਂ ਕੋਈ ਦੋ ਸੁਆਲ ਕਰਨੇ ਹਨ। ਹਰ ਪ੍ਰਸ਼ਨ ਸੱਤ-ਸੱਤ ਨੰਬਰ ਦਾ ਹੋਵੇਗਾ।

Unit	Topics	Contact Hours
I	1. ਸਭਿਆਚਾਰ : ਸਿਧਾਂਤਕ ਪਰਿਪੇਖ ਅੰਕ 10 1.1 ਸਭਿਆਚਾਰ ਦੀ ਪਰਿਭਾਸ਼ਾ, ਲੱਛਣ ਅਤੇ ਵਿਸ਼ੇਸ਼ਤਾਵਾਂ 1.2 ਸਭਿਆਚਾਰ ਦੀ ਨਿਰਮਾਣ ਪ੍ਰਕ੍ਰਿਆ	
II	2. ਸਭਿਆਚਾਰ ਅਤੇ ਦੂਜੇ ਅਨੁਸ਼ਾਸਨ : ਅੰਤਰ ਸਬੰਧ ਅੰਕ 10 2.1 ਸਭਿਆਚਾਰ ਅਤੇ ਭੂਗੋਲ 2.2 ਸਭਿਆਚਾਰ ਅਤੇ ਸਭਿਅਤਾ 2.3 ਸਭਿਆਚਾਰ ਅਤੇ ਆਰਥਿਕਤਾ 2.4 ਸਭਿਆਚਾਰ ਅਤੇ ਧਰਮ 2.5 ਸਭਿਆਚਾਰ ਅਤੇ ਰਾਜਨੀਤੀ	
III	3. ਪੰਜਾਬੀ ਸਭਿਆਚਾਰ ਅੰਕ 10 3.1 ਪੰਜਾਬੀ ਸਭਿਆਚਾਰ ਦੇ ਨਿੱਖੜਵੇਂ ਲੱਛਣ 3.2 ਪੰਜਾਬੀ ਸਭਿਆਚਾਰ ਦੇ ਮੂਲ ਸੋਮੇ 3.3 ਪੰਜਾਬੀ ਸਭਿਆਚਾਰ ਅਤੇ ਪੰਜਾਬ ਦੀ ਭੂਗੋਲਿਕ ਸਥਿਤੀ 3.4 ਪੰਜਾਬੀ ਸਭਿਆਚਾਰ ਅਤੇ ਪੰਜਾਬ ਦੀ ਆਰਥਿਕਤਾ	
IV	4. ਪੰਜਾਬੀ ਸਭਿਆਚਾਰ : ਇਤਿਹਾਸਕ ਅਤੇ ਵਰਤਮਾਨ ਪਰਿਪੇਖ ਅੰਕ 10 4.1 ਪੰਜਾਬੀ ਸਭਿਆਚਾਰ ਦੇ ਪ੍ਰਮੁੱਖ ਇਤਿਹਾਸਕ ਪੜਾਅ 4.2 ਵਿਸ਼ਵੀਕਰਨ ਦਾ ਦੌਰ ਅਤੇ ਪੰਜਾਬੀ ਸਭਿਆਚਾਰ ਸਾਹਮਣੇ ਚੁਣੌਤੀਆਂ 4.3 ਪੰਜਾਬੀ ਸਭਿਆਚਾਰ ਦਾ ਬਦਲਦਾ ਪਰਿਪੇਖ 4.4 ਪੰਜਾਬੀ ਸਭਿਆਚਾਰ ਦੀ ਭਾਰਤੀ ਸਭਿਆਚਾਰ ਨੂੰ ਦੇਣ	

Suggested Evaluation Method

Internal Assessment: 25 Marks ➢ **Theory** • Class Participation: 5 Marks • Seminar/presentation/assignment/quiz/class test etc.: 7Marks • Mid-Term Exam: 13 Marks	**End Term Examination:** 50 Marks

Part C- Learning Resources

1. ਅਮਰਜੀਤ ਸਿੰਘ ਅਤੇ ਹੋਰ (ਸੰਪਾ.) **ਪੰਜਾਬੀ ਸਭਿਆਚਾਰ : ਇੱਕ ਵਿਸ਼ਲੇਸ਼ਣ (ਦੂਸਰੀ ਪੰਜਾਬੀ ਵਿਕਾਸ ਕਾਨਫਰੰਸ)** ਪੰਜਾਬੀ ਯੂਨੀਵਰਸਿਟੀ, ਪਟਿਆਲਾ, 1988

2. ਗੁਰਬਖਸ਼ ਸਿੰਘ ਫ਼ਰੈਂਕ	**ਸਭਿਆਚਾਰ ਅਤੇ ਪੰਜਾਬੀ ਸਭਿਆਚਾਰ,** ਪੰਜਾਬੀ ਰਾਈਟਰਜ਼ ਕੋਆਪਰੇਟਿਵ ਸੁਸਾਇਟੀ, ਲੁਧਿਆਣਾ
3. ਜਸਵਿੰਦਰ ਸਿੰਘ	**ਪੰਜਾਬੀ ਸਭਿਆਚਾਰ : ਪਛਾਣ ਚਿੰਨ੍ਹ,** ਗਰੇਸੀਅਸ ਬੁੱਕਸ, ਪਟਿਆਲਾ, 2012
4. ਜੀਤ ਸਿੰਘ ਜੋਸ਼ੀ	**ਪੰਜਾਬੀ ਸਭਿਆਚਾਰ ਬਾਰੇ,** ਵਾਰਿਸ ਸ਼ਾਹ ਫਾਊਂਡੇਸ਼ਨ, ਅੰਮ੍ਰਿਤਸਰ, 1999
5. ਟੀ. ਆਰ. ਵਿਨੋਦ	**ਸੰਸਕ੍ਰਿਤੀ : ਸਿਧਾਂਤ ਅਤੇ ਵਿਹਾਰ**, ਲੋਕਗੀਤ ਪ੍ਰਕਾਸ਼ਨ, ਚੰਡੀਗੜ੍ਹ, 2004
6. ਤੇਜਵੰਤ ਸਿੰਘ ਗਿੱਲ	**ਪੰਜਾਬੀ ਸਭਿਆਚਾਰ : ਪਰੰਪਰਾ ਅਤੇ ਪ੍ਰਤਿਮਾਨ,** ਸਾਹਿਤ ਕਲਾ ਪ੍ਰਕਾਸ਼ਨ, ਲੁਧਿਆਣਾ, 2002
7. ਧਨਵੰਤ ਕੌਰ (ਸੰਪਾ.)	**ਪੰਜਾਬੀਅਤ : ਸੰਕਲਪ ਅਤੇ ਸਰੂਪ,** ਪੰਜਾਬੀ ਯੂਨੀਵਰਸਿਟੀ, ਪਟਿਆਲਾ

Syllabus of Under Graduate Course (Panjabi)

Session: 2023-24	
Part A - Introduction	
Subject	Panjabi
Semester	IVth
Name of the Course	Bachelor of Arts
Course Code	B23-PNB-401
Name of the Paper	ਪੰਜਾਬੀ ਨਾਟਕ, ਇਕਾਂਗੀ ਅਤੇ ਵਿਹਾਰਕ ਪੰਜਾਬੀ Panjabi Natak, Ikangi Ate Viharak Punjabi
Course Type: (CC/MCC/MDC/CC-M/DSEC/VOC/DSE/PC/AEC/VAC)	CC-4 MCC-6
Level of the course (As per Annexure-I	400-499
Pre-requisite for the course (if any)	----------
Course Learning Outcomes(CLO):	After completing this course, the learner will be able to: CLO-401.1 ਵਿਦਿਆਰਥੀਆਂ ਨੂੰ ਪੰਜਾਬੀ ਨਾਟਕ ਅਤੇ ਇਕਾਂਗੀ ਦੇ ਵਿਧਾਗਤ ਪ੍ਰਤੀਮਾਨਾਂ ਬਾਰੇ ਜਾਣਕਾਰੀ ਪ੍ਰਾਪਤ ਹੋਵੇਗੀ। CLO-401.2 ਵਿਦਿਆਰਥੀਆਂ ਵਿੱਚ ਪੰਜਾਬੀ ਨਾਟਕ ਅਤੇ ਇਕਾਂਗੀ ਦੇ ਇਤਿਹਾਸ, ਪ੍ਰਮੁੱਖ ਝੁਕਾਵਾਂ, ਪ੍ਰਵਿਰਤੀਆਂ ਅਤੇ ਵਿਸ਼ੇਸ਼ ਨਾਟਕਕਾਰਾਂ ਦੇ ਜੀਵਨ ਅਤੇ ਸਿਰਜਣ ਪ੍ਰਕ੍ਰਿਆ ਬਾਰੇ ਜਾਣਕਾਰੀ ਪ੍ਰਾਪਤ ਹੋਵੇਗੀ। CLO-401.3 ਵਿਸ਼ੇਸ਼ ਨਾਟਕ ਅਤੇ ਇਕਾਂਗੀਆਂ ਦੀ ਪੜ੍ਹਤ ਦੁਆਰਾ ਨਾਟਕ ਅਧਿਐਨ ਦੀ ਸੂਝ ਅਤੇ ਸਮਝ ਪੈਦਾ ਹੋਵੇਗੀ। CLO-401.4 ਵਿਹਾਰਕ ਪੰਜਾਬੀ ਦੀ ਪੜ੍ਹਾਈ ਰਾਹੀਂ ਪੰਜਾਬੀ ਭਾਸ਼ਾ ਦੀ ਸੰਰਚਨਾ ਅਤੇ ਵਰਤੋਂ ਵਿਹਾਰ ਬਾਰੇ ਸਮਝ ਅਤੇ ਮੁਹਾਰਤ ਪੈਦਾ ਹੋਵੇਗੀ।

Credits	Theory + Tutorial	Practical	Total
	3+1	----------	4
Contact Hours	60	----------	60
Max. Marks : 100 Internal Assessment Marks : 30 End Term Exam Marks : 70		Time : 3 Hrs.	

Part B- Contents of The Course

Instruction for Paper Setter

1. ਪਹਿਲਾ ਪ੍ਰਸ਼ਨ ਲਾਜ਼ਮੀ ਹੈ। ਇਹ ਪ੍ਰਸ਼ਨ 14 ਨੰਬਰ ਦਾ ਹੋਵੇਗਾ। ਇਸ ਵਿੱਚ ਸਮੁੱਚੇ ਸਿਲੇਬਸ ਵਿੱਚੋਂ ਕੁੱਲ ਚਾਰ ਸੁਆਲ ਪੁੱਛੇ ਜਾਣਗੇ। ਵਿਦਿਆਰਥੀ ਲਈ ਇਹ ਸਾਰੇ ਸੁਆਲ ਕਰਨੇ ਲਾਜ਼ਮੀ ਹਨ। ਹਰ ਸੁਆਲ ਸਾਢੇ ਤਿੰਨ ਨੰਬਰ ਦਾ ਹੋਵੇਗਾ।

2. ਸਮੁੱਚਾ ਸਿਲੇਬਸ ਕੁੱਲ ਚਾਰ ਯੂਨਿਟਾਂ ਵਿੱਚ ਵੰਡਿਆ ਗਿਆ ਹੈ। ਹਰ ਯੂਨਿਟ 14 ਨੰਬਰਾਂ ਦਾ ਹੈ।
3. ਯੂਨਿਟ ਪਹਿਲਾ ਵਿੱਚ ਤਿੰਨ ਸੁਆਲ ਪੰਜਾਬੀ ਨਾਟਕ ਅਤੇ ਇਕਾਂਗੀ ਦੇ ਸਿਧਾਂਤਕ ਅਤੇ ਇਤਿਹਾਸਕ ਪਰਿਪੇਖ ਬਾਰੇ ਪੁੱਛੇ ਜਾਣਗੇ। ਵਿਦਿਆਰਥੀ ਨੇ ਇਹਨਾਂ ਵਿੱਚੋਂ ਕੋਈ ਦੋ ਸੁਆਲ ਕਰਨੇ ਹਨ। ਹਰ ਪ੍ਰਸ਼ਨ ਸੱਤ-ਸੱਤ ਨੰਬਰ ਦਾ ਹੋਵੇਗਾ।
4. ਯੂਨਿਟ ਦੂਜਾ ਵਿੱਚ ਸਿਲੇਬਸ ਵਿੱਚ ਲੱਗੇ ਨਾਟਕ ਦੇ ਸਾਰ, ਵਿਸ਼ੇ ਵਸਤੂ, ਕਲਾ ਪੱਖ, ਆਲੋਚਨਾਤਮਕ ਅਧਿਐਨ, ਪਾਤਰ ਵਿਧਾਨ, ਰੰਗਮੰਚੀ ਸਾਰਥਕਤਾ ਅਤੇ ਲੇਖਕ ਦੇ ਜੀਵਨ ਅਤੇ ਸਾਹਿਤਕ ਯੋਗਦਾਨ ਆਦਿ ਬਾਰੇ ਤਿੰਨ ਸੁਆਲ ਪੁੱਛੇ ਜਾਣਗੇ। ਵਿਦਿਆਰਥੀ ਨੇ ਇਹਨਾਂ ਵਿੱਚੋਂ ਕੋਈ ਦੋ ਸੁਆਲ ਕਰਨੇ ਹਨ। ਹਰ ਪ੍ਰਸ਼ਨ ਸੱਤ-ਸੱਤ ਨੰਬਰ ਦਾ ਹੋਵੇਗਾ।
5. ਯੂਨਿਟ ਤੀਜਾ ਵਿੱਚ ਸਿਲੇਬਸ ਵਿੱਚ ਲੱਗੇ ਇਕਾਂਗੀ ਸੰਗ੍ਰਹਿ ਵਿਚਲੀਆਂ ਇਕਾਂਗੀਆਂ ਦੇ ਸਾਰ, ਵਿਸ਼ੇ ਵਸਤੂ, ਕਲਾ ਪੱਖ, ਆਲੋਚਨਾਤਮਕ ਅਧਿਐਨ, ਪਾਤਰ ਵਿਧਾਨ, ਰੰਗਮੰਚੀ ਸਾਰਥਕਤਾ ਅਤੇ ਇਕਾਂਗੀਕਾਰ ਦੇ ਜੀਵਨ ਅਤੇ ਸਾਹਿਤਕ ਯੋਗਦਾਨ ਆਦਿ ਬਾਰੇ ਤਿੰਨ ਸੁਆਲ ਪੁੱਛੇ ਜਾਣਗੇ। ਵਿਦਿਆਰਥੀ ਨੇ ਇਹਨਾਂ ਵਿੱਚੋਂ ਕੋਈ ਦੋ ਸੁਆਲ ਕਰਨੇ ਹਨ। ਹਰ ਪ੍ਰਸ਼ਨ ਸੱਤ-ਸੱਤ ਨੰਬਰ ਦਾ ਹੋਵੇਗਾ।
6. ਯੂਨਿਟ ਚੌਥਾ ਦੇ ਚਾਰ ਉਪ-ਭਾਗ ਹਨ। ਹਰ ਉਪ-ਭਾਗ ਦੇ $3\frac{1}{2}$ ਨੰਬਰ ਹਨ। ਉਪ-ਭਾਗ ਪਹਿਲਾ, ਦੂਜਾ ਅਤੇ ਤੀਜਾ ਵਿੱਚੋਂ ਦੋ-ਦੋ ਸੁਆਲ ਪੁੱਛੇ ਜਾਣਗੇ। ਜਿਹਨਾਂ ਵਿੱਚੋਂ ਵਿਦਿਆਰਥੀ ਨੇ ਇੱਕ ਸੁਆਲ ਕਰਨਾ ਹੈ। ਹਰ ਸੁਆਲ $3\frac{1}{2}$ ਨੰਬਰ ਦਾ ਹੋਵੇਗਾ। ਉਪ ਭਾਗ ਚੌਥਾ ਵਿੱਚ ਸਾਹਿਤਕ ਸ਼ਬਦਾਵਲੀ (ਦਿੱਤੇ ਗਏ ਦਸ ਸ਼ਬਦਾਂ ਵਿੱਚੋਂ ਕੋਈ ਸੱਤ ਸ਼ਬਦ ਕਰਨੇ ਹਨ) ਬਾਰੇ ਪ੍ਰਸ਼ਨ ਪੁੱਛੇ ਜਾਣਗੇ। ਹਰ ਸ਼ਬਦ ਦਾ ਅੱਧਾ ਨੰਬਰ ਹੋਏਗਾ।

Unit	Topics	Contact Hours
I	1. ਨਾਟਕ ਅਤੇ ਇਕਾਂਗੀ : ਸਿਧਾਂਤਕ ਇਤਿਹਾਸਕ ਪਰਿਪੇਖ ਅੰਕ 14 1.1 ਨਾਟਕ ਤੇ ਇਕਾਂਗੀ : ਪਰਿਭਾਸ਼ਾ, ਤੱਤ ਅਤੇ ਵਿਸ਼ੇਸ਼ਤਾਵਾਂ 1.2 ਨਾਟਕ ਅਤੇ ਇਕਾਂਗੀ : ਵਿਧਾਗਤ ਵਖਰੇਵਾਂ 1.3 ਪੰਜਾਬੀ ਨਾਟਕ : ਨਿਕਾਸ, ਵਿਕਾਸ ਅਤੇ ਪ੍ਰਮੁੱਖ ਪ੍ਰਵਿਰਤੀਆਂ 1.4 ਪੰਜਾਬੀ ਇਕਾਂਗੀ : ਨਿਕਾਸ, ਵਿਕਾਸ ਅਤੇ ਪ੍ਰਵਿਰਤੀਆਂ	
II	2. ***ਬਾਬਾ ਬੰਤੂ***, ਚਰਨ ਦਾਸ ਸਿੱਧੂ, ਨੈਸ਼ਨਲ ਬੁੱਕ ਸ਼ਾਪ, ਦਿੱਲੀ, 2013 ਅੰਕ 14 2.1 ਨਾਟਕ ਦਾ ਵਿਸ਼ਾ ਵਸਤੂ ਅਤੇ ਸਰੋਕਾਰ 2.2 ਆਲੋਚਨਾਤਕ ਅਧਿਐਨ 2.3 ਪਾਤਰ ਵਿਧਾਨ 2.4 ਨਾਟਕੀ ਜੁਗਤਾਂ/ ਰੰਗਮੰਚੀ ਸਾਰਥਕਤਾ	
III	3. ***ਇਕਾਂਗੀ ਬਹੁ-ਰੰਗੀ*** (ਚੋਣਵਾਂ ਇਕਾਂਗੀ ਸੰਗ੍ਰਿਹ) ਸੰਪਾਦਕ ਡਾ. ਹਰਸਿਮਰਨ ਸਿੰਘ ਰੰਧਾਵਾ ਅਤੇ ਡਾ. ਬਲਵਿੰਦਰ ਸਿੰਘ, ਪਬਲੀਕੇਸ਼ਨ ਬਿਊਰੋ, ਕੁਰੂਕਸ਼ੇਤਰ ਯੂਨੀਵਰਸਿਟੀ, ਕੁਰੂਕਸ਼ੇਤਰ। 3.1 ਇਕਾਂਗੀ ਦਾ ਸਾਰ, ਵਿਸ਼ਾ ਵਸਤੂ ਅਤੇ ਸਮੱਸਿਆ 3.2 ਪਾਤਰ ਉਸਾਰੀ 3.3 ਰੰਗਮੰਚੀ ਸਾਰਥਕਤਾ 3.4 ਸਾਹਿਤਕ ਆਲੋਚਨਾ 3.5 ਇਕਾਂਗੀਕਾਰਾਂ ਦਾ ਜੀਵਨ ਪ੍ਰੀਚੈ ਅਤੇ ਸਾਹਿਤਕ ਯੋਗਦਾਨ ਅੰਕ 14	
IV	4. ਵਿਹਾਰਕ ਪੰਜਾਬੀ ਅੰਕ 14 4.1 ਕਾਰਕ : ਪਰਿਭਾਸ਼ਾ ਅਤੇ ਕਿਸਮਾਂ 4.2 ਯੋਜਕ : ਪਰਿਭਾਸ਼ਾ, ਕਿਸਮਾਂ ਅਤੇ ਵਰਤੋਂ	

	4.4 ਅਲੰਕਾਰ : ਪਰਿਭਾਸ਼ਾ ਅਤੇ ਕਿਸਮਾਂ 4.5 ਸਾਹਿਤਕ ਸ਼ਬਦਾਵਲੀ (100 ਸ਼ਬਦ ਨਾਲ ਨੱਥੀ ਹਨ)	

Suggested Evaluation Method

Internal Assessment: 30 Marks ➢ **Theory** • Class Participation: 5 Marks • Seminar/presentation/assignment/quiz/class test etc.: 5+5=10 Marks • Mid-Term Exam: 15 Marks	**End Term Examination:** 70 Marks

Part C- Learning Resources

ਸਹਾਇਕ ਪੁਸਤਕਾਂ :

1. ਅਮਰਜੀਤ ਸਿੰਘ, **ਪੰਜ ਨਾਟਕਕਾਰ,** ਨਾਨਕ ਸਿੰਘ ਪੁਸਤਕਮਾਲਾ, ਅੰਮ੍ਰਿਤਸਰ
2. ਸ. ਸ. ਖਹਿਰਾ, **ਪੰਜਾਬੀ ਭਾਸ਼ਾ : ਵਿਆਕਰਣ ਅਤੇ ਬਣਤਰ,** ਪੰਜਾਬੀ ਯੂਨੀਵਰਸਿਟੀ, ਪਟਿਆਲਾ
3. ਸਤੀਸ਼ ਕੁਮਾਰ ਵਰਮਾ, **ਪੰਜਾਬੀ ਨਾਟਕ ਦਾ ਇਤਿਹਾਸ,** ਪੰਜਾਬੀ ਅਕਾਦਮੀ, ਦਿੱਲੀ
4. ਹਰਕੀਰਤ ਸਿੰਘ, **ਪੰਜਾਬੀ ਸ਼ਬਦ ਰੂਪ ਅਤੇ ਸ਼ਬਦ ਜੋੜ ਕੋਸ਼**, ਪੰਜਾਬੀ ਯੂਨੀਵਰਸਿਟੀ, ਪਟਿਆਲਾ
5. ਹਰਬੰਸ ਸਿੰਘ ਧੀਮਾਨ, **ਪੰਜਾਬੀ ਭਾਸ਼ਾ ਅਤੇ ਵਿਆਕਰਣ,** ਗਗਨ ਪ੍ਰਕਾਸ਼ਨ, ਰਾਜਪੁਰਾ, ਪਟਿਆਲਾ, 2006
6. ਕਮਲੇਸ਼ ਉੱਪਲ, **ਪੰਜਾਬੀ ਨਾਟਕ ਅਤੇ ਰੰਗਮੰਚ,** ਪੰਜਾਬੀ ਯੂਨੀਵਰਸਿਟੀ, ਪਟਿਆਲਾ, 2004
7. ਗੁਰਦਿਆਲ ਸਿੰਘ ਫੁੱਲ, **ਪੰਜਾਬੀ ਨਾਟਕ : ਸਰੂਪ, ਸਿਧਾਂਤ ਤੇ ਵਿਕਾਸ,** ਪੰਜਾਬੀ ਯੂਨੀਵਰਸਿਟੀ, ਪਟਿਆਲਾ, 2011
8. ਗੁਰਦਿਆਲ ਸਿੰਘ ਫੁੱਲ, **ਪੰਜਾਬੀ ਇਕਾਂਗੀ : ਸਰੂਪ ਸਿਧਾਂਤ ਤੇ ਵਿਕਾਸ,** ਪੰਜਾਬੀ ਯੂਨੀਵਰਸਿਟੀ, ਪਟਿਆਲਾ, 1987
9. ਨਵਨਿੰਦਰਾ ਬਹਿਲ, **ਨਾਟਕੀ ਸਾਹਿਤ,** ਪੰਜਾਬੀ ਯੂਨੀਵਰਸਿਟੀ, ਪਟਿਆਲਾ, 2001
10. ਪਾਲੀ ਭੁਪਿੰਦਰ ਸਿੰਘ, **ਨਾਟਕ ਅਤੇ ਨਾਟ-ਚਿੰਤਨ,** ਚੇਤਨਾ ਪ੍ਰਕਾਸ਼ਨ, ਲੁਧਿਆਣਾ, 2009
11. ਰਤਨ ਸਿੰਘ ਜੱਗੀ (ਸੰਪਾ.), **ਖੋਜ ਪਤ੍ਰਿਕਾ (ਨਾਟਕ ਵਿਸ਼ੇਸ਼ ਅੰਕ) ਅੰਕ 25,** ਪੰਜਾਬੀ ਯੂਨੀਵਰਸਿਟੀ, ਪਟਿਆਲਾ, 2000

Syllabus of Under Graduate Course (Panjabi)

Session: 2023-24	
Part A - Introduction	
Subject	Panjabi
Semester	IVth
Name of the Course	Bachelor of Arts
Course Code	B23-PNB-402
Name of the Paper	ਭਾਰਤੀ ਸਾਹਿਤ Bharti Sahit
Course Type: (CC/MCC/MDC/CC-M/DSEC/VOC/DSE/PC/AEC/VAC)	MCC-7
Level of the course (As per Annexure-I	400-499
Pre-requisite for the course (if any)	----------
Course Learning Outcomes(CLO):	After completing this course, the learner will be able to: CLO-402.1 ਵਿਦਿਆਰਥੀ ਅਨੁਵਾਦ ਅਤੇ ਸਾਹਿਤਕ ਅਨੁਵਾਦ ਤੋਂ ਜਾਣੂ ਹੋਣਗੇ। CLO-402.2 ਵਿਦਿਆਰਥੀਆਂ ਨੂੰ ਪੰਜਾਬੀ ਵਿੱਚ ਅਨੁਵਾਦਿਤ ਭਾਰਤੀ ਸਾਹਿਤ ਦੇ ਇਤਿਹਾਸ, ਇਸਦੇ ਝੁਕਾਵਾਂ ਅਤੇ ਪ੍ਰਮੁੱਖ ਸਾਹਿਤਕਾਰਾਂ ਬਾਰੇ ਜਾਣਕਾਰੀ ਪ੍ਰਾਪਤ ਹੋਵੇਗੀ। CLO-402.3 ਪੰਜਾਬੀ ਵਿੱਚ ਅਨੁਵਾਦਿਤ ਭਾਰਤੀ ਸਾਹਿਤ ਦੇ ਮੁੱਖ ਸਰੋਕਾਰਾਂ ਦਾ ਗਿਆਨ ਪ੍ਰਾਪਤ ਹੋਵੇਗਾ। CLO-402.4 ਪੰਜਾਬੀ ਵਿੱਚ ਅਨੁਵਾਦਿਤ ਭਾਰਤੀ ਸਾਹਿਤ ਦੀਆਂ ਵਿਸ਼ੇਸ਼ ਪੁਸਤਕਾਂ ਦੀ ਪੜ੍ਹਤ ਰਾਹੀਂ ਭਾਰਤੀ ਸਾਹਿਤ ਬਾਰੇ ਵਿਹਾਰਕ ਸੂਝ ਪੈਦਾ ਹੋਵੇਗੀ।

Credits	Theory + Tutorial	Practical	Total
	3+1	----------	4
Contact Hours	60	----------	60

Max. Marks : 100 Internal Assessment Marks : 30 End Term Exam Marks : 70	Time : 3 Hrs.

Part B- Contents of The Course

Instruction for Paper Setter

1. ਪਹਿਲਾ ਪ੍ਰਸ਼ਨ ਲਾਜ਼ਮੀ ਹੈ। ਇਹ ਪ੍ਰਸ਼ਨ 14 ਨੰਬਰ ਦਾ ਹੋਵੇਗਾ। ਇਸ ਵਿੱਚ ਸਮੁੱਚੇ ਸਿਲੇਬਸ ਵਿੱਚੋਂ ਕੁੱਲ ਚਾਰ ਸੁਆਲ ਪੁੱਛੇ ਜਾਣਗੇ। ਵਿਦਿਆਰਥੀ ਲਈ ਇਹ ਸਾਰੇ ਸੁਆਲ ਕਰਨੇ ਲਾਜ਼ਮੀ ਹਨ। ਹਰ ਸੁਆਲ ਸਾਢੇ ਤਿੰਨ ਨੰਬਰ ਦਾ ਹੋਵੇਗਾ।
2. ਸਮੁੱਚਾ ਸਿਲੇਬਸ ਕੁੱਲ ਚਾਰ ਯੂਨਿਟਾਂ ਵਿੱਚ ਵੰਡਿਆ ਗਿਆ ਹੈ। ਹਰ ਯੂਨਿਟ 14 ਨੰਬਰਾਂ ਦਾ ਹੈ।
3. ਯੂਨਿਟ ਪਹਿਲਾ ਤਿੰਨ ਸੁਆਲ ਅਨੁਵਾਦ ਦੇ ਸਿਧਾਂਤਕ ਪਰਿਪੇਖ ਬਾਰੇ ਪੁੱਛੇ ਜਾਣਗੇ। ਵਿਦਿਆਰਥੀ ਨੇ ਇਹਨਾਂ ਵਿੱਚੋਂ ਕੋਈ

ਦੋ ਸੁਆਲ ਕਰਨੇ ਹਨ। ਹਰ ਪ੍ਰਸ਼ਨ ਸੱਤ-ਸੱਤ ਨੰਬਰ ਦਾ ਹੋਵੇਗਾ।

4. ਯੂਨਿਟ ਦੂਜਾ ਵਿੱਚ ਤਿੰਨ ਸੁਆਲ ਭਾਰਤੀ ਸਾਹਿਤ ਦੇ ਪ੍ਰਮੁੱਖ ਰੁਝਾਨਾਂ ਅਤੇ ਪੰਜਾਬੀ ਵਿੱਚ ਭਾਰਤੀ ਸਾਹਿਤ ਦੇ ਅਨੁਵਾਦ ਦੀ ਪਰੰਪਰਾ ਦੇ ਇਤਿਹਾਸਕ ਪਰਿਪੇਖ ਬਾਰੇ ਪੁੱਛੇ ਜਾਣਗੇ। ਇਹਨਾਂ ਵਿੱਚੋਂ ਵਿਦਿਆਰਥੀ ਨੇ ਕੋਈ ਦੋ ਸੁਆਲ ਕਰਨੇ ਹਨ। ਹਰ ਸੁਆਲ ਸੱਤ ਨੰਬਰ ਦਾ ਹੈ।

5. ਯੂਨਿਟ ਤੀਜਾ ਵਿੱਚ ਤਿੰਨ ਸੁਆਲ ਸਿਲੇਬਸ ਵਿੱਚ ਲੱਗੀਆਂ ਕਹਾਣੀਆਂ ਦੇ ਵਿਸ਼ੇ, ਸਾਰ, ਆਲੋਚਨਾਤਮਕ ਅਧਿਐਨ, ਪਾਤਰ ਵਿਧਾਨ ਅਤੇ ਕਹਾਣੀਆਂ ਦੀਆਂ ਬਿਰਤਾਂਤਕ ਜੁਗਤਾਂ ਆਦਿ ਬਾਰੇ ਪੁੱਛੇ ਜਾਣਗੇ। ਇਹਨਾਂ ਵਿੱਚੋਂ ਵਿਦਿਆਰਥੀ ਨੇ ਕੋਈ ਦੋ ਸੁਆਲ ਕਰਨੇ ਹਨ। ਹਰ ਸੁਆਲ ਸੱਤ-ਸੱਤ ਨੰਬਰ ਦਾ ਹੈ।

6. ਯੂਨਿਟ ਚੌਥਾ ਵਿੱਚ ਤਿੰਨ ਸੁਆਲ ਸਿਲੇਬਸ ਵਿੱਚ ਲੱਗੇ ਨਾਵਲ ਦੇ ਵਿਸ਼ੇ, ਸਾਰ, ਆਲੋਚਨਾਤਮਕ ਅਧਿਐਨ, ਪਾਤਰ ਵਿਧਾਨ ਅਤੇ ਬਿਰਤਾਂਤਕ ਜੁਗਤਾਂ ਆਦਿ ਬਾਰੇ ਪੁੱਛੇ ਜਾਣਗੇ। ਇਹਨਾਂ ਵਿੱਚੋਂ ਵਿਦਿਆਰਥੀ ਨੇ ਕੋਈ ਦੋ ਸੁਆਲ ਕਰਨੇ ਹਨ। ਹਰ ਸੁਆਲ ਸੱਤ-ਸੱਤ ਨੰਬਰ ਦਾ ਹੈ।

Unit	Topics	Contact Hours
I	1. ਅਨੁਵਾਦ : ਸਿਧਾਂਤਕ ਪਰਿਪੇਖ ਅੰਕ : 14 1.1 ਅਨੁਵਾਦ : ਪਰਿਭਾਸ਼ਾ ਅਤੇ ਪ੍ਰਕ੍ਰਿਆ 1.2 ਅਨੁਵਾਦਿਤ ਸਾਹਿਤ ਦੀ ਮਹੱਤਤਾ 1.3 ਸਾਹਿਤਕ ਅਨੁਵਾਦ ਦੀਆਂ ਸਮੱਸਿਆਵਾਂ 1.4 ਸਾਹਿਤਕ ਅਨੁਵਾਦਕ ਲਈ ਜ਼ਰੂਰੀ ਗੁਣ	
II	2. ਭਾਰਤੀ ਸਾਹਿਤ ਅੰਕ : 14 2.1 ਭਾਰਤੀ ਸਾਹਿਤ ਦੇ ਪ੍ਰਮੁੱਖ ਰੁਝਾਨ 2.3 ਪੰਜਾਬੀ ਵਿੱਚ ਭਾਰਤੀ ਸਾਹਿਤ ਦੇ ਅਨੁਵਾਦ ਦੀ ਪਰੰਪਰਾ	
III	3. ਬਲਬੀਰ ਮਾਧੋਪੁਰੀ, (ਅਨੁ. ਅਤੇ ਸੰਪਾ.), ***ਮਿੱਟੀ ਬੋਲਦੀ ਹੈ*** ਅੰਕ : 14 (ਪਹਿਲੀਆਂ ਦਸ ਕਹਾਣੀਆਂ), ਨਵਯੁਗ ਪਬਲਿਸ਼ਰ÷, ਦਿੱਲੀ, 2014 3.1 ਵਿਸ਼ੈਗਤ ਅਧਿਐਨ 3.2 ਕਹਾਣੀ ਕਲਾ 3.3 ਬਿਰਤਾਂਤਕ ਜੁਗਤਾਂ 3.4 ਤੁਲਨਾਤਮਕ ਅਧਿਐਨ	
IV	4. ਲਵਲੀਨ ਜੌਲੀ (ਅਨੁ.), ***ਸੰਸਕਾਰ*** (ਮੂਲ ਲੇਖਕ ਯੂ. ਆਰ ਅਨੰਤਮੂਰਤੀ), ਸਾਹਿਤ ਅਕਾਦਮੀ, ਦਿੱਲੀ, 1997 ਅੰਕ : 14 4.1 ਵਿਸ਼ੇਗਤ ਸਰੋਕਾਰ 4.2 ਗਲਪੀ ਸੰਗਠਨ 4.3 ਕਥਾਨਕ ਅਤੇ ਪਾਤਰ ਚਿੱਤਰਣ 4.4 ਬਿਰਤਾਂਤਕ ਜੁਗਤਾਂ 4.5 ਸਮਾਜਿਕ-ਸੰਸਕ੍ਰਿਤਕ ਪਰਿਪੇਖ	

Suggested Evaluation Method

Internal Assessment: 30 Marks ➢ **Theory** • Class Participation: 5 Marks	**End Term Examination:** 70 Marks

• Seminar/presentation/assignment/quiz/class test etc.: 5+5=10 Marks • Mid-Term Exam: 15 Marks	

Part C- Learning Resources

ਸਹਾਇਕ ਪੁਸਤਕਾਂ :

1. ਹਰਚਰਨ ਕੌਰ ਅਤੇ ਰਵੇਲ ਸਿੰਘ (ਸੰਪਾ.), ਪੰਜਾਬੀ ਅਤੇ ਭਾਰਤੀ ਸਾਹਿਤ : ਤੁਲਨਾ ਤੋਂ ਸੰਵਾਦ ਤੱਕ, ਪੰਜਾਬੀ ਅਕਾਡਮੀ, ਦਿੱਲੀ, 2002
2. ਸਤਿੰਦਰ ਸਿੰਘ (ਸੰਪਾ.), ਤੁਲਨਾਤਮਕ ਭਾਰਤੀ ਸਾਹਿਤ, ਗੁਰੂ ਨਾਨਕ ਦੇਵ ਯੂਨੀਵਰਸਿਟੀ, ਅੰਮ੍ਰਿਤਸਰ, 1990

Syllabus of Under Graduate Course (Panjabi)

Session: 2023-24	
Part A - Introduction	
Subject	Panjabi
Semester	IVth
Name of the Course	Bachelor of Arts
Course Code	B23-PNB-403
Name of the Paper	ਪੰਜਾਬੀ ਨਾਰੀ ਸਾਹਿਤ Panjabi Nari Sahit
Course Type: (CC/MCC/MDC/CC-M/DSEC/VOC/DSE/PC/AEC/VAC)	DSE-1
Level of the course (As per Annexure-I	400-499
Pre-requisite for the course (if any)	----------
Course Learning Outcomes(CLO):	After completing this course, the learner will be able to: CLO-403.1 ਵਿਦਿਆਰਥੀ ਨਾਰੀ ਅਤੇ ਨਾਰੀ ਚੇਤਨਾ ਨਾਲ ਸਬੰਧਤ ਵਿਭਿੰਨ ਸੰਕਲਪਾਂ ਤੋਂ ਜਾਣੂ ਹੋਣਗੇ। CLO-403.2 ਵਿਦਿਆਰਥੀਆਂ ਦਾ ਨਾਰੀ ਪੰਜਾਬੀ ਸਾਹਿਤ ਦੇ ਇਤਿਹਾਸ, ਇਸਦੇ ਝੁਕਾਵਾਂ ਅਤੇ ਪ੍ਰਮੁੱਖ ਸਾਹਿਤਕਾਰਾਂ ਨਾਲ ਪਰਿਚੈ ਹੋਵੇਗਾ। CLO-403.3 ਨਾਰੀ ਪੰਜਾਬੀ ਸਾਹਿਤ ਦੇ ਮੁੱਖ ਸਰੋਕਾਰਾਂ ਨਾਲ ਜਾਣ-ਪਛਾਣ ਹੋਵੇਗੀ। CLO-403.4 ਨਾਰੀ ਪੰਜਾਬੀ ਸਾਹਿਤ ਦੇ ਜ਼ਰੀਏ ਪੰਜਾਬੀ ਔਰਤ ਦੀ ਅੰਤਰਮਨ ਸੰਵੇਦਨਾ ਨੂੰ ਸਮਝਣ ਦੀ ਸੂਝ ਪੈਦਾ ਹੋਵੇਗੀ।

Credits	Theory + Tutorial	Practical	Total
	3+1	----------	4
Contact Hours	60	----------	60
Max. Marks : 100 Internal Assessment Marks : 30 End Term Exam Marks : 70		Time : 3 Hrs.	

Part B- Contents of The Course

Instruction for Paper Setter

1. ਪਹਿਲਾ ਪ੍ਰਸ਼ਨ ਲਾਜ਼ਮੀ ਹੈ। ਇਹ ਪ੍ਰਸ਼ਨ 14 ਨੰਬਰ ਦਾ ਹੋਵੇਗਾ। ਇਸ ਵਿੱਚ ਸਮੁੱਚੇ ਸਿਲੇਬਸ ਵਿੱਚੋਂ ਕੁੱਲ ਚਾਰ ਸੁਆਲ ਪੁੱਛੇ ਜਾਣਗੇ। ਵਿਦਿਆਰਥੀ ਲਈ ਇਹ ਸਾਰੇ ਸੁਆਲ ਕਰਨੇ ਲਾਜ਼ਮੀ ਹਨ। ਹਰ ਸੁਆਲ ਸਾਢੇ ਤਿੰਨ ਨੰਬਰ ਦਾ ਹੋਵੇਗਾ।
2. ਸਮੁੱਚਾ ਸਿਲੇਬਸ ਕੁੱਲ ਚਾਰ ਯੂਨਿਟਾਂ ਵਿੱਚ ਵੰਡਿਆ ਗਿਆ ਹੈ। ਹਰ ਯੂਨਿਟ 14 ਨੰਬਰਾਂ ਦਾ ਹੈ।
3. ਯੂਨਿਟ ਪਹਿਲਾ ਵਿੱਚ ਨਾਰੀਵਾਦ ਦੇ ਸਿਧਾਂਤਕ ਪਰਿਪੇਖ ਬਾਰੇ ਤਿੰਨ ਸੁਆਲ ਪੁੱਛੇ ਜਾਣਗੇ। ਵਿਦਿਆਰਥੀ ਨੇ ਇਹਨਾਂ ਵਿੱਚੋਂ ਕੋਈ ਦੋ ਸੁਆਲ ਕਰਨੇ ਹਨ। ਹਰ ਪ੍ਰਸ਼ਨ ਸੱਤ-ਸੱਤ ਨੰਬਰ ਦਾ ਹੋਵੇਗਾ।

4. ਯੂਨਿਟ ਦੂਜਾ ਵਿੱਚ ਪੰਜਾਬੀ ਨਾਰੀ ਸਾਹਿਤ ਦੇ ਇਤਿਹਾਸਕ ਪਰਿਪੇਖ ਬਾਰੇ ਤਿੰਨ ਸੁਆਲ ਪੁੱਛੇ ਜਾਣਗੇ। ਵਿਦਿਆਰਥੀ ਨੇ ਇਹਨਾਂ ਵਿੱਚੋਂ ਕੋਈ ਦੋ ਸੁਆਲ ਕਰਨੇ ਹਨ। ਹਰ ਪ੍ਰਸ਼ਨ ਸੱਤ-ਸੱਤ ਨੰਬਰ ਦਾ ਹੋਵੇਗਾ।

5. ਯੂਨਿਟ ਤੀਜਾ ਵਿੱਚ ਸਿਲੇਬਸ ਵਿੱਚ ਲੱਗੇ ਕਾਵਿ ਸੰਗ੍ਰਹਿ ਦੇ ਵਿਸ਼ੇ ਵਸਤੂ, ਕਲਾ ਪੱਖ, ਆਲੋਚਨਾਤਮਕ ਅਧਿਐਨ, ਨਾਰੀ ਸੰਵੇਦਨਾ ਅਤੇ ਲੇਖਕ ਦੇ ਜੀਵਨ ਅਤੇ ਸਾਹਿਤਕ ਯੋਗਦਾਨ ਆਦਿ ਬਾਰੇ ਤਿੰਨ ਸੁਆਲ ਪੁੱਛੇ ਜਾਣਗੇ। ਵਿਦਿਆਰਥੀ ਨੇ ਇਹਨਾਂ ਵਿੱਚੋਂ ਕੋਈ ਦੋ ਸੁਆਲ ਕਰਨੇ ਹਨ। ਹਰ ਪ੍ਰਸ਼ਨ ਪੰਜ-ਪੰਜ ਨੰਬਰ ਦਾ ਹੋਵੇਗਾ। ਇੱਕ ਸੁਆਲ ਕਵਿਤਾ ਦੀ ਪ੍ਰਸੰਗ ਸਾਹਿਤ ਵਿਆਖਿਆ ਦਾ ਹੋਵੇਗਾ। ਵਿਦਿਆਰਥੀਆਂ ਨੂੰ ਦੋ ਕਾਵਿ ਟੁਕੜੀਆਂ ਦਿੱਤੀਆਂ ਜਾਣਗੀਆਂ ਜਿਸ ਵਿੱਚੋਂ ਵਿਦਿਆਰਥੀ ਨੇ ਕਿਸੇ ਇੱਕ ਦੀ ਪ੍ਰਸੰਗ ਸਾਹਿਤ ਵਿਆਖਿਆ ਕਰਨੀ ਹੋਵੇਗੀ। ਇਹ ਸੁਆਲ ਚਾਰ ਨੰਬਰ ਦਾ ਹੋਵੇਗਾ।

6. ਯੂਨਿਟ ਚੌਥਾ ਵਿੱਚ ਸਿਲੇਬਸ ਵਿੱਚ ਲੱਗੇ ਕਹਾਣੀ ਸੰਗ੍ਰਹਿ ਦੇ ਵਿਸ਼ੇ/ ਸਾਰ/ ਆਲੋਚਨਾਤਮਕ ਅਧਿਐਨ, ਪਾਤਰ ਵਿਧਾਨ, ਨਾਰੀ ਸੰਵੇਦਨਾ ਅਤੇ ਕਹਾਣੀਕਾਰਾ ਦੇ ਜੀਵਨ ਪ੍ਰੀਚੈ ਅਤੇ ਸਾਹਿਤਕ ਯੋਗਦਾਨ ਬਾਰੇ ਤਿੰਨ ਸੁਆਲ ਪੁੱਛੇ ਜਾਣਗੇ। ਇਹਨਾਂ ਸੁਆਲਾਂ ਵਿੱਚੋਂ ਵਿਦਿਆਰਥੀ ਨੇ ਕੋਈ ਦੋ ਸੁਆਲ ਕਰਨੇ ਹਨ। ਹਰ ਸੁਆਲ ਸੱਤ ਨੰਬਰ ਦਾ ਹੋਵੇਗਾ।

Unit	Topics	Contact Hours
I	1. ਨਾਰੀ ਵਾਦ : ਸਿਧਾਂਤਕ ਪਰਿਪੇਖ ਅੰਕ : 14 1.1 ਨਾਰੀ ਵਾਦ : ਪਰਿਭਾਸ਼ਾ ਵਿਕਾਸ ਅਤੇ ਮੰਤਵ 1.2 ਪ੍ਰਮੁੱਖ ਨਾਰੀਵਾਦੀ ਲਹਿਰਾਂ 1.3 ਨਾਰੀ ਵਾਦ ਅਤੇ ਨਾਰੀ ਮੁਕਤੀ ਮਾਡਲ 1.4 ਨਾਰੀ ਲਿਖਤ ਦਾ ਮਸਲਾ	
II	2. ਨਾਰੀ ਵਾਦ : ਇਤਿਹਾਸਕ ਪਰਿਪੇਖ ਅੰਕ : 14 2.1 ਭਾਰਤੀ ਨਾਰੀ ਅਤੇ ਨਾਰੀਵਾਦ 2.2 ਪੰਜਾਬੀ ਸਾਹਿਤ ਅਤੇ ਨਾਰੀਵਾਦ 2.3 ਪੰਜਾਬੀ ਨਾਰੀ ਕਾਵਿ : ਇਤਿਹਾਸਕ ਪਰਿਪੇਖ 2.4 ਪੰਜਾਬੀ ਨਾਰੀ ਕਹਾਣੀ : ਇਤਿਹਾਸਕ ਪਰਿਪੇਖ	
III	3. ਪਾਲ ਕੌਰ, ***ਇੰਝ ਨਾ ਮਿਲੀਂ***, ਆਰਸੀ ਪਬਲਿਸ਼ਰਜ਼, ਦਿੱਲੀ, 1999 ਅੰਕ : 14 3.1 ਨਾਰੀ ਸੰਵੇਦਨਾ 3.2 ਕਾਵਿ ਜੁਗਤਾਂ 3.3 ਵਿਹਾਰਕ ਸਮੀਖਿਆ 3.4 ਕਾਵਿ ਸਰੋਕਾਰ 3.5 ਕਵਿੱਤਰੀ ਦਾ ਜੀਵਨ ਪ੍ਰੀਚੈ ਅਤੇ ਸਾਹਿਤਕ ਯੋਗਦਾਨ	
IV	4. ਫ਼ਾਲਤੂ ਔਰਤ, ਅਜੀਤ ਕੌਰ, ਕਿਤਾਬ ਘਰ ਪ੍ਰਕਾਸ਼ਨ, ਦਿੱਲੀ ਅੰਕ : 14 4.1 ਵਿਸ਼ਾ ਵਸਤੂ 4.2 ਕਲਾਤਮਕ ਜੁਗਤਾਂ 4.3 ਨਾਰੀ ਸੰਵੇਦਨਾ 4.4 ਸਰੋਕਾਰ ਅਤੇ ਵਿਚਾਰਧਾਰਾ 4.5 ਲੇਖਿਕਾ ਦਾ ਜੀਵਨ ਪ੍ਰੀਚੈ ਅਤੇ ਸਾਹਿਤਕ ਯੋਗਦਾਨ	

Suggested Evaluation Method	
Internal Assessment: 30 Marks ➢ **Theory** • Class Participation: 5 Marks • Seminar/presentation/assignment/quiz/class test etc.: 5+5=10 Marks • Mid-Term Exam: 15 Marks	**End Term Examination:** 70 Marks

Part C- Learning Resources

1. ਅਰਵਿੰਦਰਪਾਲ ਕੌਰ, **ਨਾਰੀ ਕਾਵਿ–ਚਿੰਤਨ,** ਵਾਰਿਸ ਸ਼ਾਹ ਫ਼ਾਊਂਡੇਸ਼ਨ, ਅੰਮ੍ਰਿਤਸਰ
2. ਆਸ਼ਾ ਕੌਸ਼ਿਕ, **ਨਾਰੀ ਸ਼ਸ਼ਕਤੀਕਰਣ : ਵਿਮਰਸ਼ ਏਵਮ ਯਥਾਰਥ,** ਪੁਆਇੰਟਰ ਪਬਲਿਸ਼ਰ, ਜੈਪੁਰ, 2004
3. ਹਰਪ੍ਰੀਤ ਕੌਰ, **ਨਾਰੀਵਾਦ,** ਲੋਕਗੀਤ ਪ੍ਰਕਾਸ਼ਨ, ਚੰਡੀਗੜ੍ਹ
4. ਮਾਨਚੰਦ ਖੰਡੇਲਾ, **ਮਹਿਲਾ ਔਰ ਬਦਲਤਾ ਸਮਾਜਿਕ ਪਰਿਵੇਸ਼,** ਅਵਿਸ਼ਕਾਰ ਪਬਲਿਸ਼ਰ, ਜੈਪੁਰ, 2012
5. ਰਵਿੰਦਰ ਕੁਮਾਰ, **ਔਰਤ ਤੇ ਦਲਿਤ ਹਾਸ਼ੀਆਗਤ ਪ੍ਰਵਚਨ : ਨਵ–ਇਤਿਹਾਸਵਾਦੀ ਪਰਿਪੇਖ,** ਲੋਕਗੀਤ ਪ੍ਰਕਾਸ਼ਨ, ਚੰਡੀਗੜ੍ਹ, 2005
6. ਵਨੀਤਾ, **ਨਾਰੀਵਾਦ ਤੇ ਸਾਹਿਤ,** ਅਜੰਤਾ ਬੁੱਕਸ ਇੰਟਰਨੈਸ਼ਨਲ, ਦਿੱਲੀ, 2002

Syllabus of Under Graduate Course (Panjabi)

Session: 2023-24	
Part A - Introduction	
Subject	Panjabi
Semester	IVth
Name of the Course	Bachelor of Arts
Course Code	B23-PNB-405
Name of the Paper	ਜੰਮੂ ਕਸ਼ਮੀਰ ਦਾ ਪੰਜਾਬੀ ਸਾਹਿਤ Jammu Kashmir Da Panjabi Sahit
Course Type: (CC/MCC/MDC/CC-M/DSEC/VOC/DSE/PC/AEC/VAC)	DSE-1
Level of the course (As per Annexure-I	400-499
Pre-requisite for the course (if any)	----------
Course Learning Outcomes(CLO):	After completing this course, the learner will be able to: **CLO-405.1** ਵਿਦਿਆਰਥੀ ਜੰਮੂ ਕਸ਼ਮੀਰ ਵਿੱਚ ਰਚੇ ਜਾ ਰਹੇ ਪੰਜਾਬੀ ਸਾਹਿਤ ਦੇ ਇਤਿਹਾਸਕ ਵਿਕਾਸ ਤੋਂ ਜਾਣੂ ਹੋਣਗੇ। **CLO-405.2** ਵਿਦਿਆਰਥੀਆਂ ਦੀ ਜੰਮੂ ਕਸ਼ਮੀਰ ਦੇ ਪੰਜਾਬੀ ਸਾਹਿਤ ਦੇ ਮੁੱਖ ਸਰੋਕਾਰਾਂ ਨਾਲ ਜਾਣ-ਪਛਾਣ ਹੋਵੇਗੀ। **CLO-405.3** ਜੰਮੂ ਕਸ਼ਮੀਰ ਦੇ ਪੰਜਾਬੀ ਸਾਹਿਤਕਾਰਾਂ ਦੀਆਂ ਰਚਨਾਵਾਂ ਦੇ ਹਵਾਲੇ ਨਾਲ ਜੰਮੂ ਕਸ਼ਮੀਰ ਦੇ ਲੋਕਾਂ ਦੇ ਜਨ-ਜੀਵਨ, ਸਭਿਆਚਾਰ, ਸੋਚ ਅਤੇ ਸਮੱਸਿਆਵਾਂ ਨੂੰ ਸਮਝਣ ਦੀ ਸੂਝ ਪੈਦਾ ਹੋਵੇਗੀ। **CLO-405.4** ਵਿਦਿਆਰਥੀਆਂ ਵਿੱਚ ਖੇਤਰੀ ਸਾਹਿਤ ਨੂੰ ਪੜ੍ਹਨ, ਸਮਝਣ ਦੀ ਰੁਚੀ ਪੈਦਾ ਹੋਵੇਗੀ।

Credits	Theory + Tutorial	Practical	Total
	3+1	----------	4
Contact Hours	60	----------	60
Max. Marks : 100 Internal Assessment Marks : 30 End Term Exam Marks : 70		Time : 3 Hrs.	

Part B- Contents of The Course

Instruction for Paper Setter

1. ਪਹਿਲਾ ਪ੍ਰਸ਼ਨ ਲਾਜ਼ਮੀ ਹੈ। ਇਹ ਪ੍ਰਸ਼ਨ 14 ਨੰਬਰ ਦਾ ਹੋਵੇਗਾ। ਇਸ ਵਿੱਚ ਸਮੁੱਚੇ ਸਿਲੇਬਸ ਵਿੱਚੋਂ ਕੁੱਲ ਚਾਰ ਸੁਆਲ ਪੁੱਛੇ ਜਾਣਗੇ। ਵਿਦਿਆਰਥੀ ਲਈ ਇਹ ਸਾਰੇ ਸੁਆਲ ਕਰਨੇ ਲਾਜ਼ਮੀ ਹਨ। ਹਰ ਸੁਆਲ ਸਾਢੇ ਤਿੰਨ ਨੰਬਰ ਦਾ ਹੋਵੇਗਾ।
2. ਸਮੁੱਚਾ ਸਿਲੇਬਸ ਕੁੱਲ ਚਾਰ ਯੂਨਿਟਾਂ ਵਿੱਚ ਵੰਡਿਆ ਗਿਆ ਹੈ। ਹਰ ਯੂਨਿਟ 14 ਨੰਬਰਾਂ ਦਾ ਹੈ।

3. ਯੂਨਿਟ ਪਹਿਲਾ ਵਿੱਚ ਜੰਮੂ ਕਸ਼ਮੀਰ ਦੇ ਪੰਜਾਬੀ ਸਾਹਿਤ ਦੇ ਸਿਧਾਂਤਕ ਅਤੇ ਸਮਾਜ-ਸਭਿਆਚਾਰਕ ਪਿਛੋਕੜ ਬਾਰੇ ਤਿੰਨ ਸੁਆਲ ਪੁੱਛੇ ਜਾਣਗੇ। ਵਿਦਿਆਰਥੀ ਨੇ ਇਹਨਾਂ ਵਿੱਚੋਂ ਕੋਈ ਦੋ ਸੁਆਲ ਕਰਨੇ ਹਨ। ਹਰ ਪ੍ਰਸ਼ਨ ਸੱਤ-ਸੱਤ ਨੰਬਰ ਦਾ ਹੋਵੇਗਾ।

4. ਯੂਨਿਟ ਦੂਜਾ ਵਿੱਚ ਜੰਮੂ ਕਸ਼ਮੀਰ ਦੇ ਪੰਜਾਬੀ ਸਾਹਿਤ ਦੇ ਇਤਿਹਾਸਕ ਪਰਿਪੇਖ ਬਾਰੇ ਤਿੰਨ ਸੁਆਲ ਪੁੱਛੇ ਜਾਣਗੇ। ਵਿਦਿਆਰਥੀ ਨੇ ਇਹਨਾਂ ਵਿੱਚੋਂ ਕੋਈ ਦੋ ਸੁਆਲ ਕਰਨੇ ਹਨ। ਹਰ ਪ੍ਰਸ਼ਨ ਸੱਤ-ਸੱਤ ਨੰਬਰ ਦਾ ਹੋਵੇਗਾ।

5. ਯੂਨਿਟ ਤੀਜਾ ਵਿੱਚ ਸਿਲੇਬਸ ਵਿੱਚ ਲੱਗੀਆਂ ਕਵਿਤਾਵਾਂ ਦੇ ਵਿਸ਼ੇ/ ਸਾਰ/ ਆਲੋਚਨਾਤਮਕ ਅਧਿਐਨ ਅਤੇ ਕਵੀ ਦੇ ਜੀਵਨ ਪ੍ਰੀਚੈ ਅਤੇ ਸਾਹਿਤਕ ਯੋਗਦਾਨ ਆਦਿ ਬਾਰੇ ਪੁੱਛੇ ਜਾਣਗੇ। ਇਹਨਾਂ ਵਿੱਚੋਂ ਵਿਦਿਆਰਥੀ ਨੇ ਕੋਈ ਦੋ ਸੁਆਲ ਕਰਨੇ ਹਨ। ਹਰ ਸੁਆਲ ਪੰਜ ਨੰਬਰ ਦਾ ਹੈ। ਇੱਕ ਸੁਆਲ ਕਵਿਤਾ ਦੀ ਪ੍ਰਸੰਗ ਸਾਹਿਤ ਵਿਆਖਿਆ ਦਾ ਹੋਵੇਗਾ। ਵਿਦਿਆਰਥੀਆਂ ਨੂੰ ਦੋ ਕਾਵਿ ਟੁਕੜੀਆਂ ਦਿੱਤੀਆਂ ਜਾਣਗੀਆਂ ਜਿਸ ਵਿੱਚੋਂ ਵਿਦਿਆਰਵੀ ਨੇ ਕਿਸੇ ਇੱਕ ਦੀ ਪ੍ਰਸੰਗ ਸਾਹਿਤ ਵਿਆਖਿਆ ਕਰਨੀ ਹੋਵੇਗੀ। ਇਹ ਸੁਆਲ ਚਾਰ ਨੰਬਰ ਦਾ ਹੋਵੇਗਾ।

6. ਯੂਨਿਟ ਚੌਥਾ ਵਿੱਚ ਸਿਲੇਬਸ ਵਿੱਚ ਲੱਗੇ ਕਹਾਣੀ ਸੰਗ੍ਰਹਿ ਦੀਆਂ ਕਹਾਣੀਆਂ ਦੇ ਵਿਸ਼ੇ, ਸਾਰ, ਆਲੋਚਨਾਤਮਕ ਅਧਿਐਨ, ਪਾਤਰ ਵਿਧਾਨ ਅਤੇ ਬਿਰਤਾਂਤਕ ਜੁਗਤਾਂ ਅਤੇ ਕਹਾਣੀਕਾਰ ਦੇ ਜੀਵਨ ਪ੍ਰੀਚੈ ਅਤੇ ਸਾਹਿਤਕ ਯੋਗਦਾਨ ਤਿੰਨ ਸੁਆਲ ਆਦਿ ਬਾਰੇ ਪੁੱਛੇ ਜਾਣਗੇ। ਇਹਨਾਂ ਵਿੱਚੋਂ ਵਿਦਿਆਰਥੀ ਨੇ ਕੋਈ ਦੋ ਸੁਆਲ ਕਰਨੇ ਹਨ। ਹਰ ਸੁਆਲ ਸੱਤ-ਸੱਤ ਨੰਬਰ ਦਾ ਹੈ।

Unit	Topics	Contact Hours
I	1. ਜੰਮੂ ਕਸ਼ਮੀਰ ਦਾ ਪੰਜਾਬੀ ਸਾਹਿਤ : ਸਿਧਾਂਤਕ ਪਰਿਪੇਖ ਅੰਕ : 14 1.1 ਡੋਗਰੀ ਅਤੇ ਪੰਜਾਬੀ ਭਾਸ਼ਾ : ਅੰਤਰ ਸਬੰਧ 1.2 ਜੰਮੂ ਕਸ਼ਮੀਰ ਦਾ ਸਮਾਜਿਕ ਸਭਿਆਚਾਰਕ ਪਿਛੋਕੜ	
II	2 ਜੰਮੂ ਕਸ਼ਮੀਰ ਦਾ ਪੰਜਾਬੀ ਸਾਹਿਤ : ਇਤਿਹਾਸਕ ਪਰਿਪੇਖ ਅੰਕ : 14 2.1 ਜੰਮੂ ਕਸ਼ਮੀਰ ਦੀ ਪੰਜਾਬੀ ਕਵਿਤਾ : ਨਿਕਾਸ ਤੇ ਵਿਕਾਸ 2.2 ਜੰਮੂ ਕਸ਼ਮੀਰ ਦਾ ਪੰਜਾਬੀ ਕਹਾਣੀ : ਨਿਕਾਸ ਤੇ ਵਿਕਾਸ 2.3 ਜੰਮੂ ਕਸ਼ਮੀਰ ਦੇ ਪੰਜਾਬੀ ਸਾਹਿਤ ਦੇ ਨਵੇਂ ਰੁਝਾਨ	
III	3. ਸਮਾਮੀ ਅੰਤਰ ਨੀਰਵ, ਕੁਝ ਬਾਕੀ ਹੈ, ਸੀਰਤ ਪਬਲੀਕੇਸ਼ਨਜ਼, ਅੰਕ : 14 ਜੰਮੂ ਕਸ਼ਮੀਰ 3.1 ਕਵਿਤਾਵਾਂ ਦਾ ਸਾਰ, ਵਿਸ਼ਾ ਅਤੇ ਕਲਾ ਪੱਖ 3.2 ਕਵਿਤਾਵਾਂ ਦਾ ਆਲੋਚਨਾਤਮਕ ਅਧਿਐਨ 3.3 ਪ੍ਰਸੰਗ ਸਾਹਿਤ ਵਿਆਖਿਆ	
IV	4. ਹਰਭਜਨ ਸਿੰਘ, ਬੰਦ ਦਰਵਾਜ਼ੇ ਦਾ ਬਿਰਤਾਂਤ, ਸਾਗਰ ਪਬਲਿਸ਼ਰਜ਼, ਅੰਕ : 14 ਸ੍ਰੀ ਨਗਰ 4.1 ਕਹਾਣੀਆਂ ਦਾ ਵਿਸ਼ਾ ਵਸਤੂ ਅਤੇ ਸਰੋਕਾਰ 4.2 ਆਲੋਚਨਾਤਕ ਅਧਿਐਨ 4.3 ਪਾਤਰ ਵਿਧਾਨ 4.4 ਬਿਰਤਾਂਤਕ ਜੁਗਤਾਂ 4.5 ਕਹਾਣੀਕਾਰ ਦਾ ਜੀਵਨ ਅਤੇ ਸਾਹਿਤਕ ਯੋਗਦਾਨ	

Suggested Evaluation Method	
Internal Assessment: 30 Marks ➢ **Theory** • Class Participation: 5 Marks • Seminar/presentation/assignment/quiz/class test etc.: 5+5=10 Marks • Mid-Term Exam: 15 Marks	**End Term Examination:** 70 Marks

Part C- Learning Resources

1. ਕਰਤਾਰ ਸਿੰਘ ਸੂਰੀ **ਜੰਮੂ ਕਸ਼ਮੀਰ ਦੀ ਪ੍ਰਤੀਨਿਧ ਪੰਜਾਬੀ ਕਵਿਤਾ**
ਨਾਨਕ ਸਿੰਘ ਪੁਸਤਕਮਾਲਾ, ਅੰਮ੍ਰਿਤਸਰ, 1982

2. ਗੁਰਚਰਨ ਸਿੰਘ ਗੁਲਸ਼ਨ **ਜੰਮੂ ਕਸ਼ਮੀਰ ਦੇ ਪੰਜਾਬੀ ਸਾਹਿਤ ਦਾ ਇਤਿਹਾਸ (ਭਾਗ ਪਹਿਲਾ, ਦੂਜਾ ਤੇ ਤੀਜਾ)**
ਜੰਮੂ ਕਸ਼ਮੀਰ ਅਕਾਡਮੀ ਆਂ ਆਰਟਸ, ਕਲਚਰ ਐਂਡ ਲਿਟਰੇਚਰ, ਜੰਮੂ

3. **ਆਲੋਚਨਾ** (ਜੰਮੂ ਕਸ਼ਮੀਰ ਦਾ ਪੰਜਾਬੀ ਸਾਹਿਤ ਵਿਸ਼ੇਸ਼ ਅੰਕ), ਅੰਕ 224, ਅਕਤੂਬਰ 2010–ਮਾਰਚ 2011

4. **ਆਲੋਚਨਾ** (ਪੰਜਾਬੀ ਸਾਹਿਤ ਦਾ ਭਾਰਤੀ ਪਰਿਪੇਖ), ਅੰਕ 205, ਜਨਵਰੀ–ਜੂਨ, 2005

DEPARTMENT OF PANJABI
KURUKSHETRA UNIVERSITY, KURUKSHETRA
(Established by the State Legislature Act XII of 1956)
("A+" Grade, NAAC Accredited)

Syllabus for Ability Enhancement Course (AEC) for the subject PUNJABI

for UG Programme in accordance to NEP-2020 (Multiple Entry-Exit, Intership and CBCS-LOCF) to be implemented w.e.f. 2023-24 (in phased manner)

Programme Learning Outcomes in Bachelor of Arts (Multidisciplinary, Single Major, Honours and Honours with Research) as per NEP 2020

1. Acquire a comprehensive understanding of relevant concepts, theories, and principles in the field.
2. Develop practical skills and technical expertise to effectively apply knowledge in realworld situations.
3. Apply acquired knowledge and skills to solve complex problems and make informed decisions.
4. Communicate effectively, both orally and in writing, with diverse audiences and in various contexts.
5. Apply critical thinking skills to analyse information, evaluate arguments, and generate innovative solutions to complex problems.
6. Demonstrate ethical integrity and social responsibility in decision-making and actions.
7. Embrace continuous learning and adaptability for staying current in the field.
8. Foster innovative thinking and generate new ideas to tackle challenges and seize opportunities.
9. Develop proficiency in research methods to contribute to the advancement of knowledge in the field.
10. Apply interdisciplinary analysis to solve complex problems with evidence-based approaches.

NEP 2020 ਦੇ ਅਨੁਸਾਰ ਬੈਚਲਰ ਆਫ਼ ਆਰਟਸ (ਬਹੁ-ਅਨੁਸ਼ਾਸਨੀ, ਸਿੰਗਲ ਮੇਜਰ, ਆਨਰਜ਼ ਅਤੇ ਰਿਸਰਚ ਦੇ ਨਾਲ ਆਨਰਜ਼) ਵਿੱਚ ਪ੍ਰੋਗਰਾਮ ਸਿੱਖਣ ਦੇ ਨਤੀਜੇ

1. ਖੇਤਰ ਵਿੱਚ ਸੰਬੰਧਿਤ ਸੰਕਲਪਾਂ, ਸਿਧਾਂਤਾਂ ਅਤੇ ਸਿਧਾਂਤਾਂ ਦੀ ਇੱਕ ਵਿਆਪਕ ਸਮਝ ਪ੍ਰਾਪਤ ਕਰੋ।
2. ਅਸਲ ਸੰਸਾਰ ਸਥਿਤੀਆਂ ਵਿੱਚ ਗਿਆਨ ਨੂੰ ਪ੍ਰਭਾਵਸ਼ਾਲੀ ਢੰਗ ਨਾਲ ਲਾਗੂ ਕਰਨ ਲਈ ਵਿਹਾਰਕ ਹੁਨਰ ਅਤੇ ਤਕਨੀਕੀ ਮੁਹਾਰਤ ਦਾ ਵਿਕਾਸ ਕਰੋ।
3. ਗੁੰਝਲਦਾਰ ਸਮੱਸਿਆਵਾਂ ਨੂੰ ਹੱਲ ਕਰਨ ਅਤੇ ਸੂਝਵਾਨ ਫੈਸਲੇ ਲੈਣ ਲਈ ਹਾਸਲ ਕੀਤੇ ਗਿਆਨ ਅਤੇ ਹੁਨਰ ਨੂੰ ਲਾਗੂ ਕਰੋ।
4. ਮੌਖਿਕ ਅਤੇ ਲਿਖਤੀ ਰੂਪ ਵਿੱਚ, ਵਿਭਿੰਨ ਦਰਸ਼ਕਾਂ ਨਾਲ ਅਤੇ ਵੱਖ-ਵੱਖ ਸੰਦਰਭਾਂ ਵਿੱਚ ਪ੍ਰਭਾਵਸ਼ਾਲੀ ਢੰਗ ਨਾਲ ਸੰਚਾਰ ਕਰੋ।
5. ਜਾਣਕਾਰੀ ਦਾ ਵਿਸ਼ਲੇਸ਼ਣ ਕਰਨ, ਦਲੀਲਾਂ ਦਾ ਮੁਲਾਂਕਣ ਕਰਨ, ਅਤੇ ਗੁੰਝਲਦਾਰ ਸਮੱਸਿਆਵਾਂ ਦੇ ਨਵੀਨਤਾਕਾਰੀ ਹੱਲ ਤਿਆਰ ਕਰਨ ਲਈ ਆਲੋਚਨਾਤਮਕ ਸੋਚ ਦੇ ਹੁਨਰ ਨੂੰ ਲਾਗੂ ਕਰੋ।
6. ਫੈਸਲੇ ਲੈਣ ਅਤੇ ਕਾਰਵਾਈਆਂ ਵਿੱਚ ਨੈਤਿਕ ਅਖੰਡਤਾ ਅਤੇ ਸਮਾਜਿਕ ਜ਼ਿੰਮੇਵਾਰੀ ਦਾ ਪ੍ਰਦਰਸ਼ਨ ਕਰੋ।
7. ਖੇਤਰ ਵਿੱਚ ਮੌਜੂਦਾ ਰਹਿਣ ਲਈ ਨਿਰੰਤਰ ਸਿੱਖਣ ਅਤੇ ਅਨੁਕੂਲਤਾ ਨੂੰ ਅਪਣਾਓ।
8. ਨਵੀਨਤਾਕਾਰੀ ਸੋਚ ਨੂੰ ਉਤਸ਼ਾਹਿਤ ਕਰੋ ਅਤੇ ਚੁਣੌਤੀਆਂ ਨਾਲ ਨਜਿੱਠਣ ਅਤੇ ਮੌਕਿਆਂ ਨੂੰ ਹਾਸਲ ਕਰਨ ਲਈ ਨਵੇਂ ਵਿਚਾਰ ਪੈਦਾ ਕਰੋ।
9. ਖੇਤਰ ਵਿੱਚ ਗਿਆਨ ਦੀ ਤਰੱਕੀ ਵਿੱਚ ਯੋਗਦਾਨ ਪਾਉਣ ਲਈ ਖੋਜ ਵਿਧੀਆਂ ਵਿੱਚ ਮੁਹਾਰਤ ਦਾ ਵਿਕਾਸ ਕਰੋ।
10. ਸਬੂਤ-ਆਧਾਰਿਤ ਪਹੁੰਚਾਂ ਨਾਲ ਗੁੰਝਲਦਾਰ ਸਮੱਸਿਆਵਾਂ ਨੂੰ ਹੱਲ ਕਰਨ ਲਈ ਅੰਤਰ-ਅਨੁਸ਼ਾਸਨੀ ਵਿਸ਼ਲੇਸ਼ਣ ਨੂੰ ਲਾਗੂ ਕਰੋ।

Syllabus of Under Graduate Courses (Punjabi)

Session: 2023-24	
Part A – Introduction	
Subject	Panjabi
Semester	Ist
Name or Nomenclature of the Course	ਪੰਜਾਬੀ ਭਾਸ਼ਾ ਅਤੇ ਸੰਚਾਰ-I (Punjabi Bhasha Ate Sanchar-I)
Course Code	**B-23-PNB-AEC-141**
Course Type: (CC/MCC/MDC/CC-M/DSEC/VOC/DSE/PC/AEC/VAC)	AEC
Level of the course (As per Annexure-I	100-199
Pre-requisite for the course (if any)	Senior Secondary (10+2) or Equivalent in any Stream
Learning Objectives ਸਿੱਖਣ ਦੇ ਉਦੇਸ਼:	1. ਇਹ ਕੋਰਸ ਉਹਨਾਂ ਵਿਦਿਆਰਥੀਆਂ ਲਈ ਤਿਆਰ ਕੀਤਾ ਗਿਆ ਹੈ ਜੋ ਸਕੂਲ ਵਿੱਚ ਕਿਸੇ ਵੀ ਪੱਧਰ 'ਤੇ ਪੰਜਾਬੀ ਨੂੰ ਵਿਸ਼ੇ ਵਜੋਂ ਨਹੀਂ ਚੁਣ ਸਕਦੇ। 2. ਇਹ ਕੋਰਸ ਵਿਦਿਆਰਥੀਆਂ ਦੀ ਪੰਜਾਬੀ ਭਾਸ਼ਾ ਬੋਲਣ, ਸੁਣਨ, ਪੜ੍ਹਨ ਅਤੇ ਲਿਖਣ ਦੀ ਸਮਰੱਥਾ ਨੂੰ ਵਧਾਉਣ ਵਿੱਚ ਮਦਦ ਕਰੇਗਾ। 3. ਇਹ ਕੋਰਸ ਵਿਦਿਆਰਥੀਆਂ ਵਿੱਚ ਸ਼ਬਦ ਨਿਰਮਾਣ ਅਤੇ ਸ਼ਬਦਾਵਲੀ ਅਭਿਆਸ ਦੀ ਯੋਗਤਾ ਦਾ ਵਿਕਾਸ ਕਰੇਗਾ। ਵਿਦਿਆਰਥੀ ਪੰਜਾਬੀ ਭਾਸ਼ਾ ਦੇ ਸ਼ਬਦਾਂ, ਵਾਕਾਂਸ਼ਾਂ ਅਤੇ ਵਾਕਾਂ ਦੇ ਅਰਥ ਸਿੱਖਣਗੇ। 4. ਇਹ ਕੋਰਸ ਬਹੁ-ਭਾਸ਼ਾਈ ਸਮਾਜਾਂ ਦੇ ਵਿਦਿਆਰਥੀਆਂ ਵਿਚਕਾਰ ਸੰਚਾਰ ਹੁਨਰ ਅਤੇ ਸਮਾਜਿਕ ਪਰਸਪਰ ਕ੍ਰਿਆ ਦੀ ਸਮਝ ਦਾ ਵਿਕਾਸ ਕਰੇਗਾ।

Course Learning Outcomes(CLO): ਕੋਰਸ ਸਿੱਖਣ ਦੇ ਨਤੀਜੇ:	After completing this course, the learner will be able to: 1. ਇਸ ਕੋਰਸ ਨੂੰ ਪੂਰਾ ਕਰਨ ਤੋਂ ਬਾਅਦ ਵਿਦਿਆਰਥੀ ਪੰਜਾਬੀ ਭਾਸ਼ਾ ਪੜ੍ਹ, ਲਿਖਣ, ਬੋਲਣ ਅਤੇ ਸਮਝ ਸਕਣਗੇ। 2. ਵਿਦਿਆਰਥੀ ਮੁੱਢਲੇ ਪੰਜਾਬੀ ਸ਼ਬਦ ਅਤੇ ਵਾਕ ਦੀ ਰਚਨਾ ਅਤੇ ਇਸ ਦੀ ਵਿਹਾਰਕ ਵਰਤੋਂ ਸਿੱਖ ਸਕਣਗੇ। 3. ਵਿਦਿਆਰਥੀ ਪੰਜਾਬੀ ਵਿੱਚ ਬੋਲਣ ਦੀ ਆਪਣੀ ਸਮਰੱਥਾ ਨੂੰ ਰਵਾਨਗੀ ਅਤੇ ਸਮਝ ਦੋਵਾਂ ਪੱਖੋਂ ਬਿਹਤਰ ਬਣਾਉਣਗੇ। 4. ਵਿਦਿਆਰਥੀਆਂ ਦੀ ਪੜ੍ਹਨ ਦੀ ਗਤੀ ਅਤੇ ਪੰਜਾਬੀ ਭਾਸ਼ਾ ਦੀ ਸਮਝ ਵਿੱਚ ਵਾਧਾ ਹੋਵੇਗਾ। ਉਹ ਨਿਊਜ਼ ਪੇਪਰ, ਮੈਗਜ਼ੀਨ ਅਤੇ ਸਾਹਿਤ ਆਦਿ ਪੜ੍ਹ ਸਕਣਗੇ ਅਤੇ ਵਿਦਿਆਰਥੀ ਪੰਜਾਬੀ ਸ਼ਬਦਾਂ ਅਤੇ ਵਾਕਾਂ ਨੂੰ ਲਿਖਣ ਦੀ ਸਮਰੱਥਾ ਨੂੰ ਮਜ਼ਬੂਤ ਕਰਨਗੇ। 5*.

Credits : 02	Theory	Practical	Total
	02	00	02
Contact Hours : 02	02	00	02

Max. Marks: 50 **Internal Assessment Marks: 15** **End Term Exam Marks:** 35	**Time: 3 Hrs**

Part B- Contents of the Course

Instructions for Paper- Setter

1. ਇਸ ਪ੍ਰਸ਼ਨ ਪੱਤਰ ਵਿੱਚ ਕੁੱਲ ਨੌਂ ਸਵਾਲ ਪੁੱਛੇ ਜਾਣਗੇ। ਪ੍ਰਸ਼ਨ ਪੱਤਰ ਵਿੱਚੋਂ ਵਿਦਿਆਰਥੀ ਨੇ ਕੁੱਲ ਪੰਜ ਸਵਾਲ ਹੱਲ ਕਰਨੇ ਹਨ। ਇਹ ਪ੍ਰਸ਼ਨ ਪੱਤਰ ਕੁੱਲ 35 ਅੰਕਾਂ ਦਾ ਹੋਵੇਗਾ।
2. ਪਹਿਲਾ ਪ੍ਰਸ਼ਨ ਹੱਲ ਕਰਨਾ ਲਾਜ਼ਮੀ ਹੈ। ਇਸ ਪ੍ਰਸ਼ਨ ਵਿੱਚ ਇਕ-ਇਕ ਅੰਕ ਵਾਲੇ ਸੱਤ ਸਵਾਲ ਪੁੱਛੇ ਜਾਣਗੇ।
3. ਪ੍ਰਸ਼ਨ ਪੱਤਰ ਵਿੱਚ ਕੁੱਲ ਚਾਰ ਯੂਨਿਟ ਹੋਣਗੇ। ਹਰ ਯੂਨਿਟ ਵਿੱਚ ਦੋ ਸਵਾਲ ਪੁੱਛੇ ਜਾਣਗੇ ਜਿਨ੍ਹਾਂ ਵਿੱਚੋਂ ਵਿਦਿਆਰਥੀ ਨੇ ਕੋਈ ਇਕ ਸਵਾਲ ਹੱਲ ਕਰਨਾ ਹੈ। ਇਹ ਸਵਾਲ ਸੱਤ-ਸੱਤ ਅੰਕਾਂ ਦੇ ਹੋਣਗੇ।

Unit	Topics	Contact Hours

I	ਯੂਨਿਟ – 1 ਲਿੱਪੀ ਬੋਧ 1 ਗੁਰਮੁਖੀ ਲਿੱਪੀ ਨਾਲ ਮੁਢਲੀ ਜਾਣ-ਪਛਾਣ 2 ਪੈਂਤੀ ਅੱਖਰੀ ਅਤੇ ਪੈਰ ਬਿੰਦੀ ਵਾਲੇ ਵਰਨਾਂ ਦਾ ਉਚਾਰਨ ਅਤੇ ਸੁੰਦਰ ਲਿਖਾਈ ਦਾ ਅਭਿਆਸ 3 ਲਗਾਂ-ਮਾਤਰਾਵਾਂ ਅਤੇ ਲਗਾਖਰਾਂ ਦੀ ਵਰਤੋਂ	
II	ਯੂਨਿਟ – 2 ਸ਼ਬਦ ਬੋਧ 1 ਬਿਨਾਂ ਲਗ ਵਾਲੇ, ਇਕ ਲਗ ਵਾਲੇ, ਦੋ ਲਗ ਅਤੇ ਦੋ ਤੋਂ ਵੱਧ ਲਗ ਵਾਲੇ ਸ਼ਬਦਾਂ ਦਾ ਉਚਾਰਨ ਅਤੇ ਲਿਖਣ ਅਭਿਆਸ 2 ਲਿੰਗ ਅਤੇ ਵਚਨ ਦੀ ਵਰਤੋਂ 3 ਅਗੇਤਰ ਅਤੇ ਪਿਛੇਤਰ ਦੀ ਵਰਤੋਂ	
III	ਯੂਨਿਟ – 3 ਅਰਥ ਬੋਧ 1. ਸਮੇਂ, ਦਿਨਾਂ, ਦੇਸੀ ਮਹੀਨਿਆਂ, ਰੁੱਤਾਂ, ਦਿਸ਼ਾਵਾਂ, ਗਿਣਤੀ, ਜਾਨਵਰਾਂ, ਪੰਛੀਆਂ, ਕੀੜੇ-ਮਕੌੜੇ, ਸਰੀਰ ਦੇ ਅੰਗਾਂ, ਸਬਜ਼ੀਆਂ, ਫਲਾਂ ਨਾਲ ਸਬੰਧਿਤ ਸ਼ਬਦਾਵਲੀ ਦਾ ਉਚਾਰਨ ਅਤੇ ਲਿਖਣ ਅਭਿਆਸ 2. ਘਰ ਦੇ ਕੰਮ-ਧੰਦੇ, ਰਸੋਈ ਦਾ ਸਮਾਨ, ਪਹਿਰਾਵੇ, ਖਾਣ-ਪੀਣ, ਲੋਕ ਕਿੱਤਿਆਂ, ਖੇਤੀ-ਬਾੜੀ, ਤਿੱਥਾਂ-ਤਿਉਹਾਰਾਂ, ਦਰੱਖਤਾਂ ਨਾਲ ਸਬੰਧਿਤ ਸ਼ਬਦਾਵਲੀ ਦਾ ਉਚਾਰਨ ਅਤੇ ਲਿਖਣ ਅਭਿਆਸ 3. ਸਮਾਨਾਰਥਕ ਸ਼ਬਦ, ਵਿਰੋਧਾਰਥਕ ਸ਼ਬਦ, ਬਹੁਅਰਥਕ ਸ਼ਬਦ ਅਤੇ ਬਹੁਤੇ ਸ਼ਬਦਾਂ ਦੀ ਥਾਂ ਤੇ ਇਕ ਸ਼ਬਦ ਦਾ ਉਚਾਰਨ ਅਤੇ ਲਿਖਣ ਅਭਿਆਸ	
IV	ਯੂਨਿਟ – 4 ਵਾਕ ਬੋਧ ਸਧਾਰਨ ਵਾਕ, ਪ੍ਰਸ਼ਨਵਾਚਕ ਵਾਕ ਅਤੇ ਨਾਂਹ ਵਾਚਕ ਵਾਕ ਦੀ ਪਛਾਣ ਅਤੇ ਲਿਖਣ ਦਾ ਅਭਿਆਸ 2 ਆਮ ਬੋਲ-ਚਾਲ, ਦਫ਼ਤਰੀ ਕੰਮ-ਕਾਜ, ਖਰੀਦੋ-ਫ਼ਰੋਖਤ ਨਾਲ ਸਬੰਧਿਤ ਸੰਵਾਦ ਦਾ ਵਾਕ ਲਿਖਣ ਅਭਿਆਸ 3 ਸ਼ੁੱਧ ਵਾਕ ਲਿਖਣ ਦਾ ਅਭਿਆਸ	
V*		
Suggested Evaluation Methods		

Internal Assessment: ➢ **Theory** • Class Participation: 4 Marks • Seminar/presentation/assignment/quiz/class test etc.: 4 Marks • Mid-Term Exam: 7 Marks ➢ **Practicum** • Class Participation: • Seminar/Demonstration/Viva-voce/Lab records etc.: • Mid-Term Exam:	**End Term Examination: 35 Marks**

Part C-Learning Resources

Recommended Books/e-resources/LMS: ਸਹਾਇਕ ਪੁਸਤਕਾਂ

1 ਆਧੁਨਿਕ ਪੰਜਾਬੀ ਵਿਆਕਰਨ ਅਤੇ ਲੇਖ ਰਚਨਾ (2019), ਪੰਜਾਬ ਸਕੂਲ ਸਿੱਖਿਆ ਬੋਰਡ, ਸਾਹਿਬਜ਼ਾਦਾ ਅਜੀਤ ਸਿੰਘ ਨਗਰ

2 ਪੰਜਾਬੀ ਪਾਠ ਪੁਸਤਕ-4 (ਦੂੱਜੀ ਭਾਸ਼ਾ) (2020), ਪੰਜਾਬ ਸਕੂਲ ਸਿੱਖਿਆ ਬੋਰਡ, ਸਾਹਿਬਜ਼ਾਦਾ ਅਜੀਤ ਸਿੰਘ ਨਗਰ

3 ਤੇਜਾ, ਚਰਨਜੀਤ ਸਿੰਘ (ਈ ਡੀ ਐਸ) (2017), ਪਹਿਲੀ ਕਿਤਾਬ, ਸੰਨ ਸੰਤਾਲੀ ਪਬਲੀਕੇਸ਼ਨ, ਅੰਮ੍ਰਿਤਸਰ

*Applicable for courses having practical component.

Syllabus of Under Graduate Courses (Punjabi)

Session: 2023-24	
Part A - Introduction	
Subject	Panjabi
Semester	II
Name of the Course	ਪੰਜਾਬੀ ਭਾਸ਼ਾ ਅਤੇ ਸੰਚਾਰ-II (Punjabi Bhasha Ate Sanchar-II)
Course Code	**B-23-PNB-AEC-241**
Course Type: (CC/MCC/MDC/CC-M/DSEC/VOC/DSE/PC/AEC/VAC)	AEC
Level of the course (As per Annexure-I	200-299
Pre-requisite for the course (if any)	Senior Secondary (10+2) or Equivalent in any Stream
Learning Objectives ਸਿੱਖਣ ਦੇ ਉਦੇਸ਼:	1. ਇਹ ਕੋਰਸ ਵਿਦਿਆਰਥੀਆਂ ਦੀ ਪੰਜਾਬੀ ਭਾਸ਼ਾ ਵਿੱਚ ਯੋਗਤਾ ਨੂੰ ਵਧਾਉਣ ਵਿੱਚ ਮਦਦ ਕਰੇਗਾ। 2. ਕੋਰਸ ਦਾ ਉਦੇਸ਼ ਵਿਦਿਆਰਥੀਆਂ ਨੂੰ ਪੰਜਾਬੀ ਦਾ ਗਿਆਨ ਪ੍ਰਾਪਤ ਕਰਨ ਵਿੱਚ ਮਦਦ ਕਰਨਾ ਹੈ। 3. ਇਹ ਕੋਰਸ ਵਿਦਿਆਰਥੀਆਂ ਨੂੰ ਇੱਕ ਵਿਅਕਤੀ ਦੀ ਭਾਸ਼ਾਈ ਸਮਰੱਥਾ ਵਿੱਚ ਕੀ ਹੁੰਦਾ ਹੈ, ਇਹ ਬੱਚਿਆਂ ਵਿੱਚ ਕਿਵੇਂ ਪੈਦਾ ਹੁੰਦਾ ਹੈ, ਇਹ ਬੋਲਣ ਅਤੇ ਸੁਣਨ ਵਿੱਚ ਕਿਵੇਂ ਕੰਮ ਕਰਦਾ ਹੈ ਬਾਰੇ ਜਾਗਰੂਕ ਕਰੇਗਾ। 4. ਕੋਰਸ ਦਾ ਉਦੇਸ਼ ਵਿਦਿਆਰਥੀਆਂ ਨੂੰ ਪੰਜਾਬੀ ਭਾਸ਼ਾ ਵਿੱਚ ਸ਼ਬਦ ਸ਼੍ਰੇਣੀ, ਸ਼ਬਦ ਬਣਤਰ ਅਤੇ ਵਾਕ ਬਣਾਉਣ ਤੋਂ ਜਾਣੂ ਕਰਵਾਉਣਾ ਹੈ।

Course Learning Outcomes(CLO): ਕੋਰਸ ਸਿੱਖਣ ਦੇ ਨਤੀਜੇ:	After completing this course, the learner will be able to: 1. ਭਾਸ਼ਾ ਦਾ ਅਧਿਐਨ ਵਿਦਿਆਰਥੀਆਂ ਦੇ ਤਰਕਸ਼ੀਲ ਮਨ ਦਾ ਵਿਕਾਸ ਕਰਦਾ ਹੈ ਅਤੇ ਉਨ੍ਹਾਂ ਦੀ ਭਾਸ਼ਾਈ ਯੋਗਤਾ ਨੂੰ ਵੀ ਨਿਖਾਰਦਾ ਹੈ। 2. ਭਾਸ਼ਾ ਦੀ ਯੋਗਤਾ ਵਿਦਿਆਰਥੀਆਂ ਨੂੰ ਦੂਜੀ ਭਾਸ਼ਾ ਦੀ ਬਣਤਰ ਨੂੰ ਸਮਝਣ ਵਿੱਚ ਮਦਦਗਾਰ ਹੁੰਦੀ ਹੈ। 3. ਵਿਦਿਆਰਥੀ ਪੰਜਾਬੀ ਭਾਸ਼ਾ ਦੀ ਸ਼ਬਦ ਬਣਤਰ ਦੀ ਬੁਨਿਆਦੀ ਸਮਝ ਵਿਕਸਿਤ ਕਰਨਗੇ। 4. ਵਿਦਿਆਰਥੀ ਪੰਜਾਬੀ ਦਾ ਵਿਸ਼ਲੇਸ਼ਣ ਕਰਦੇ ਸਮੇਂ ਤਰਕਪੂਰਨ ਵਿਸ਼ਲੇਸ਼ਣ ਦੇ ਢੰਗਾਂ ਨੂੰ ਸਮਝਣਗੇ ਅਤੇ ਵਰਤਣਗੇ। 5. 5. ਇਸ ਕੋਰਸ ਨੂੰ ਪੂਰਾ ਕਰਨ ਤੋਂ ਬਾਅਦ ਵਿਦਿਆਰਥੀ ਪੰਜਾਬੀ ਵਿਆਕਰਨ ਦੇ ਗਿਆਨ ਤੋਂ ਜਾਣੂ ਹੋਣਗੇ। ਇਹ ਕੋਰਸ ਪੰਜਾਬੀ ਭਾਸ ਦੇ ਹੁਨਰ ਦੇ ਖੇਤਰ ਵਿੱਚ ਵਿਦਿਆਰਥੀਆਂ ਦੀ ਮੁਹਾਰਤ ਵਿੱਚ ਵਾਧਾ ਕਰੇਗਾ। 5*.

Credits : 02	Theory	Practical	Total
	02	00	02
Contact Hours : 02	02	00	02

Max. Marks: 50 **Internal Assessment Marks: 15** **End Term Exam Marks:** 35	**Time: 3 Hrs**

Part B- Contents of the Course

Instructions for Paper- Setter

1. ਇਸ ਪ੍ਰਸ਼ਨ ਪੱਤਰ ਵਿੱਚ ਕੁੱਲ ਨੌਂ ਸਵਾਲ ਪੁੱਛੇ ਜਾਣਗੇ। ਪ੍ਰਸ਼ਨ ਪੱਤਰ ਵਿੱਚੋਂ ਵਿਦਿਆਰਥੀ ਨੇ ਕੁੱਲ ਪੰਜ ਸਵਾਲ ਹੱਲ ਕਰਨੇ ਹਨ। ਇਹ ਪ੍ਰਸ਼ਨ ਪੱਤਰ ਕੁੱਲ 35 ਅੰਕਾਂ ਦਾ ਹੋਵੇਗਾ।
2. ਪਹਿਲਾ ਪ੍ਰਸ਼ਨ ਹੱਲ ਕਰਨਾ ਲਾਜ਼ਮੀ ਹੈ। ਇਸ ਪ੍ਰਸ਼ਨ ਵਿੱਚ ਇਕ-ਇਕ ਅੰਕ ਵਾਲੇ ਸੱਤ ਸਵਾਲ ਪੁੱਛੇ ਜਾਣਗੇ।
3. ਪ੍ਰਸ਼ਨ ਪੱਤਰ ਵਿੱਚ ਕੁੱਲ ਚਾਰ ਯੂਨਿਟ ਹੋਣਗੇ। ਹਰ ਯੂਨਿਟ ਵਿੱਚ ਦੋ ਸਵਾਲ ਪੁੱਛੇ ਜਾਣਗੇ ਜਿਨ੍ਹਾਂ ਵਿੱਚੋਂ ਵਿਦਿਆਰਥੀ ਨੇ ਕੋਈ ਇਕ ਸਵਾਲ ਹੱਲ ਕਰਨਾ ਹੈ। ਇਹ ਸਵਾਲ ਸੱਤ-ਸੱਤ ਅੰਕਾਂ ਦੇ ਹੋਣਗੇ।

Unit	Topics	Contact Hours
I	ਯੂਨਿਟ – 1 ਸ਼ਬਦ ਸ਼੍ਰੇਣੀਆਂ 1. ਨਾਂਵ, ਪੜਨਾਂਵ ਅਤੇ ਵਿਸ਼ੇਸ਼ਣ ਨਾਲ ਜਾਣ-ਪਛਾਣ 2. ਕਿਰਿਆ, ਕਿਰਿਆ-ਵਿਸ਼ੇਸ਼ਣ ਨਾਲ ਜਾਣ-ਪਛਾਣ 3. ਸੰਬੰਧਕ ਅਤੇ ਯੋਜਕ ਨਾਲ਼ ਜਾਣ-ਪਛਾਣ	
II	ਯੂਨਿਟ – 2 ਸ਼ਬਦ ਰਚਨਾ 1. ਸਾਧਾਰਨ ਸ਼ਬਦ (ਕੋਸ਼ੀ ਅਤੇ ਵਿਆਕਰਨਕ ਸ਼ਬਦ) ਅਤੇ ਮਿਸ਼ਰਿਤ ਸ਼ਬਦ (ਧਾਤੁ+ਵਧੇਤਰ) 2. ਸਮਾਸੀ ਸ਼ਬਦ 3. ਸੌਗਾਤੀ ਸ਼ਬਦ (ਤਤਸਮ : ਸੰਸਕ੍ਰਿਤ, ਅਰਬੀ-ਫ਼ਾਰਸੀ ਅਤੇ ਅੰਗਰੇਜ਼ੀ, ਤਦਭਵ : ਸੰਸਕ੍ਰਿਤ, ਅਰਬੀ-ਫ਼ਾਰਸੀ ਅਤੇ ਅੰਗਰੇਜ਼ੀ)	
III	ਯੂਨਿਟ – 3 ਸ਼ਬਦ ਜੋੜਾਂ ਦੇ ਨਿਯਮ 1. ਅੰਤਿਮ ਸਥਿਤੀ ਵਿਚ (ਉ, ਅ ਅਤੇ ਏ) ਦੀ ਵਰਤੋਂ 2. (ਨ), (ਣ) ਅਤੇ (ਯ), (ਵ) ਦੀ ਵਰਤੋਂ 3. (ਹ, ਰ ਅਤੇ ਵ) ਦੀ ਪੈਰ ਚਿੰਨ੍ਹ ਵਜੋਂ ਵਰਤੋਂ	
IV	ਯੂਨਿਟ – 4 ਵਾਕ ਵਟਾਂਦਰਾ 1. ਪੰਜਾਬੀ ਭਾਸ਼ਾ ਦਾ ਵਾਕ ਪ੍ਰਬੰਧ : ਮੁਢਲੀ ਜਾਣ-ਪਛਾਣ 2. ਸਾਧਾਰਨ ਵਾਕ ਤੋਂ ਪ੍ਰਸ਼ਨਵਾਚਕ ਅਤੇ ਆਗਿਆਵਾਚਕ ਵਿਚ ਵਾਕ ਵਟਾਂਦਰਾ 3. ਸਾਧਾਰਨ ਵਾਕ ਤੋਂ ਨਾਂਹ ਵਾਚਕ ਅਤੇ ਹਾਂ ਵਾਚਕ ਵਿਚ ਵਾਕ ਵਟਾਂਦਰਾ	
V*		
Suggested Evaluation Methods		

Internal Assessment: ➢ **Theory** • Class Participation: 4 Marks • Seminar/presentation/assignment/quiz/class test etc.: 4 Marks • Mid-Term Exam: 7 Marks ➢ **Practicum** • Class Participation: • Seminar/Demonstration/Viva-voce/Lab records etc.: • Mid-Term Exam:	**End Term Examination: 35 Marks**

Part C-Learning Resources

Recommended Books/e-resources/LMS: ਸਹਾਇਕ ਪੁਸਤਕਾਂ

1 ਆਧੁਨਿਕ ਪੰਜਾਬੀ ਵਿਆਕਰਨ ਅਤੇ ਲੇਖ ਰਚਨਾ (2019), ਪੰਜਾਬ ਸਕੂਲ ਸਿੱਖਿਆ ਬੋਰਡ, ਸਾਹਿਬਜ਼ਾਦਾ ਅਜੀਤ ਸਿੰਘ ਨਗਰ

2 ਬਰਾੜ, ਬੂਟਾ ਸਿੰਘ (2015), ਪੰਜਾਬੀ ਭਾਸ਼ਾ ਲਿੱਪੀ ਅਤੇ ਵਿਆਕਰਨ, ਆਰਸੀ ਪਬਲੀਸ਼ਰਜ਼, ਨਵੀਂ ਦਿੱਲੀ

3 ਦੁੱਗਲ, ਨਰਿੰਦਰ ਸਿੰਘ (ਡਾ.) (2000), ਪੰਜਾਬੀ ਵਿਆਕਰਨ ਤੇ ਰਚਨਾਵਲੀ, ਨਿਊ ਬੁੱਕ ਕੰਪਨੀ, ਜਲੰਧਰ

*Applicable for courses having practical component.

Syllabus of Under Graduate Courses (Punjabi)

Session: 2023-24	
Part A - Introduction	
Subject	Panjabi
Semester	III
Name of the Course	ਪੰਜਾਬੀ ਭਾਸ਼ਾ ਅਤੇ ਸੰਚਾਰ-III (Punjabi Bhasha Ate Sanchar-III)
Course Code	**B-23-PNB-AEC-341**
Course Type: (CC/MCC/MDC/CC-M/DSEC/VOC/DSE/PC/AEC/VAC)	AEC
Level of the course (As per Annexure-I	300-499
Pre-requisite for the course (if any)	Senior Secondary (10+2) or Equivalent in any Stream
Learning Objectives ਸਿੱਖਣ ਦੇ ਉਦੇਸ਼:	1. ਇਹ ਕੋਰਸ ਉਹਨਾਂ ਵਿਦਿਆਰਥੀਆਂ ਲਈ ਤਿਆਰ ਕੀਤਾ ਗਿਆ ਹੈ ਜਿਨ੍ਹਾਂ ਨੇ ਪੰਜਾਬੀ ਵਿਸ਼ੇ ਵਜੋਂ 10+2 ਕਲਾਸ ਦੀ ਯੋਗਤਾ ਪੂਰੀ ਕੀਤੀ ਹੈ। 2. ਇਹ ਕੋਰਸ ਵਿਦਿਆਰਥੀਆਂ ਦੀ ਪੰਜਾਬੀ ਲਿਖਣ ਦੀ ਯੋਗਤਾ ਨੂੰ ਨਿਖਾਰਨ ਵਿੱਚ ਮਦਦ ਕਰੇਗਾ ਅਤੇ ਵਿਦਿਆਰਥੀ ਪੰਜਾਬੀ ਭਾਸ਼ਾ ਦੀ ਸ਼ਬਦਾਵਲੀ ਵਿੱਚ ਵੀ ਨਿਖਾਰ ਪਾ ਸਕਣਗੇ। 3. ਵਿਦਿਆਰਥੀ ਸਹੀ ਸ਼ਬਦ ਨਿਰਮਾਣ ਅਤੇ ਪੰਜਾਬੀ ਵਾਕਾਂ ਦੀਆਂ ਵੱਖ-ਵੱਖ ਕਿਸਮਾਂ ਬਾਰੇ ਸਮਝਣਗੇ। 4. ਇਹ ਕੋਰਸ ਹਿੰਦੀ ਤੋਂ ਪੰਜਾਬੀ, ਅੰਗਰੇਜ਼ੀ ਤੋਂ ਪੰਜਾਬੀ ਅਤੇ ਇਸ ਦੇ ਉਲਟ ਅਨੁਵਾਦ ਦੀ ਮੁਢਲੀ ਯੋਗਤਾ ਵਿਕਸਿਤ ਕਰੇਗਾ। 5. ਇਹ ਕੋਰਸ ਵਿਦਿਆਰਥੀਆਂ ਨੂੰ ਪੰਜਾਬੀ ਸਮਾਜ ਦੇ ਵੱਖ-ਵੱਖ ਖੇਤਰਾਂ ਵਿੱਚ ਰੋਜ਼ਾਨਾ ਵਰਤੋਂ ਦੀ ਤਕਨੀਕੀ ਸ਼ਬਦਾਵਲੀ ਬਾਰੇ

	ਸਮਝਣ ਵਿੱਚ ਮਦਦ ਕਰੇਗਾ। 6. ਇਹ ਕੋਰਸ ਵਿਦਿਆਰਥੀਆਂ ਨੂੰ ਰੋਜ਼ਾਨਾ ਜੀਵਨ ਵਿੱਚ ਲਾਭਦਾਇਕ ਲਿਖਣ ਦੇ ਕਈ ਹੁਨਰਾਂ ਦੀ ਯੋਗਤਾ ਹਾਸਲ ਕਰਨ ਵਿੱਚ ਮਦਦ ਕਰੇਗਾ।
Course Learning Outcomes(CLO): ਕੋਰਸ ਸਿੱਖਣ ਦੇ ਨਤੀਜੇ:	After completing this course, the learner will be able to: 1. ਵਿਦਿਆਰਥੀ ਪੰਜਾਬੀ ਭਾਸ਼ਾ ਦੇ ਵੱਖ-ਵੱਖ ਪਹਿਲੂਆਂ ਦੀ ਯੋਗਤਾ ਨੂੰ ਵਧਾਉਣ ਦੇ ਯੋਗ ਹੋਣਗੇ। 2. ਇਸ ਕੋਰਸ ਨੂੰ ਪੂਰਾ ਕਰਨ ਤੋਂ ਬਾਅਦ ਵਿਦਿਆਰਥੀਆਂ ਦੀ ਪੰਜਾਬੀ ਭਾਸ਼ਾ ਵਿੱਚ ਮੁਹਾਰਤ ਵਿੱਚ ਅਗਾਊਂ ਪੱਧਰ 'ਤੇ ਵਾਧਾ ਕੀਤਾ ਜਾਵੇਗਾ। 2. ਵਿਦਿਆਰਥੀ ਪੰਜਾਬੀ ਭਾਸ਼ਾ ਦੇ ਗੁੰਝਲਦਾਰ ਵਿਆਕਰਨਿਕ ਢਾਂਚੇ ਅਤੇ ਵਿਸ਼ੇਸ਼ ਸ਼ਬਦਾਵਲੀ ਨੂੰ ਸਮਝਣ ਦੇ ਯੋਗ ਹੋਣਗੇ। 3. ਵਿਦਿਆਰਥੀ ਉੱਨਤ ਪੱਧਰ 'ਤੇ ਪੰਜਾਬੀ ਭਾਸ਼ਾ ਦੇ ਭਾਸ ਾਈ ਹੁਨਰ ਨੂੰ ਸਮਝ ਸਕਣਗੇ 4. ਇਸ ਕੋਰਸ ਨੂੰ ਪੂਰਾ ਕਰਨ ਤੋਂ ਬਾਅਦ ਵਿਦਿਆਰਥੀਆਂ ਨੂੰ ਪੰਜਾਬੀ ਭਾਸ਼ਾ ਵਿੱਚ ਅਨੁਵਾਦ ਅਤੇ ਲਿਖਣ ਦੀ ਮੁਹਾਰਤ ਹਾਸਲ ਹੋਵੇਗੀ। 5*.

Credits : 02	Theory	Practical	Total
	02	00	02
Contact Hours : 02	02	00	02

Max. Marks: 50 **Internal Assessment Marks: 15** **End Term Exam Marks:** 35	**Time: 3 Hrs**

Part B- Contents of the Course

Instructions for Paper- Setter

1. ਇਸ ਪ੍ਰਸ਼ਨ ਪੱਤਰ ਵਿੱਚ ਕੁੱਲ ਨੌਂ ਸਵਾਲ ਪੁੱਛੇ ਜਾਣਗੇ। ਪ੍ਰਸ਼ਨ ਪੱਤਰ ਵਿੱਚੋਂ ਵਿਦਿਆਰਥੀ ਨੇ ਕੁੱਲ ਪੰਜ ਸਵਾਲ ਹੱਲ ਕਰਨੇ ਹਨ। ਇਹ ਪ੍ਰਸ਼ਨ ਪੱਤਰ ਕੁੱਲ 35 ਅੰਕਾਂ ਦਾ ਹੋਵੇਗਾ।
2. ਪਹਿਲਾ ਪ੍ਰਸ਼ਨ ਹੱਲ ਕਰਨਾ ਲਾਜ਼ਮੀ ਹੈ। ਇਸ ਪ੍ਰਸ਼ਨ ਵਿੱਚ ਇਕ-ਇਕ ਅੰਕ ਵਾਲੇ ਸੱਤ ਸਵਾਲ ਪੁੱਛੇ ਜਾਣਗੇ।
3. ਪ੍ਰਸ਼ਨ ਪੱਤਰ ਵਿੱਚ ਕੁੱਲ ਚਾਰ ਯੂਨਿਟ ਹੋਣਗੇ। ਹਰ ਯੂਨਿਟ ਵਿੱਚ ਦੋ ਸਵਾਲ ਪੁੱਛੇ ਜਾਣਗੇ ਜਿਨ੍ਹਾਂ ਵਿੱਚੋਂ ਵਿਦਿਆਰਥੀ ਨੇ ਕੋਈ ਇਕ ਸਵਾਲ ਹੱਲ ਕਰਨਾ ਹੈ। ਇਹ ਸਵਾਲ ਸੱਤ-ਸੱਤ ਅੰਕਾਂ ਦੇ ਹੋਣਗੇ।

Unit	Topics	Contact Hours
I	ਯੂਨਿਟ – 1 ਸ਼ੁੱਧ ਲਿਖਤ ਅਭਿਆਸ 1. ਸ਼ਬਦ ਜੋੜਾਂ ਦੇ ਨਿਯਮ : ਸੰਖੇਪ ਜਾਣ-ਪਛਾਣ 2. ਸ਼ੁੱਧ ਸ਼ਬਦ ਅਤੇ ਵਾਕ ਲਿਖਣ ਦਾ ਅਭਿਆਸ 3. ਵਿਸ਼ਰਾਮ ਚਿੰਨ੍ਹ ਦੀ ਵਰਤੋਂ	
II	ਯੂਨਿਟ – 2 ਅਨੁਵਾਦ ਅਭਿਆਸ 1. ਅਨੁਵਾਦ ਕਲਾ ਸੰਖੇਪ ਜਾਣ-ਪਛਾਣ 2. ਹਿੰਦੀ/ਅੰਗਰੇਜ਼ੀ ਤੋਂ ਪੰਜਾਬੀ ਵਿਚ ਸ਼ਬਦਾਂ ਅਤੇ ਵਾਕਾਂ ਦਾ ਅਨੁਵਾਦ 3. ਹਿੰਦੀ/ਅੰਗਰੇਜ਼ੀ ਤੋਂ ਪੰਜਾਬੀ ਵਿਚ ਪੈਰੇ ਦਾ ਅਨੁਵਾਦ	
III	ਯੂਨਿਟ – 3 ਤਕਨੀਕੀ ਸ਼ਬਦਾਵਲੀ ਅਤੇ ਵਾਕ ਲਿਖਣ ਦਾ ਅਭਿਆਸ 1. ਦਫ਼ਤਰੀ ਸ਼ਬਦਾਵਲੀ 2. ਵੱਖ-ਵੱਖ ਵਿਸ਼ਿਆਂ ਨਾਲ ਸਬੰਧਿਤ ਸ਼ਬਦਾਵਲੀ 3. ਬੈਂਕ ਸੇਵਾ, ਰੇਲਵੇ ਸੇਵਾ, ਡਾਕ ਵਿਭਾਗ ਸੇਵਾ ਬਾਰੇ ਤਕਨੀਕੀ ਵਾਕ ਲਿਖਣ ਦਾ ਅਭਿਆਸ	
IV	ਯੂਨਿਟ – 4 ਰਚਨਾਤਮਕ ਅਭਿਆਸ 1. ਇਸ਼ਤਿਹਾਰ ਲੇਖਣ ਅਤੇ ਰਿਪੋਰਟ ਲੇਖਣ 2. ਚਿੱਠੀ ਅਤੇ ਬਿਨੈ-ਪੱਤਰ ਲੇਖਣ (ਨਿੱਜੀ, ਸਰਕਾਰੀ ਅਤੇ ਵਪਾਰਕ) 3. ਪੈਰਾ ਰਚਨਾ ਅਤੇ ਫੀਚਰ ਲੇਖਣ	
V*		
Suggested Evaluation Methods		

Internal Assessment: ➢ **Theory** • Class Participation: 4 Marks • Seminar/presentation/assignment/quiz/class test etc.: 4 Marks • Mid-Term Exam: 7 Marks ➢ **Practicum** • Class Participation: • Seminar/Demonstration/Viva-voce/Lab records etc.: • Mid-Term Exam:	**End Term Examination: 35 Marks**

Part C-Learning Resources

Recommended Books/e-resources/LMS: ਸਹਾਇਕ ਪੁਸਤਕਾਂ

1. ਆਧੁਨਿਕ ਪੰਜਾਬੀ ਵਿਆਕਰਨ ਅਤੇ ਲੇਖ ਰਚਨਾ (2019), ਪੰਜਾਬ ਸਕੂਲ ਸਿੱਖਿਆ ਬੋਰਡ, ਸਾਹਿਬਜ਼ਾਦਾ ਅਜੀਤ ਸਿੰਘ ਨਗਰ
2. ਲਾਜ਼ਮੀ ਪੰਜਾਬੀ (ਗਿਆਰ੍ਹਵੀ ਸ਼੍ਰੇਣੀ ਲਈ) (2021-22), ਪੰਜਾਬ ਸਕੂਲ ਸਿੱਖਿਆ ਬੋਰਡ, ਸਾਹਿਬਜ਼ਾਦਾ ਅਜੀਤ ਸਿੰਘ ਨਗਰ
3. ਦੁੱਗਲ, ਨਰਿੰਦਰ ਸਿੰਘ (ਡਾ.) (2000), ਪੰਜਾਬੀ ਵਿਆਕਰਨ ਤੇ ਰਚਨਾਵਲੀ, ਨਿਊ ਬੁੱਕ ਕੰਪਨੀ, ਜਲੰਧਰ

*Applicable for courses having practical component.

Syllabus of Under Graduate Courses (Punjabi)

Session: 2023-24	
Part A - Introduction	
Subject	Panjabi
Semester	IV
Name of the Course	ਪੰਜਾਬੀ ਭਾਸ਼ਾ ਅਤੇ ਸੰਚਾਰ-IV (Punjabi Bhasha Ate Sanchar-IV)
Course Code	**B-23-PNB-AEC-441**
Course Type: (CC/MCC/MDC/CC-M/DSEC/VOC/DSE/PC/AEC/VAC)	AEC
Level of the course (As per Annexure-I	400-499
Pre-requisite for the course (if any)	Senior Secondary (10+2) or Equivalent in any Stream
Learning Objectives ਸਿੱਖਣ ਦੇ ਉਦੇਸ਼:	1. ਇਸ ਕੋਰਸ ਦਾ ਉਦੇਸ਼ ਵਿਦਿਆਰਥੀ ਦੇ ਭਾਸ਼ਾ ਦੇ ਹੁਨਰ ਨੂੰ ਵਧਾਉਣਾ ਹੈ। ਭਾਸ਼ਾ ਦਾ ਅਧਿਐਨ ਵਿਦਿਆਰਥੀਆਂ ਨੂੰ ਉਨ੍ਹਾਂ ਦੀ ਭਾਸ ਼ਾਈ ਅਤੇ ਰਚਨਾਤਮਕ ਯੋਗਤਾ ਨੂੰ ਨਿਖਾਰਨ ਵਿੱਚ ਮਦਦ ਕਰੇਗਾ। 2. ਕੋਰਸ ਪੰਜਾਬੀ ਭਾਸ਼ਾ ਦੇ ਮੂਲ ਸੁਭਾਅ, ਸ਼ਾਖਾਵਾਂ ਅਤੇ ਇਤਿਹਾਸ ਦੀ ਬੁਨਿਆਦੀ ਸਮਝ ਵਿਕਸਿਤ ਕਰੇਗਾ। 3. ਇਹ ਵਿਦਿਆਰਥੀਆਂ ਨੂੰ ਪੰਜਾਬੀ ਦੀਆਂ ਵੱਖ-ਵੱਖ ਉਪਭਾਸ਼ਾਵਾਂ/ਬੋਲੀਆਂ ਦੇ ਭਾਸ਼ਾਈ ਡੇਟਾ ਦੇ ਵਿਸ਼ਲੇਸ਼ਣ ਦੇ ਤਰੀਕਿਆਂ ਨੂੰ ਸਮਝਣ ਅਤੇ ਵਰਤਣ ਵਿੱਚ ਮਦਦ ਕਰੇਗਾ। 4. ਕੋਰਸ ਉਹਨਾਂ ਨੂੰ ਪੰਜਾਬੀ ਭਾਸ਼ਾ ਅਤੇ ਗੁਰਮੁਖੀ ਲਿਪੀ ਦਾ ਇੱਕ ਵਿਆਪਕ ਅੰਤਰ-ਅਨੁਸ਼ਾਸਨੀ ਦ੍ਰਿਸ਼ਟੀਕੋਣ ਪ੍ਰਦਾਨ ਕਰੇਗਾ।

Course Learning Outcomes(CLO): ਕੋਰਸ ਸਿੱਖਣ ਦੇ ਨਤੀਜੇ:	After completing this course, the learner will be able to: 1. ਵਿਦਿਆਰਥੀ ਪੰਜਾਬੀ ਭਾਸ਼ਾ ਦਾ ਉੱਨਤ ਗਿਆਨ ਪ੍ਰਾਪਤ ਕਰਨਗੇ। 2. ਉਹ ਪੰਜਾਬੀ ਭਾਸ਼ਾ ਦੀਆਂ ਵੱਖ-ਵੱਖ ਉਪ-ਬੋਲੀਆਂ ਬਾਰੇ ਸਮਝ ਵਿਕਸਿਤ ਕਰਨਗੇ। 3. ਉਹ ਪੰਜਾਬੀ ਭਾਸ਼ਾ ਦੇ ਧੁਨੀ ਵਿਗਿਆਨ, ਰੂਪ ਵਿਗਿਆਨ ਅਤੇ ਸੰਟੈਕਸ ਬਣਤਰ ਦੇ ਸੰਕਲਪਾਂ ਨੂੰ ਸਮਝਣਗੇ। 4. ਉਹ ਪੰਜਾਬੀ ਭਾਸ਼ਾ (ਨਿਬੰਧ ਲਿਖਣਾ, ਪੱਤਰ ਲਿਖਣਾ ਆਦਿ) ਦੀ ਵਿਹਾਰਕ ਵਰਤੋਂ ਵੀ ਸਿੱਖਣਗੇ। 5*.

Credits : 02	Theory	Practical	Total
	02	00	02
Contact Hours : 02	02	00	02

Max. Marks: 50 **Internal Assessment Marks: 15** **End Term Exam Marks:** 35	**Time: 3 Hrs**

Part B- Contents of the Course

Instructions for Paper- Setter

1. ਇਸ ਪ੍ਰਸ਼ਨ ਪੱਤਰ ਵਿੱਚ ਕੁੱਲ ਨੌਂ ਸਵਾਲ ਪੁੱਛੇ ਜਾਣਗੇ। ਪ੍ਰਸ਼ਨ ਪੱਤਰ ਵਿੱਚੋਂ ਵਿਦਿਆਰਥੀ ਨੇ ਕੁੱਲ ਪੰਜ ਸਵਾਲ ਹੱਲ ਕਰਨੇ ਹਨ। ਇਹ ਪ੍ਰਸ਼ਨ ਪੱਤਰ ਕੁੱਲ 35 ਅੰਕਾਂ ਦਾ ਹੋਵੇਗਾ।
2. ਪਹਿਲਾ ਪ੍ਰਸ਼ਨ ਹੱਲ ਕਰਨਾ ਲਾਜ਼ਮੀ ਹੈ। ਇਸ ਪ੍ਰਸ਼ਨ ਵਿੱਚ ਇਕ-ਇਕ ਅੰਕ ਵਾਲੇ ਸੱਤ ਸਵਾਲ ਪੁੱਛੇ ਜਾਣਗੇ।
3. ਪ੍ਰਸ਼ਨ ਪੱਤਰ ਵਿੱਚ ਕੁੱਲ ਚਾਰ ਯੂਨਿਟ ਹੋਣਗੇ। ਹਰ ਯੂਨਿਟ ਵਿੱਚ ਦੋ ਸਵਾਲ ਪੁੱਛੇ ਜਾਣਗੇ ਜਿਨ੍ਹਾਂ ਵਿੱਚੋਂ ਵਿਦਿਆਰਥੀ ਨੇ ਕੋਈ ਇਕ ਸਵਾਲ ਹੱਲ ਕਰਨਾ ਹੈ। ਇਹ ਸਵਾਲ ਸੱਤ-ਸੱਤ ਅੰਕਾਂ ਦੇ ਹੋਣਗੇ।

Unit	Topics	Contact Hours
I	ਯੂਨਿਟ – 1 ਸ਼ਬਦ ਰਚਨਾ ਅਤੇ ਸ਼ਬਦ ਸ਼੍ਰੇਣੀਆਂ 1 ਸ਼ਬਦ-ਰਚਨਾ ਦੇ ਨਿਯਮ ਅਤੇ ਸ਼ੁੱਧ-ਅਸ਼ੁੱਧ 2 ਨਾਂਵ, ਪੜਨਾਂਵ, ਵਿਸ਼ੇਸ਼ਣ ਅਤੇ ਕਿਰਿਆ ਵਿਸ਼ੇਸ਼ਣ, ਸੰਬੰਧਕ ਅਤੇ ਯੋਜਕ : ਪਰਿਭਾਸ਼ਾ ਅਤੇ ਕਿਸਮਾਂ 3 ਵਿਰੋਧੀ ਸ਼ਬਦ, ਸਮਾਨਾਰਥਕ ਸ਼ਬਦ, ਬਹੁਤੇ ਸ਼ਬਦਾਂ ਦੀ ਥਾਂ	

	ਇਕ ਸ਼ਬਦ	
II	ਯੂਨਿਟ – 2 ਤਕਨੀਕੀ ਸ਼ਬਦਾਵਲੀ 1 ਬੈਂਕਿੰਗ 2 ਦਫ਼ਤਰੀ 3 ਸਾਹਿਤਕ	
III	ਯੂਨਿਟ – 3 ਵਿਹਾਰਕ ਪੱਖ 1 ਚਿੱਠੀ ਪੱਤਰ 2 ਪੈਰਾ ਰਚਨਾ 3 ਇਸ਼ਤਿਹਾਰ	
IV	ਯੂਨਿਟ – 4 ਵਾਕ ਰਚਨਾ, ਅਖਾਣ ਅਤੇ ਮੁਹਾਵਰੇ 1 ਵਾਕ : ਸਧਾਰਨ, ਸੰਯੁਕਤ ਤੇ ਮਿਸ਼ਰਤ 2 ਵਿਸ਼ਰਾਮ ਚਿੰਨ੍ਹ 3 ਮੁਹਾਵਰੇ ਅਤੇ ਅਖਾਣ	
V*		
Suggested Evaluation Methods		
Internal Assessment: ➢ **Theory** • Class Participation: 4 Marks • Seminar/presentation/assignment/quiz/class test etc.: 4 Marks • Mid-Term Exam: 7 Marks ➢ **Practicum** • Class Participation: • Seminar/Demonstration/Viva-voce/Lab records etc.: • Mid-Term Exam:		**End Term Examination: 35 Marks**
Part C-Learning Resources		

Recommended Books/e-resources/LMS: ਸਹਾਇਕ ਪੁਸਤਕਾਂ

1 ਲਾਜ਼ਮੀ ਪੰਜਾਬੀ-11 (2015), ਪੰਜਾਬ ਸਕੂਲ ਸਿੱਖਿਆ ਬੋਰਡ, ਸਾਹਿਬਜ਼ਾਦਾ ਅਜੀਤ ਸਿੰਘ ਨਗਰ

2 ਧੀਮਾਨ, ਹਰਬੰਸ ਸਿੰਘ (ਡਾ.) (2009), ਵਿਹਾਰਕ ਪੰਜਾਬੀ ਭਾਸ਼ਾ ਅਤੇ ਵਿਆਕਰਨ (ਭਾਗ-1), ਮਨਪ੍ਰੀਤ ਪਬਲੀਕੇਸ਼ਨ, ਦਿੱਲੀ

*Applicable for courses having practical component.

Kurukshetra University Kurukshetra

Scheme of Examination for Undergraduate programmes

Subject: Political Science

According to Curriculum Framework for Undergraduate Programmes as per NEP 2020

(Multiple Entry-Exit, Internships and Choice Based Credit System)

Semester	Course Type	Course Code	Nomenclature of paper	Credits	Credits	Contact hours		Internal marks	End term Marks	Total Marks	Duration of exam (Hrs.)
					Theory	Tutorial	T+T				
1	CC-1 MCC-1	B23-POL-101	Principles of Political Science - I	4	3	1	4	30	70	100	3
	MCC-2	B23-POL-102	Introduction to Political Theory	4	3	1	4	30	70	100	3
	CC-M1	B23-POL-103	Fundamentals of Political Science-I	2	2	NA	2	15	35	50	3
	-MDC 1	B23-POL-104	Indian Polity - I	3	2	1	3	25	50	75	3
2	CC-2 MCC-3	B23-POL-201	Principles of Political Science - II	4	3	1	4	30	70	100	3
	DSEC-1	B23-POL-202	Gender & Law In India	4	3	1	4	30	70	100	3
	-MDC 2	B23-POL-203	Indian Polity - II	3	2	1	3	25	50	75	3
	CC - M2	B23-POL-204	Fundamentals of Political Science-II	2	2	NA	2	15	35	50	3
3	CC-3 MCC-4	B23-POL-301	Indian Constitution	4	3	1	4	30	70	100	3
	MCC-5	B23-POL-302	Comparative Politics	4	3	1	4	30	70	100	3
	-MDC 3	B23-POL-303	Indian Polity - III	3	2	1	3	25	50	75	3
4	CC-4 MCC-6	B23-POL-401	Indian Government and Politics	4	3	1	4	30	70	100	3
	MCC-7	B23-POL-402	Comparative Constitutions of UK and USA	4	3	1	4	30	70	100	3

	MCC-8	B23-POL-403	State Politics in India	4	3	1	4	30	70	100	3
	DSE-1	B23-POL-404	Perspectives on Democracy	4	3	1	4	30	70	100	3
		Or									
		B23-POL-405	Perspectives on Human Rights	4	3	1	4	30	70	100	3
5	CC-5 MCC-9	B23-POL-501	Introduction to International Relations	4	3	1	4	30	70	100	3
	MCC-10	B23-POL-502	International Organization	4	3	1	4	30	70	100	3
	DSE-2	B23-POL-503	India's Neighbourhood Policy	4	3	1	4	30	70	100	3
		Or									
		B23-POL-504	Social Movements in India	4	3	1	4	30	70	100	3
	DSE-3	B23-POL-505	Diplomacy and Global Affairs	4	3	1	4	30	70	100	3
		Or									
		B23-POL-506	Governance: Issues and Challenges	4	3	1	4	30	70	100	3
6	CC-6 MCC-11	B23-POL-601	India's Foreign Policy	4	3	1	4	30	70	100	3
	MCC-12	B23-POL-602	Major Political Ideologies	4	3	1	4	30	70	100	3
	DSE-4	B23-POL-603	United Nations Organization	4	3	1	4	30	70	100	3
		Or									
		B23-POL-604	Indian Independence Movement	4	3	1	4	30	70	100	3
	DSE-5	B23-POL-605	Politics of Globalization	4	3	1	4	30	70	100	3
		Or									
		B23-POL-606	Gender and Politics in India	4	3	1	4	30	70	100	3
7	CC-H1	B23-POL-701	Research Methodology - I	4	3	1	4	30	70	100	3

	CC-H2	B23-POL-702	Western Political Thought - I	4	3	1	4	30	70	100	3
	CC-H3	B23-POL-703	Indian Political Thought - II	4	3	1	4	30	70	100	3
	DSE-6	B23-POL-704	International Law	4	3	1	4	30	70	100	3
		Or									
		B23-POL-705	Political Sociology	4	3	1	4	30	70	100	3
	PC-H1	B23-POL-706	Liberal Political Theory -I	4	3	1	4	30	70	100	3
8	CC-H4	B23-POL-801	Research Methodology - II	4	3	1	4	30	70	100	3
	CC-H5	B23-POL-802	Western Political Thought - II	4	3	1	4	30	70	100	3
	CC-H6	B23-POL-803	Indian Political Thought - II	4	3	1	4	30	70	100	3
	DSE-7	B23-POL-804	Foreign Policy of Major Powers	4	3	1	4	30	70	100	3
		Or									
		B23-POL-805	Democracy in India	4	3	1	4	30	70	100	3
	PC-H2	B23-POL-806	Liberal Political Theory - II	4	3	1	4	30	70	100	3

OR SEMESTER-8 (FOR HONOURS WITH RESEARCH IN POLITICAL SCIENCE)

8	CC-H4	B23-POL-801	Research Methodology-II	4	3	1	4	30	70	100	3
	CC-H5	B23-POL-802	Western Political Thought -II	4	3	1	4	30	70	100	3
	Research	B23-POL-807	Dissertation	12						300	

KURUKSHETRA UNIVERSITY KURUKSHETRA

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Undergraduate Programme (Political Science) Syllabus, Semester-I

CC-1 / MCC-1			
Session 2023-2024			
Part-A Introduction			
Subject	**Political Science**		
Semester	**I**		
Name of the Course	**Principles of Political Science - I**		
Course Code	**B23-POL-101**		
Course Type: (CC/MCC/MDC/ CCM/ DSEC/VOC/DSE/PC/AEC/ VAC	**CC/MCC**		
Level of the course (As per Annexure-I)	**100-199**		
Pre-requisite for the course (if any)	**NA**		
Course Learning Outcomes (CLO)	After completing this course, the learner will be able to: 1. Understand the meaning, nature and scope of Political Science along with its relationship with other Social Sciences. 2. Understand the concept, development and theories of the origin of State. 3. Develop a thorough understanding of state and its relationship with society, government and nation. 4. Comprehend the concepts, features and theories of sovereignty.		
Credits	**Theory**	**Tutorial**	**Total**
	3	1	4
Contact Hours	3 per week	1 per week	4 per week
Max. Marks: 100 **Internal Assessment Marks: 30** **End Term Exam Marks: 70**	**Time: 3 Hours**		
Part-B Contents of the Course			
Instructions for Paper Setters 1. Total NINE Questions will be set and students will be required to attempt FIVE questions. 2. Question No. 1 will be compulsory and will consist of 7 short answer type questions of 2 marks each spread over the entire syllabus. 3. The remaining EIGHT questions will be set taking TWO questions from each of the four units.			

The candidate would be required to attempt ONE question from each unit in addition to the compulsory question.

4. Each question will carry 14 marks.

Unit	Topics	Contact Hours
I	Meaning, Nature, Scope and Significance of Political Science; Relationship of Political Science with Philosophy, History, Economics and Sociology	12
II	State: Meaning, Definition and Elements; Origin and Development of the State: Divine Origin Theory, Force Theory, Social Contract Theory and Evolutionary Theory	12
III	Functions of the State, State and Society, State and Government, State and Nation	12
IV	Sovereignty: Meaning, Types and Main Characteristics; Monistic and Pluralist Theories of Sovereignty	12
	Tutorial	12

Suggested Evaluation Methods

Internal Assessment: 30 Marks	**End Term Examination:**
Class Participation **05** Seminar/Presentation/Assignment/Quiz/Class Test etc. **10** Mid Term Exam: **15**	**70 Marks**

Part-C Learning Resources

Recommended Books:

- A.C. Kapur. (2017). Principles of Political Science. S. Chand Publishing.
- Ball, T., Dagger, R., & O'Neill, B. (2020). Political Ideologies and The Democratic Ideal. Pearson.
- Beetham, D. (2013). The Legitimation of Power. Palgrave Macmillan.
- Beetham, D., & Boyle, K. (2019). Introducing Democracy: 80 Questions and Answers. Polity Press.
- Bidyut Chakrabarty. (2019). Indian Politics. Pearson.
- Bodin, J. (1992). On Sovereignty: Four Chapters from the Six Books of the Commonwealth (J. H. Franklin, Trans.). Cambridge University Press.
- Copley, A. (2018). Essentials of Political Science. Oxford University Press.
- Dahl, R. A. (1957). The Concept of Power. Behavioral Science, 2(3), 201-215.
- Easton, D. (2013). The Political System: An Inquiry into The State of Political Science. University Of Chicago Press.
- Garner, R., Ferdinand, P., Lawson, S., & Wilkinson, A. (2016). Introduction to Politics. Oxford University Press.
- Heywood, A. (2013). Political Ideologies: An Introduction. Palgrave Macmillan.
- Heywood, A. (2013). Politics. Palgrave Macmillan.

- Heywood, A. (2017). Political Theory: An Introduction (5th Ed.). Palgrave Macmillan.
- Heywood, A. (2019). Politics (5th Ed.). Palgrave Macmillan.
- Hoffman, J. (2005). Sovereignty. In W. Carlsnaes, T. Risse, & B. A. Simmons (Eds.), Handbook of International Relations (Pp. 70-88). SAGE Publications.
- Kelsen, H. (2000). The Essence and Value Of Democracy. Rowman & Littlefield.
- M.P. Jain. (2021). Political Theory: An Introduction. Lexis Nexis.
- M.V. Pylee. (2018). Political Theory: Ideas and Concepts. SAGE Publications India.
- Mill, J. S. (2002). On Liberty. Dover Publications.
- Rajeev Bhargava. (2019). Political Theory: An Introduction. Pearson.
- Rawls, J. (1971). A Theory of Justice. Harvard University Press.
- Raz, J. (1986). The Morality of Freedom. Oxford University Press.
- Roskin, M. G., Cord, R. L., Medeiros, J. A., & Jones, W. S. (2017). Political Science: An Introduction. Pearson.
- Skocpol, T. (1979). States and Social Revolutions: A Comparative Analysis Of France, Russia, and China. Cambridge University Press.
- Weber, M. (1969). Politics as a Vocation. In H. H. Gerth & C. Wright Mills (Eds.), From Max Weber: Essays In Sociology. Oxford University Press.
- Weber, M. (1978). Economy and Society: An Outline of Interpretive Sociology. University of California Press.

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Undergraduate Programme (Political Science) Syllabus, Semester-I

MCC-2			
Session 2023-2024			
Part-A Introduction			
Subject	**Political Science**		
Semester	**I**		
Name of the Course	**Introduction to Political Theory**		
Course Code	**B23-POL-102**		
Course Type: (CC/MCC/MDC/ CCM/ DSEC/VOC/DSE/PC/AEC/ VAC	**MCC**		
Level of the course (As per Annexure-I)	**100-199**		
Pre-requisite for the course (if any)	**NA**		
Course Learning Outcomes (CLO)	After completing this course, the learner will be able to: 1. Understand the meaning, nature and significance of Political Theory along with the causes of its decline and resurgence. 2. Comprehend the concepts of liberty, equality and justice. 3. Comprehend the concepts of democracy, rights and citizenship. 4. Develop an understanding of power, political obligation and common good.		
Credits	**Theory**	**Tutorial**	**Total**
	3	1	4
Contact Hours	3 per week	1 per week	4 per week
Max. Marks: 100 **Internal Assessment Marks: 30** **End Term Exam Marks: 70**	**Time: 3 Hours**		
Part-B Contents of the Course			
Instructions for Paper Setters 1. Total NINE Questions will be set and students will be required to attempt FIVE questions. 2. Question No. 1 will be compulsory and will consist of 7 short answer type questions of 2 marks each spread over the entire syllabus. 3. The remaining EIGHT questions will be set taking TWO questions from each of the four units. The			

candidate would be required to attempt ONE question from each unit in addition to the compulsory question.

4. Each question will carry 14 marks.

Unit	Topics	Contact Hours
I	Political Theory: Meaning; Nature; Significance; Decline and Resurgence	12
II	Liberty, Equality and Justice	12
III	Democracy, Rights and Citizenship	12
IV	Power, Political Obligation and Common Good	12
	Tutorial	12

Suggested Evaluation Methods

Internal Assessment: 30 Marks	**End Term Examination:**
Class Participation **05** Seminar/Presentation/Assignment/Quiz/Class Test etc. **10** Mid Term Exam: **15**	**70 Marks**

Part-C Learning Resources

Recommended Books:

- Arblaster, Democracy , 2nd edn., Open University Press, Buckingham, 1994.
- Vincent, The Nature of Political Theory, Oxford University Press, New York, 2004.
- Cobban, 'The Decline of Political Theory,' Political Science Quarterly, 1953, LXVIII, pp. 321-337.
- Heywood, Political Theory: An Introduction, Palgrave Macmillan, London, 2013.
- Heywood, Political Ideologies: An Introduction, Palgrave Macmillan, London, 2012.
- Richard, Citizenship: A Very Short Introduction, Oxford University press, Oxford, 2008.
- Bhuyan, Understanding Political Theory, Kitab Mahal, Cuttack, 2016.
- Held, Political Theory Today, Polity Press, Cambridge, 1991.
- J. Chapman, 'The Feminist Perspective', in Marsh, D. and Stoker, G. (eds.) Theory and Methods in Political Science, Macmillan, London, 1995, pp. 94-114.
- J. C. Johari, Contemporary Political Theory: New Dimensions, Basic Concepts and Major Trends, Sterling, New Delhi, 2007.
- J. C. Johari, Rajnitik Siddhanth, SBPD, Agra, 2015. 1
- J. K. Baral et al., Political Theory: Concepts, issues and ideologies, Vidyapuri, Cuttack, 2015.
- N. Dadhich, Samsamayik Rajnitik Siddhanth, Rawat, Jaipur, 2015.
- O. P. Gauba, An Introduction To Political Theory, 8th edn, Mayur, New Delhi, 2019.
- O. P. Gauba, Rajniti Siddhanth ki Ruprekha: Mayur, New Delhi, 2018.

- R. Bhargava and A. Acharya (eds.), Political Theory: An Introduction, Pearson Longman, New Delhi, 2008.
- R. Bellamy, 'Introduction: The Demise and Rise of Political Theory', in Bellamy, R. (ed.) Theories and Concepts of Politics, Manchester University Press, New York, 1993, pp. 1-14.
- S. Ramaswamy, Political Theory – Ideas and Concepts 2nd edn. , PHI Learning, New Delhi, 2015

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Undergraduate Programme (Political Science) Syllabus, Semester-I

CC-M 1			
Session 2023-2024			
Part-A Introduction			
Subject	**Political Science**		
Semester	**I**		
Name of the Course	**Fundamentals of Political Science-I**		
Course Code	**B23-POL-103**		
Course Type: (CC/MCC/MDC/ CCM/ DSEC/VOC/DSE/PC/AEC/ VAC	**CC-M**		
Level of the course (As per Annexure-I)	**100-199**		
Pre-requisite for the course (if any)	**NA**		
Course Learning Outcomes (CLO)	After completing this course, the learner will be able to: 1. Understand the meaning, nature and scope of Political Science. 2. Understand the elements, function and origin of the State. 3. Comprehend the concepts of power, authority and legitimacy. 4. Develop an understanding of the concepts rights, liberty and equality.		
Credits	**Theory**	**Tutorial**	**Total**
	2	NA	2
Contact Hours	2 per week	NA	2 per week
Max. Marks: 50 **Internal Assessment Marks: 15** **End Term Exam Marks: 35**	**Time: 3 Hours**		
Part-B Contents of the Course			
Instructions for Paper Setters 1. Total NINE Questions will be set and students will be required to attempt FIVE questions. 2. Question No. 1 will be compulsory and will consist of 7 short answer type questions of 1 mark each spread over the entire syllabus. 3. The remaining EIGHT questions will be set taking TWO questions from each of the four units. The candidate would be required to attempt ONE question from each unit in addition to the			

compulsory question.

4. Each question will carry 07 marks.

Unit	Topics	Contact Hours
I	Meaning, Nature, Scope and Significance of Political Science	08
II	State: Elements and Functions; Origin and Development of State	08
III	Key Concepts: Power, Authority, Legitimacy	08
IV	Key Concepts: Rights, Liberty, Equality	08

Suggested Evaluation Methods

Internal Assessment: 15 Marks	**End Term Examination:**
Class Participation: **04** Seminar/Presentation/Assignment/Quiz/Class Test etc: **04** Mid Term Exam: **07**	**35**

Part-C Learning Resources

Recommended Books:

- Ball, T., Dagger, R., & O'Neill, B. (2020). Political Ideologies and the Democratic Ideal. Pearson.
- Beetham, D. (2013). The Legitimation of Power. Palgrave Macmillan.
- Beetham, D., & Boyle, K. (2019). Introducing Democracy: 80 Questions and Answers. Polity Press.
- Copley, A. (2018). Essentials of Political Science. Oxford University Press.
- Dahl, R. A. (1957). The Concept of Power. Behavioral Science, 2(3), 201-215.
- Garner, R., Ferdinand, P., Lawson, S., & Wilkinson, A. (2016). Introduction to Politics. Oxford University Press.
- Heywood, A. (2013). Political Ideologies: An Introduction. Palgrave Macmillan.
- Heywood, A. (2013). Politics. Palgrave Macmillan.
- Heywood, A. (2017). Political Theory: An Introduction. Palgrave Macmillan.
- Kapur, A.C., (2017). Principles of Political Science. S. Chand Publishing.
- Kelsen, H. (2000). The Essence and Value of Democracy. Rowman & Littlefield.
- M.P. Jain. (2021). Political Theory: An Introduction. Lexis Nexis.
- M.V. Pylee. (2018). Political Theory: Ideas and Concepts. SAGE Publications India.
- Mill, J. S. (2002). On Liberty. Dover Publications.
- Rajeev Bhargava. (2019). Political Theory: An Introduction. Pearson.
- Rawls, J. (1971). A Theory of Justice. Belknap Press.
- Roskin, M. G., Cord, R. L., Medeiros, J. A., & Jones, W. S. (2016). Political Science: An Introduction. Pearson.

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Undergraduate Programme (Political Science) Syllabus, Semester-I

MDC-1			
Session 2023-2024			
Part-A Introduction			
Subject	**Political Science**		
Semester	**I**		
Name of the Course	**Indian Polity - I**		
Course Code	**B23-POL-104**		
Course Type: (CC/MCC/MDC/ CCM/ DSEC/VOC/DSE/PC/AEC/ VAC	**MDC**		
Level of the course (As per Annexure-I)	**100-199**		
Pre-requisite for the course (if any)	**NA**		
Course Learning Outcomes (CLO)	After completing this course, the learner will be able to: 1. Comprehend the salient features of the Indian Constitution and develop an understanding of Fundamental Rights and duties. 2. Develop an understanding of the powers, position and functions of the Union Executive 3. Comprehend the functioning of the Union legislature. 4. Comprehend the functioning of the Indian judicial system.		
Credits	**Theory**	**Tutorial**	**Total**
	2	1	3
Contact Hours	2 per week	1 per week	3 per week
Max. Marks: 75 **Internal Assessment Marks: 25** **End Term Exam Marks: 50**	**Time: 3 Hours**		
Part-B Contents of the Course			
Instructions for Paper Setters 1. Total NINE Questions will be set and students will be required to attempt FIVE questions. 2. Question No. 1 will be compulsory and will consist of 5 short answer type questions of 2 marks each spread over the entire syllabus. 3. The remaining EIGHT questions will be set taking TWO questions from each of the four units. The candidate would be required to attempt ONE question from each unit in addition to the compulsory			

question.

4. Each question will carry 10 marks.

Unit	Topics	Contact Hours
I	Indian Constitution: Salient Features, Fundamental Rights and Fundamental Duties	09
II	Union Executive: President, Prime Minister and Council of Ministers	09
III	Union Legislature: Lok Sabha and Rajya Sabha	09
IV	Judiciary: Supreme Court, Judicial Review and Judicial Activism	09
	Tutorial	09

Suggested Evaluation Methods

Internal Assessment: 25 Marks	**End Term Examination:**
Class Participation: **05** Seminar/Presentation/Assignment/Quiz/Class Test etc: **07** Mid Term Exam: **13**	**50**

Part-C Learning Resources

Recommended Books:

- Austin, G. (1966). The Indian Constitution: Corner Stone of a Nation. Oxford, Oxford University Press.
- Austin, G. (2000). Working a Democratic Constitution: The Indian Experience. Delhi, Oxford University Press.
- Basu, D. D. (1994). An Introduction to the Constitution of India. New Delhi, Prentice Hall.
- Bhushan, R., & Katju, M. (2012). Supreme but not Infallible: Essays In Honour of The Supreme Court of India. Hay House India.
- Pylee, M. V. (1998). An Introduction to the Constitution of India. New Delhi.

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Undergraduate Programme (Political Science) Syllabus, Semester-II

CC-2 / MCC-3			
Session 2023-2024			
Part-A Introduction			
Subject	**Political Science**		
Semester	**II**		
Name of the Course	**Principles of Political Science-II**		
Course Code	**B23-POL-201**		
Course Type: (CC/MCC/MDC/ CCM/ DSEC/VOC/DSE/PC/AEC/ VAC	**CC/MCC**		
Level of the course (As per Annexure-I)	**100-199**		
Pre-requisite for the course (if any)	**NA**		
Course Learning Outcomes (CLO)	After completing this course, the learner will be able to: 1. Develop a thorough understanding of the theory and practice of government, separation of powers and rule of law. 2. Understand the various forms of government in a political system. 3. Understand the nature and operation of political parties, pressure groups, representation and bureaucracy. 4. Comprehend the functioning of monarchy, totalitarianism, military rule and democratic political regimes		
Credits	**Theory**	**Tutorial**	**Total**
	3	1	4
Contact Hours	3 per week	1 per week	4 per week
Max. Marks: 100 **Internal Assessment Marks: 30** **End Term Exam Marks: 70**	**Time: 3 Hours**		
Part-B Contents of the Course			
Instructions for Paper Setters 1. Total NINE Questions will be set and students will be required to attempt FIVE questions. 2. Question No. 1 will be compulsory and will consist of 7 short answer type questions of 2 marks each spread over the entire syllabus. 3. The remaining EIGHT questions will be set taking TWO questions from each of the four units. The			

candidate would be required to attempt ONE question from each unit in addition to the compulsory question.

4. Each question will carry 14 marks.

Unit	Topics	Contact Hours
I	Theory and Practice of Government: Legislature, Executive and Judiciary; Separation of Powers and Rule of Law	12
II	Forms of Government: Unitary and Federal; Parliamentary and Presidential	12
III	Operational Dynamics of Political System: Political Parties, Pressure Groups, Representation and Bureaucracy	12
IV	Political Regimes: Monarchy, Totalitarianism, Military Rule and Democracy	12
	Tutorial	12

Suggested Evaluation Methods

Internal Assessment: 30 Marks Class Participation **05** Seminar/Presentation/Assignment/Quiz/Class Test etc. **10** Mid Term Exam: **15**	**End Term Examination:** **70 Marks**

Part-C Learning Resources

Recommended Books:

- Kapur, A.C. (2017). Principles of Political Science. S. Chand Publishing.
- Ball, T., Dagger, R., & O'Neill, B. (2020). Political Ideologies and The Democratic Ideal. Pearson.
- Beetham, D. (2013). The Legitimation of Power. Palgrave Macmillan.
- Beetham, D., & Boyle, K. (2019). Introducing Democracy: 80 Questions and Answers. Polity Press.
- Bidyut Chakrabarty. (2019). Indian Politics. Pearson.
- Bodin, J. (1992). On Sovereignty: Four Chapters from the Six Books of the Commonwealth (J. H. Franklin, Trans.). Cambridge University Press.
- Copley, A. (2018). Essentials of Political Science. Oxford University Press.
- Dahl, R. A. (1957). The Concept of Power. Behavioral Science, 2(3), 201-215.
- Easton, D. (2013). The Political System: An Inquiry into The State of Political Science. University Of Chicago Press.
- Garner, R., Ferdinand, P., Lawson, S., & Wilkinson, A. (2016). Introduction to Politics. Oxford University Press.
- Heywood, A. (2013). Political Ideologies: An Introduction. Palgrave Macmillan.
- Heywood, A. (2013). Politics. Palgrave Macmillan.
- Heywood, A. (2017). Political Theory: An Introduction (5th Ed.). Palgrave Macmillan.
- Heywood, A. (2019). Politics (5th Ed.). Palgrave Macmillan.
- Hoffman, J. (2005). Sovereignty. In W. Carlsnaes, T. Risse, & B. A. Simmons (Eds.), Handbook of International Relations (Pp. 70-88). SAGE Publications.

- Kelsen, H. (2000). The Essence and Value Of Democracy. Rowman & Littlefield.
- M.P. Jain. (2021). Political Theory: An Introduction. Lexis Nexis.
- M.V. Pylee. (2018). Political Theory: Ideas and Concepts. SAGE Publications India.
- Mill, J. S. (2002). On Liberty. Dover Publications.
- Rajeev Bhargava. (2019). Political Theory: An Introduction. Pearson.
- Raz, J. (1986). The Morality of Freedom. Oxford University Press.
- Roskin, M. G., Cord, R. L., Medeiros, J. A., & Jones, W. S. (2017). Political Science: An Introduction. Pearson.
- Weber, M. (1978). Economy and Society: An Outline of Interpretive Sociology. University of California Press.

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Undergraduate Programme (Political Science) Syllabus, Semester-II

DSEC-1			
Session 2023-2024			
Part-A Introduction			
Subject	**Political Science**		
Semester	**II**		
Name of the Course	**Gender and Law in India: Theory and Practice**		
Course Code	**B23-POL-202**		
Course Type: (CC/MCC/MDC/ CCM/ DSEC/VOC/DSE/PC/AEC/ VAC	**DSEC**		
Level of the course (As per Annexure-I)	**100-199**		
Pre-requisite for the course (if any)	**NA**		
Course Learning Outcomes (CLO)	After completing this course, the learner will be able to: 1. Understand the concept, origin and development and types of Feminism 2. Understand the concept of Patriarchy, gender as a social construct and public/private dichotomy. 3. Understand the history of women's movement and constitutional provisions related to gender in India. 4. Gain an in depth knowledge of legal provisions related to gender.		
Credits	**Theory**	**Tutorial**	**Total**
	3	1	4
Contact Hours	3 per week	1 per week	4 per week
Max. Marks: 100 **Internal Assessment Marks: 30** **End Term Exam Marks: 70**	**Time: 3 Hours**		
Part-B Contents of the Course			
Instructions for Paper Setters 1. Total NINE Questions will be set and students will be required to attempt FIVE questions. 2. Question No. 1 will be compulsory and will consist of 7 short answer type questions of 2 marks each spread over the entire syllabus. 3. The remaining EIGHT questions will be set taking TWO questions from each of the four units. The candidate would be required to attempt ONE question from each unit in addition to the compulsory question. 4. Each question will carry 14 marks.			

Unit	Topics	Contact Hours
I	Feminism: Concept, Origin and Development; Types: Liberal, Socialist and Radical Feminism	12
II	Patriarchy; Gender as a Social construct; Public and Private dichotomy.	12
III	History of Women's Movement in India; Constitutional Provisions related to Gender in India;	12
IV	Domestic Violence Act 2005; Criminal Law Amendment Act 2014; LGBTQIA issues.	12
	Tutorial	12
Suggested Evaluation Methods		
Internal Assessment: 30 Marks Class Participation **05** Seminar/Presentation/Assignment/Quiz/Class Test etc. **10** Mid Term Exam: **15**		**End Term Examination:** **70 Marks**

Part-C Learning Resources

Recommended Books:

- J. Ann Tickner, "Gender in World Politics" in John Baylis et al., (eds), The Globalization Of World Politics : An Introduction to International Relations, Oxford University Press, New York, 2014.
- Manisha Pathak Shelat, Communication For Gender Sensitization, Concept, New Delhi, 2004.
- M.P Jain et al., Indian Constitution Law, LexisNexis, New Delhi, 2018.
- Indira Jaising (eds.), Handbook on Law of Domestic Violence, LexisNexis, New Delhi, 2009.
- Shobha Saxena, Crime Against Women and Protective Laws, Deep & Deep, New Delhi, 2000.
- K.L Vibhute, Criminal Law, LexisNexis, New Delhi, 2019.
- Lisa M. Stulberg, LGBTQ Social Movements, Polity Press, Cambridge, 2018.
- Mayank Khari and Aditya Gupta, A Collection of Articles on Contemporary Legal Issues, Educreation, New Delhi, 2018.
- Virginie Dutoya, "Defining the 'Queers' in India: The Politics of Academic Representation", India Review, 15 (2), 2016

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Undergraduate Programme (Political Science) Syllabus, Semester-II

MDC-2			
Session 2023-2024			
Part-A Introduction			
Subject	**Political Science**		
Semester	**II**		
Name of the Course	**Indian Polity-II**		
Course Code	**B23-POL-203**		
Course Type: (CC/MCC/MDC/ CCM/ DSEC/VOC/DSE/PC/AEC/ VAC	**MDC**		
Level of the course (As per Annexure-I)	**100-199**		
Pre-requisite for the course (if any)	**NA**		
Course Learning Outcomes (CLO)	After completing this course, the learner will be able to: 1. Understand the powers, position and functions of the State Executive. 2. Develop an understanding of the powers, position and function of the State legislature 3. Comprehend the functioning of the Indian Judicial system. 4. Comprehend the functioning of local self-government.		
Credits	**Theory**	**Tutorial**	**Total**
	2	1	3
Contact Hours	2 per week	1 per week	3 per week
Max. Marks: 75 **Internal Assessment Marks: 25** **End Term Exam Marks: 50**	**Time: 3 Hours**		
Part-B Contents of the Course			
Instructions for Paper Setters 1. Total NINE Questions will be set and students will be required to attempt FIVE questions. 2. Question No. 1 will be compulsory and will consist of 5 short answer type questions of 2 marks each spread over the entire syllabus. 3. The remaining EIGHT questions will be set taking TWO questions from each of the four units. The candidate would be required to attempt ONE question from each unit in addition to the compulsory question.			

4. Each question will carry 10 marks.

Unit	Topics	Contact Hours
I	State Executive: Governor, Chief Minister and Council of Ministers	09
II	State Legislature: Legislative assembly and Legislative Council	09
III	Judiciary: High Courts and Subordinate Courts	09
IV	Rural and Urban Local Self-government	09
	Tutorial	09

Suggested Evaluation Methods

Internal Assessment: 25 Marks Class Participation: **05** Seminar/Presentation/Assignment/Quiz/Class Test etc: **07** Mid Term Exam: **13**	**End Term Examination:** **50 Marks**

Part-C Learning Resources

Recommended Books:

- Austin, G. (1966). The Indian Constitution: Corner Stone of a Nation. Oxford, Oxford University Press.
- Austin, G. (2000). Working a Democratic Constitution: The Indian Experience. Delhi, Oxford University Press.
- Basu, D. D. (1994). An Introduction to the Constitution of India. New Delhi, Prentice Hall.
- Bhushan, R., & Katju, M. (2012). Supreme but not Infallible: Essays In Honour of The Supreme Court of India. Hay House India.
- Pylee, M. V. (1998). An Introduction to the Constitution of India. New Delhi.

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Undergraduate Programme (Political Science) Syllabus, Semester-II

CC-M 2			
Session 2023-2024			
Part-A Introduction			
Subject	**Political Science**		
Semester	**II**		
Name of the Course	**Fundamentals of Political Science-II**		
Course Code	**B23-POL-204**		
Course Type: (CC/MCC/MDC/ CCM/ DSEC/VOC/DSE/PC/AEC/ VAC	**CC-M**		
Level of the course (As per Annexure-I)	**100-199**		
Pre-requisite for the course (if any)	**NA**		
Course Learning Outcomes (CLO)	After completing this course, the learner will be able to: 1. Comprehend the functioning of the executive, legislature and judiciary. 2. Understand the nature and functioning of unitary, federal, parliamentary and presidential form of government. 3. Develop an understanding of the role of political parties, pressure groups and bureaucracy in a political system. 4. Comprehend the functioning of monarchy, totalitarianism and democratic political regimes.		
Credits	**Theory**	**Tutorial**	**Total**
	2	NA	2
Contact Hours	2 per week	NA	2 per week
Max. Marks: 50 **Internal Assessment Marks: 15** **End Term Exam Marks: 35**	**Time: 3 Hours**		
Part-B Contents of the Course			
Instructions for Paper Setters 1. Total NINE Questions will be set and students will be required to attempt FIVE questions. 2. Question No. 1 will be compulsory and will consist of 7 short answer type questions of 1 mark each spread over the entire syllabus. 3. The remaining EIGHT questions will be set taking TWO questions from each of the four units. The			

candidate would be required to attempt ONE question from each unit in addition to the compulsory question.

4. Each question will carry 07 marks.

Unit	Topics	Contact Hours
I	Institutions: Executive, Legislature, Judiciary	08
II	Types of Government: Unitary and Federal, Parliamentary and Presidential	08
III	Operational Dynamics: Political Parties, Pressure Groups, Bureaucracy	08
IV	Regimes: Democracy, Monarchy, Totalitarianism	08

Suggested Evaluation Methods

Internal Assessment: 15 Marks	**End Term Examination:**
Class Participation: **04** Seminar/Presentation/Assignment/Quiz/Class Test etc: **04** Mid Term Exam: **07**	**35 Marks**

Part-C Learning Resources

Recommended Books:

- Ball, T., Dagger, R., & O'Neill, B. (2020). Political Ideologies and the Democratic Ideal. Pearson.
- Beetham, D. (2013). The Legitimation of Power. Palgrave Macmillan.
- Beetham, D., & Boyle, K. (2019). Introducing Democracy: 80 Questions and Answers. Polity Press.
- Copley, A. (2018). Essentials of Political Science. Oxford University Press.
- Dahl, R. A. (1957). The Concept of Power. Behavioral Science, 2(3), 201-215.
- Garner, R., Ferdinand, P., Lawson, S., & Wilkinson, A. (2016). Introduction to Politics. Oxford University Press.
- Heywood, A. (2013). Political Ideologies: An Introduction. Palgrave Macmillan.
- Heywood, A. (2013). Politics. Palgrave Macmillan.
- Heywood, A. (2017). Political Theory: An Introduction. Palgrave Macmillan.
- Kapur, A.C., (2017). Principles of Political Science. S. Chand Publishing.
- Kelsen, H. (2000). The Essence and Value of Democracy. Rowman & Littlefield.
- M.P. Jain. (2021). Political Theory: An Introduction. Lexis Nexis.
- M.V. Pylee. (2018). Political Theory: Ideas and Concepts. SAGE Publications India.
- Mill, J. S. (2002). On Liberty. Dover Publications.
- Rajeev Bhargava. (2019). Political Theory: An Introduction. Pearson.
- Rawls, J. (1971). A Theory of Justice. Belknap Press.
- Roskin, M. G., Cord, R. L., Medeiros, J. A., & Jones, W. S. (2016). Political Science: An Introduction. Pearson.

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Undergraduate Programme (Political Science) Syllabus, Semester-III

CC-3 / MCC-4			
Session 2023-2024			
Part-A Introduction			
Subject	**Political Science**		
Semester	**III**		
Name of the Course	**Indian Constitution**		
Course Code	**B23-POL-301**		
Course Type: (CC/MCC/MDC/ CCM/ DSEC/VOC/DSE/PC/AEC/ VAC	**CC/MCC**		
Level of the course (As per Annexure-I)	**200-299**		
Pre-requisite for the course (if any)	**NA**		
Course Learning Outcomes (CLO)	After completing this course, the learner will be able to: 1. Understand the preamble and features of the Indian Constitution and develop an understanding of Fundamental Rights and Directive Principles of State Policy. 2. Develop an understanding of the powers, position and functions of the Union and the State Executive. 3. Comprehend the functioning of the Union and State legislatures and local self-government. 4. Comprehend the functioning of the Indian judicial system		
Credits	**Theory**	**Tutorial**	**Total**
	3	1	4
Contact Hours	3 per week	1 per week	4 per week
Max. Marks: 100 **Internal Assessment Marks: 30** **End Term Exam Marks: 70**	**Time: 3 Hours**		
Part-B Contents of the Course			
Instructions for Paper Setters 1. Total NINE Questions will be set and students will be required to attempt FIVE questions. 2. Question No. 1 will be compulsory and will consist of 7 short answer type questions of 2 marks each spread over the entire syllabus.			

3. The remaining EIGHT questions will be set taking TWO questions from each of the four units. The candidate would be required to attempt ONE question from each unit in addition to the compulsory question.
4. Each question will carry 14 marks.

Unit	Topics	Contact Hours
I	Indian Constitution: Preamble, Salient Features, Fundamental Rights, Directive Principles of State Policy	12
II	Union Executive: President, Vice-President, Prime Minister and Council of Ministers State Executive: Governor, Chief Minister and Council of Ministers	12
III	Union Legislature: Parliament - Composition, Functions and the Legislative Process State Legislature: Legislative Assembly and Legislative Council Panchayati Raj Institutions: History, Basic Features and 73rd Amendment	12
IV	Judiciary: Supreme Court and High Courts: Powers, Functions and Jurisdiction; Judicial Review and Judicial Activism	12
	Tutorial	12

Suggested Evaluation Methods

Internal Assessment: 30 Marks Class Participation **05** Seminar/Presentation/Assignment/Quiz/Class Test etc. **10** Mid Term Exam: **15**	**End Term Examination:** **70 Marks**

Part-C Learning Resources

Recommended Books:

- Austin, G. (1966). The Indian Constitution: Corner Stone of a Nation. Oxford, Oxford University Press.
- Austin, G. (2000). Working a Democratic Constitution: The Indian Experience. Delhi, Oxford University Press.
- Basu, D. D. (1994). An Introduction to the Constitution of India. New Delhi, Prentice Hall.
- Basu, D. D., & Parekh, B. (Eds.). (1994). Crisis and Change in Contemporary India. New Delhi, Sage.
- Bhambhri, C. P. (1997). The Indian State: Fifty Years. New Delhi, Shipra.
- Bhushan, R., & Katju, M. (2012). Supreme but not Infallible: Essays In Honour of The Supreme Court of India. Hay House India.
- Brass, P. (1974). Language, Religion and Politics in North India. London, Cambridge University Press.
- Brass, P. (1990). Politics of India Since Independence. Hyderabad, Orient Longman.
- Chanda, A. (1965). Federalism in India: A Study of Union-State Relations. London, George

Allen & Unwin.
- Chaturvedi, S. (2019). State Legislatures in India: Structure, Functioning, Conduct of Business, Powers And Privileges. Universal Law Publishing.
- Cobridge, S., & Harriss, J. (2001). Reinventing India: Liberalization, Hindu Nationalism and Popular Democracy. Delhi, Oxford University Press.
- Fadia, B. L. (1984). State Politics in India (Vol. 1-2). New Delhi, Radiant Publishers.
- Hardgrave, R. L. (1965). India: Government and Politics in a Developing Nation. New York, Harcourt, Brace and World.
- Jayal, N. G. (Ed.). (2001). Democracy in India. Delhi, Oxford University Press.
- Kashyap, S. C. (2012). Our Parliament: An Introduction to the Parliament of India. National Book Trust, India.
- Kaushik, S. (Ed.). (1990). Indian Government and Politics. Delhi University, Directorate Of Hindi Implementation.
- Kohli, A. (1991). Democracy and Discontent: India's Growing Crisis of Governability. Cambridge, Cambridge University Press.
- Kothari, R. (1967). Party System and Election Studies. Bombay, Asia Publishing House.
- Kothari, R. (1970). Politics in India. New Delhi, Orient Longman.
- Morris Jones, W. H. (1974). Government and Politics in India. Delhi, BI Publications.
- Pylee, M. V. (1998). An Introduction to the Constitution of India. New Delhi.
- Ray, A. (1970). Tension Areas in India's Federal System. Calcutta, The World Press.
- Sahni, N. C. (Ed.). (1971). Coalition Politics in India. Jullunder, New Academic Publishing Company.
- Singh, M. P., & Roy, H. (Eds.). (1995). Indian Political System: Structure, Policies, Development. New Delhi, Jnanada Prakash.
- Siwach, J. R. (1985). Dynamics of Indian Government & Politics. New Delhi, Sterling Publishers.
- Thakur, R. (1995). The Government & Politics of India. London, Macmillan.

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Undergraduate Programme (Political Science) Syllabus, Semester-III

MCC-5			
Session 2023-2024			
Part-A Introduction			
Subject	**Political Science**		
Semester	**III**		
Name of the Course	**Comparative Politics**		
Course Code	**B23-POL-302**		
Course Type: (CC/MCC/MDC/ CCM/ DSEC/VOC/DSE/PC/AEC/ VAC	**MCC**		
Level of the course (As per Annexure-I)	**200-299**		
Pre-requisite for the course (if any)	**NA**		
Course Learning Outcomes (CLO)	After completing this course, the learner will be able to: 1. Understand the definition and scope of comparative politics along with its traditional and modern concerns. 2. Develop a thorough understanding of the following approaches to study Comparative Politics: Systems, Structural-functionalism, Political Development and Political Culture. 3. Comprehend the concept of constitutionalism and its problems in the modern times. 4. Comprehend the formal and informal constitutional structures.		
Credits	**Theory**	**Tutorial**	**Total**
	3	1	4
Contact Hours	3 per week	1 per week	4 per week
Max. Marks: 100 **Internal Assessment Marks: 30** **End Term Exam Marks: 70**	**Time: 3 Hours**		
Part-B Contents of the Course			

Instructions for Paper Setters

1. Total NINE Questions will be set and students will be required to attempt FIVE questions.
2. Question No. 1 will be compulsory and will consist of 7 short answer type questions of 2 marks each spread over the entire syllabus.
3. The remaining EIGHT questions will be set taking TWO questions from each of the four units. The candidate would be required to attempt ONE question from each unit in addition to the compulsory question.
4. Each question will carry 14 marks.

Unit	Topics	Contact Hours
I	Comparative Politics: Definition, Scope; Traditional & Modern Concerns, Comparative Method	12
II	Approaches to the Study of Comparative Politics: Systems approach, Structural Functionalism, Political Development and Political Culture	12
III	Constitutionalism: History, Nature, Type and Problem in Modern Times.	12
IV	Constitutional Structure: (a) Formal-Executive, Legislation and Judiciary, (b) Informal Structures-Political Parties and Pressure Groups.	12
	Tutorial	12

Suggested Evaluation Methods

Internal Assessment: 30 Marks	**End Term Examination:**
Class Participation **05** Seminar/Presentation/Assignment/Quiz/Class Test etc. **10** Mid Term Exam: **15**	**70 Marks**

Part-C Learning Resources

Recommended Books:

- G.A. Almond and J.S. Coleman, The Politics of the Developing Areas, Princeton NJ Princeton University Press, 1960..
- G.A. Almond, and S. Verba. The Civil Culture: Political Attitudes and Democracy in Five Nations, Princeton NJ, Princeton University Press, 1963.
- G.A. Almond, Comparative Politics Today: A World View, 7th edn., New York, London, Harper/Collins, 2000.
- D.E. Apter, The Politics of Modernization, Chicago, University of Chicago Press, 1965
- A. Bebler and J Seroka (eds.), Contemporary Political Systems: Classifications and Typologies, Boulder Colerado, Lynne Reinner Publishers, 1990.
- R. Hauge and M. Harrop, Comparative Government and Politics. An Introduction, 5th edn., New York, Palgrave, 2001.
- J.C. Johari, Comparative Political Theory: New Dimensions, Basic Concepts and Major Trends, New Delhi, Sterling, 1987.
- R.C. Macridis, The Study of Comparative Government, New York, Doubleday, 1955.
- R.C. Macridis and R.E. Ward, Modern Political Systems: Europe, and Asia, 2nd edn. Englewood Cliffs NJ, Prentice Hall, 1968.

- J. Manor (ed.), Rethinking Third World Politics, London, Longman, 1991.
- R.C. Macridis, Modern European Governments: Cases in Comparative Policy-Making, Englewood Cliffs NJ, Prentice Hall, 1968.
- L.W. Pye (ed.), Communication and Political Development, Princeton NJ, Princeton University Press, 1963.

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Undergraduate Programme (Political Science) Syllabus, Semester-III

MDC-3			
Session 2023-2024			
Part-A Introduction			
Subject	**Political Science**		
Semester	**III**		
Name of the Course	**Indian Polity - III**		
Course Code	**B23-POL-303**		
Course Type: (CC/MCC/MDC/ CCM/ DSEC/VOC/DSE/PC/AEC/ VAC	**MDC**		
Level of the course (As per Annexure-I)	**200-299**		
Pre-requisite for the course (if any)	**NA**		
Course Learning Outcomes (CLO)	After completing this course, the learner will be able to: 1. Understand the nature and basics of Federalism in India. 2. Comprehend the concept of representation and working of electoral system in India. 3. Understand the nature and role of political parties, coalition politics and pressure groups in India. 4. Develop an understanding of the social factors that influence Indian politics.		
Credits	**Theory**	**Tutorial**	**Total**
	2	1	3
Contact Hours	2 per week	1 per week	3 per week
Max. Marks: 75 **Internal Assessment Marks: 25** **End Term Exam Marks: 50**	**Time: 3 Hours**		
Part-B Contents of the Course			
Instructions for Paper Setters 1. Total NINE Questions will be set and students will be required to attempt FIVE questions. 2. Question No. 1 will be compulsory and will consist of 5 short answer type questions of 2 marks each spread over the entire syllabus. 3. The remaining EIGHT questions will be set taking TWO questions from each of the four units. The candidate would be required to attempt ONE question from each unit in addition to the compulsory question.			

4. Each question will carry 10 marks.

Unit	Topics	Contact Hours
I	Indian Federalism: Nature and Basic Features; Centre - State Relations	09
II	Representation, Election Commission, Electoral Reforms.	09
III	Party System, Coalition Politics, Pressure Groups in Indian Politics	09
IV	Caste, Religion and Regionalism in Indian Politics	09
	Tutorial	09

Suggested Evaluation Methods

Internal Assessment: 25 Marks Class Participation: **05** Seminar/Presentation/Assignment/Quiz/Class Test etc: **07** Mid Term Exam: **13**	**End Term Examination:** **50 Marks**

Part-C Learning Resources

Recommended Books:

- Austin, G. (1966). The Indian Constitution: Corner Stone of a Nation. Oxford, Oxford University Press.
- Austin, G. (2000). Working a Democratic Constitution: The Indian Experience. Delhi, Oxford University Press.
- Basu, D. D. (1994). An Introduction to the Constitution of India. New Delhi, Prentice Hall.
- Basu, D. D., & Parekh, B. (Eds.). (1994). Crisis and Change in Contemporary India. New Delhi, Sage.
- Bhambhri, C. P. (1997). The Indian State: Fifty Years. New Delhi, Shipra.
- Bhushan, R., & Katju, M. (2012). Supreme but not Infallible: Essays In Honour of The Supreme Court of India. Hay House India.
- Brass, P. (1974). Language, Religion and Politics in North India. London, Cambridge University Press.
- Brass, P. (1990). Politics of India Since Independence. Hyderabad, Orient Longman.
- Chanda, A. (1965). Federalism in India: A Study of Union-State Relations. London, George Allen & Unwin.
- Chaturvedi, S. (2019). State Legislatures in India: Structure, Functioning, Conduct of Business, Powers And Privileges. Universal Law Publishing.
- Cobridge, S., & Harriss, J. (2001). Reinventing India: Liberalization, Hindu Nationalism and Popular Democracy. Delhi, Oxford University Press.
- Fadia, B. L. (1984). State Politics in India (Vol. 1-2). New Delhi, Radiant Publishers.
- Hardgrave, R. L. (1965). India: Government and Politics in a Developing Nation. New York, Harcourt, Brace and World.
- Jayal, N. G. (Ed.). (2001). Democracy in India. Delhi, Oxford University Press.
- Kashyap, S. C. (2012). Our Parliament: An Introduction to the Parliament of India. National Book Trust, India.
- Kaushik, S. (Ed.). (1990). Indian Government and Politics. Delhi University, Directorate Of

Hindi Implementation.

- Kohli, A. (1991). Democracy and Discontent: India's Growing Crisis of Governability. Cambridge, Cambridge University Press.
- Kothari, R. (1967). Party System and Election Studies. Bombay, Asia Publishing House.
- Kothari, R. (1970). Politics in India. New Delhi, Orient Longman.
- Morris Jones, W. H. (1974). Government and Politics in India. Delhi, BI Publications.
- Pylee, M. V. (1998). An Introduction to the Constitution of India. New Delhi.
- Ray, A. (1970). Tension Areas in India's Federal System. Calcutta, The World Press.
- Sahni, N. C. (Ed.). (1971). Coalition Politics in India. Jullunder, New Academic Publishing Company.
- Singh, M. P., & Roy, H. (Eds.). (1995). Indian Political System: Structure, Policies, Development. New Delhi, Jnanada Prakash.
- Siwach, J. R. (1985). Dynamics of Indian Government & Politics. New Delhi, Sterling Publishers.
- Thakur, R. (1995). The Government & Politics of India. London, Macmillan.

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Undergraduate Programme (Political Science) Syllabus, Semester-IV

CC-4 / MCC-6			
Session 2023-2024			
Part-A Introduction			
Subject	**Political Science**		
Semester	**IV**		
Name of the Course	**Indian Government and Politics**		
Course Code	**B23-POL-401**		
Course Type: (CC/MCC/MDC/ CCM/ DSEC/VOC/DSE/PC/AEC/ VAC	**CC/MCC**		
Level of the course (As per Annexure-I)	**200-299**		
Pre-requisite for the course (if any)	**NA**		
Course Learning Outcomes (CLO)	After completing this course, the learner will be able to: 1. Understand the theory and practice of Federalism in India. 2. Comprehend the process and dynamics of elections in India. 3. Understand the nature and role of party system, interest and pressure groups in India. 4. Develop an understanding of the socio-political factors that influence Indian politics along with its emerging trends.		
Credits	**Theory**	**Tutorial**	**Total**
	3	1	4
Contact Hours	3 per week	1 per week	4 per week
Max. Marks: 100 **Internal Assessment Marks: 30** **End Term Exam Marks: 70**	**Time: 3 Hours**		
Part-B Contents of the Course			
Instructions for Paper Setters 1. Total NINE Questions will be set and students will be required to attempt FIVE questions. 2. Question No. 1 will be compulsory and will consist of 7 short answer type questions of 2 marks each spread over the entire syllabus. 3. The remaining EIGHT questions will be set taking TWO questions from each of the four units. The			

candidate would be required to attempt ONE question from each unit in addition to the compulsory question.

4. Each question will carry 14 marks.

Unit	Topics	Contact Hours
I	Working of Indian Federalism: Centre-State Relations; Centre-State Tensions; Demands for State Autonomy, Emerging Trends in Indian Federalism	12
II	Election Commission, Electoral Process, Electoral Reforms, Model Code of Conduct, Politics of defection	12
III	Party System in India: Features of Party System; National and Regional Political Parties; Interest and Pressure Groups	12
IV	Socio-political Factors in Indian Politics: Caste, Religion, Language and Regionalism in Indian Politics; Emerging Trends in Indian Politics.	12
	Tutorial	12

Suggested Evaluation Methods

Internal Assessment: 30 Marks	**End Term Examination:**
Class Participation **05** Seminar/Presentation/Assignment/Quiz/Class Test etc. **10** Mid Term Exam: **15**	**70 Marks**

Part-C Learning Resources

Recommended Books:

- Austin, G. (1966). The Indian Constitution: Corner Stone of a Nation. Oxford, Oxford University Press.
- Austin, G. (2000). Working a Democratic Constitution: The Indian Experience. Delhi, Oxford University Press.
- Austin, G. (2003). Indian Federalism in The New Millennium. Oxford University Press.
- Basu, D. D. (1994). An Introduction to the Constitution of India. New Delhi, Prentice Hall.
- Basu, D. D., & Parekh, B. (Eds.). (1994). Crisis and Change in Contemporary India. New Delhi, Sage.
- Bhambhri, C. P. (1997). The Indian State: Fifty Years. New Delhi, Shipra.
- Bhushan, R., & Katju, M. (2012). Supreme but Not Infallible: Essays in Honour of The Supreme Court of India. Hay House India.
- Brass, P. (1974). Language, Religion and Politics in North India. London, Cambridge University Press.
- Brass, P. (1990). Politics of India Since Independence. Hyderabad, Orient Longman.
- Brass, P. R. (2006). The Production of Hindu-Muslim Violence in Contemporary India. University Of Washington Press.
- Chanda, A. (1965). Federalism in India: A Study of Union-State Relations. London, George Allen & Unwin.
- Chaturvedi, S. (2019). State Legislatures in India: Structure, Functioning, Conduct of Business, Powers And Privileges. Universal Law Publishing.

- Chawla, N. (2004). The Great Indian Election: Manifesto Politics, Electoral Behaviour and Democracy. Penguin Books India.
- Cobridge, S., & Harriss, J. (2001). Reinventing India: Liberalization, Hindu Nationalism and Popular Democracy. Delhi, Oxford University Press.
- Fadia, B. L. (1984). State Politics In India (Vol. 1-2). New Delhi, Radiant Publishers.
- Hardgrave, R. L. (1965). India: Government and Politics in A Developing Nation. New York, Harcourt, Brace And World.
- Jaffrelot, C. (2004). India's Silent Revolution: The Rise of the Lower Castes In North India. Columbia University Press.
- Jayal, N. G. (Ed.). (2001). Democracy in India. Delhi, Oxford University Press.
- Kashyap, S. C. (2012). Our Parliament: An Introduction to the Parliament of India. National Book Trust, India.
- Kaushik, S. (Ed.). (1990). Indian Government and Politics. Delhi University, Directorate of Hindi Implementation.
- Kohli, A. (1991). Democracy and Discontent: India's Growing Crisis of Governability. Cambridge, Cambridge University Press.
- Kohli, A. (2008). Democracy and Discontent: India's Growing Crisis of Governability. Cambridge University Press.
- Kothari, R. (1967). Party System and Election Studies. Bombay, Asia Publishing House.
- Kothari, R. (1970). Politics in India. New Delhi, Orient Longman.
- Morris Jones, W. H. (1974). Government and Politics in India. Delhi, BI Publications.
- Noorani, A. G. (2000). Constitutional Questions in India: The President, Parliament and The States. Delhi, Oxford University Press.
- Pylee, M. V. (1998). An Introduction to the Constitution of India. New Delhi.
- Ray, A. (1970). Tension Areas in India's Federal System. Calcutta, The World Press.
- Rudolph, L. I., & Rudolph, S. H. (2008). The Modernity of Tradition: Political Development in India. University of Chicago Press.
- Sahni, N. C. (Ed.). (1971). Coalition Politics in India. Jullunder, New Academic Publishing Company.
- Singh, M. P., & Roy, H. (Eds.). (1995). Indian Political System: Structure, Policies, Development. New Delhi, Jnanada Prakash.
- Siwach, J. R. (1985). Dynamics of Indian Government & Politics. New Delhi, Sterling Publishers.
- Sridharan, E. (2016). The Dynamics of Party Support: Cohort-Analyzing Party Identification in Multiparty Systems. Oxford University Press.
- Thakur, R. (1995). The Government & Politics of India. London, Macmillan.

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Undergraduate Programme (Political Science) Syllabus, Semester-IV

MCC-7			
Session 2023-2024			
Part-A Introduction			
Subject	**Political Science**		
Semester	**IV**		
Name of the Course	**Comparative Constitutions of UK & USA**		
Course Code	**B23-POL-402**		
Course Type: (CC/MCC/MDC/ CCM/ DSEC/VOC/DSE/PC/AEC/ VAC	**MCC**		
Level of the course (As per Annexure-I)	**200-299**		
Pre-requisite for the course (if any)	**NA**		
Course Learning Outcomes (CLO)	After completing this course, the learner will be able to: 1. Understand the evolution, conventions, legacies and features of the constitutions of UK and USA along with their socio-economic basis. 2. Develop a thorough understanding of the comparative study of the executive, legislature and judiciary of U.K. and USA. 3. Understand the structure, functions and role of political parties and pressure groups in UK and USA. 4. Comprehend the process and dynamics of elections, bureaucracy and recent trends in the system of UK and USA.		
Credits	**Theory**	**Tutorial**	**Total**
	3	1	4
Contact Hours	3 per week	1 per week	4 per week
Max. Marks: 100 **Internal Assessment Marks: 30** **End Term Exam Marks: 70**	**Time: 3 Hours**		
Part-B Contents of the Course			

Instructions for Paper Setters

1. Total NINE Questions will be set and students will be required to attempt FIVE questions.
2. Question No. 1 will be compulsory and will consist of 7 short answer type questions of 2 marks each spread over the entire syllabus.
3. The remaining EIGHT questions will be set taking TWO questions from each of the four units. The candidate would be required to attempt ONE question from each unit in addition to the compulsory question.
4. Each question will carry 14 marks.

Unit	Topics	Contact Hours
I	Evolution, Conventions, Legacies and Basic features of Constitutions of UK and USA; Socio Economic basis of Constitutions of UK and USA.	12
II	Comparative Study of Executive, Legislature and Judiciary System of UK and USA.	12
III	Comparative studies of Structures, Functions and roles of political parties and pressure groups of UK and USA.	12
IV	Electoral Processes, Voting Behaviour, Bureaucracy and Recent Trends of the Working of the systems of UK and USA.	12
	Tutorial	12

Suggested Evaluation Methods

Internal Assessment: 30 Marks	**End Term Examination:**
Class Participation **05** Seminar/Presentation/Assignment/Quiz/Class Test etc. **10** Mid Term Exam: **15**	**70 Marks**

Part-C Learning Resources

Recommended Books:

- G.A. Almond et al., Comparative Politics Today: A World View, 7th edn., New York, London, Harper/Collins, 2000.
- W. Bagehot. The English Constitution, London, Fontana, 1963.
- A.H. Birch, British System of Government, 4th edn., London, George Alen and Unwin, 1980.
- J. Blondel, An Introduction to Comparative Government, London, Weidenfeld and Nicolson, 1969.
- J. Blondel, Comparative Legislatures, Englewood Cliffs NJ, Prentice Hall, 1973.
- J. Bryce, Modern Democracies, Vol. 2, New York, Macmillan, 1921.
- S.E. Finer, Comparative Government, Harmondsworth, Penguin. 1974.
- E.S. Griffith, The American System of Government, 6th edn., London, Methuen, 1983.
- D. Kavangh, Brith Politics: Continuity and Change, Oxford, Oxford University Press, 1985.
- H.J. Laski American Democracy: A Commentary and An Interpretation, London, Unwin, 1948.
- A. Lijphart, Electoral Systems and Party System, New Haven CT, Yale University Press, 1994.
- A. Lijphart, (ed.), Parliamentary versus Presidential Government, Oxford and New York, Oxford University Press, 1992.

- P. Mair, The West European Party System, Oxford, Oxford University Press, 1990.
- K.C. Wheare, Federal Government, 4th edn., Oxford and New York, Oxford University Press, 1963.
- J. Wilson, Americal Government, 4th edn., Boston Massachusetts, Houghton Miffin, 1997.

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Undergraduate Programme (Political Science) Syllabus, Semester-IV

MCC-8			
Session 2023-2024			
Part-A Introduction			
Subject	**Political Science**		
Semester	**IV**		
Name of the Course	**State Politics in India**		
Course Code	**B23-POL-403**		
Course Type: (CC/MCC/MDC/ CCM/ DSEC/VOC/DSE/PC/AEC/ VAC	**MCC**		
Level of the course (As per Annexure-I)	**200-299**		
Pre-requisite for the course (if any)	**NA**		
Course Learning Outcomes (CLO)	After completing this course, the learner will be able to: 1. Understand the significance and determinants of state politics in India. 2. Comprehend the theory and practice of Federalism in India. 3. Understand the centre-state relations and various mechanism to resolve the irritants. 4. Develop an understanding of regionalism and movements against land acquisition in India.		
Credits	**Theory**	**Tutorial**	**Total**
	3	1	4
Contact Hours	3 per week	1 per week	4 per week
Max. Marks: 100 **Internal Assessment Marks: 30** **End Term Exam Marks: 70**	**Time: 3 Hours**		
Part-B Contents of the Course			
Instructions for Paper Setters 1. Total NINE Questions will be set and students will be required to attempt FIVE questions. 2. Question No. 1 will be compulsory and will consist of 7 short answer type questions of 2 marks each spread over the entire syllabus. 3. The remaining EIGHT questions will be set taking TWO questions from each of the four units. The candidate would be required to attempt ONE question from each unit in addition to the compulsory			

question.

4. Each question will carry 14 marks.

Unit	Topics	Contact Hours
I	Significance, frameworks of analysis, Determinants of State Politics.	12
II	Theory and practice of Federalism in India, History of Reorganization of states in India, Contemporary Demands for new states.	12
III	Centre-state Relations: Areas of Conflict; Demands for State Autonomy, Punchhi Commission's Report, Inter-state Council.	12
IV	Regionalism and regional political parties, Rise of an agrarian capitalist class, Movements against land acquisition.	12
	Tutorial	12

Suggested Evaluation Methods

Internal Assessment: 30 Marks	**End Term Examination:**
Class Participation **05** Seminar/Presentation/Assignment/Quiz/Class Test etc. **10** Mid Term Exam: **15**	**70 Marks**

Part-C Learning Resources

Recommended Books:

- Kumar, A. (2016) Introduction, in *Rethinking State Politics in India-Regions Within Regions* Kumar, A. (2016) Introduction, in *Rethinking State Politics in India-Regions Within Regions* Taylor and Francis.
- Pai, Sudha (1989) 'Towards a theoretical framework for the study of state politics in India: Some observations, *The Indian Journal of Political Science* , Jan. - March, Vol. 50, No. 1, pp. 94-109
- Tillin, L. (2013) 'National and Subnational Comparative Politics: Why, What and How,' *Studies in Indian Politics*, Vol.1, No.02, pp.235-240.
- Snyder, R. (2001) 'Scaling Down: The Subnational Comparative Method,' *Studies in Comparative International Development*, Spring 2001, Vol. 36, No. 1, pp. 93–110.
- Mawdsley, E. (2002). Redrawing the body politic: federalism, regionalism and the creation of new states in India. *Commonwealth & Comparative Politics*, Vol. 40, No.3, pp. 34-54. Sarangi, A. and Pai, S. (2011), Introduction: ContextualisingReorganisation, in Sarangi, A. and Pai, S (eds) *Interrogating Reorganisation of States-Culture, Identity and Politics in India*, Routledge, New Delhi.
- Tillin, Louise (2011), Reorganising the Hindi Heartland in 2000: The Deep Regional Politics of State Formation, in Sarangi, A. and Pai, S (eds) *Interrogating Reorganisation of States- Culture, Identity and Politics in India*, Routledge, New Delhi.
- Singh, M.P. (2008) 'Reorganisation of States in India,' *Economic and Political Weekly*, Vol. 43, No.11 (March 15-21) pp.70-75.

- Tillin, Louise (2013). *Remapping India: New states and their political origins*. Hurst Publishers.
- Samaddar, R. (2020). Rule, Governmental Rationality and Reorganisation of States, in Sarangi, A. and Pai, S (eds) *Interrogating Reorganisation of States* (pp. 48-65). Routledge India.
- Nag, Sajal (2011) 'Linguistic Provinces' to 'Homelands': Shifting Paradigms of State-making in Post-colonial India, in Sarangi, A. and Pai, S. (eds) *Interrogating Reorganisation of States-Culture, Identity and Politics in India*, Routledge, New Delhi. 223
- Bhalla G.S. 1994 (ed.) *Economic Liberalisation and Indian Agriculture,* Institute for Studies in Industrial Development, New Delhi: 61107.
- Brass, T. (1994) Introduction: The new farmers' movements in India, The Journal of Peasant Studies, 21:3-4, 3-26,DOI: 10.1080/03066159408438553
- Frankel, F. and Rao, M.S.A. (1989 and 1990) (eds.) *Dominance and State Power in India* Oxford University Press, New Delhi 2 Vols. 198
- Pai, S. (2009)'Agrarian Mobilization and Farmers' Movements in India' in *Oxford Companion to Indian Politics* (eds.) Pratap Bhanu Mehta and Niraja Gopal Jayal. Oxford: Oxford University Press.
- Baviskar, A. and Levien, M. (2021) 'Farmers' protests in India: introduction to the JPS Forum,' *The Journal of Peasant Studies*, 48:7, DOI: 10.1080/03066150.2021.1998002
- Auerbach, A. M., Bussell, J., Chauchard, S., Jensenius, F. R., Nellis, G., Schneider, M.,& Ziegfeld, A. (2022). Rethinking the study of electoral politics in the developing world: Reflections on the Indian case. *Perspectives on Politics*, *20*(1), 250-264.
- Kumar, A. (2003). State Electoral Politics: Looking for the Larger Picture. *Economic and Political Weekly*, *38*(30), 3145–3147
- Yadav, Y. (1999). Electoral politics in the time of change: India's third electoral system, 1989-99. *Economic and political weekly*, 2393-2399.
- Yadav, Yogendra, and Palshikar, S. (2006)'Party system and electoral politics in the Indian States, 1952-2002: From hegemony to convergence,' *India's political parties* 6: 73-116.
- Roy, H., Singh, M.P. and Chouhan, A.P.S. (2017) *State Politics in India*, Primus Books. Narain, I. (1965) (ed.) *State Politics in India* Meerut, Meenakshi Prakashan

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Undergraduate Programme (Political Science) Syllabus, Semester-IV

DSE-1			
Session 2023-2024			
Part-A Introduction			
Subject	**Political Science**		
Semester	**IV**		
Name of the Course	**Perspectives on Democracy**		
Course Code	**B23-POL-404**		
Course Type: (CC/MCC/MDC/ CCM/ DSEC/VOC/DSE/PC/AEC/ VAC	**DSE**		
Level of the course (As per Annexure-I)	**200-299**		
Pre-requisite for the course (if any)	**NA**		
Course Learning Outcomes (CLO)	After completing this course, the learner will be able to: 1. Understand the meaning, definition and characteristics of democracy along with its historical development. 2. Comprehend the forms, dimensions and safeguards of democracy. 3. Understand the liberal, Marxist, elitist and pluralist theories of democracy. 4. Develop an understanding of issues, challenges and future of democracy.		
Credits	**Theory**	**Tutorial**	**Total**
	3	1	4
Contact Hours	3 per week	1 per week	4 per week
Max. Marks: 100 **Internal Assessment Marks: 30** **End Term Exam Marks: 70**	**Time: 3 Hours**		
Part-B Contents of the Course			
Instructions for Paper Setters 1. Total NINE Questions will be set and students will be required to attempt FIVE questions. 2. Question No. 1 will be compulsory and will consist of 7 short answer type questions of 2 marks each spread over the entire syllabus. 3. The remaining EIGHT questions will be set taking TWO questions from each of the four units. The candidate would be required to attempt ONE question from each unit in addition to the compulsory			

question.

4. Each question will carry 14 marks.

Unit	Topics	Contact Hours
I	Democracy: Meaning, Definition and Characteristics, Historical Development, Merits and Demerits	12
II	Forms of Democracy: Direct and Indirect; Dimensions of Democracy: Political, Social, Economic & Cultural; Safeguards of Democracy	12
III	Theories of Democracy: Liberal, Marxist, Elitist and Plural	12
IV	Issues in Democracy: Majority Rule & Minority Rights, Right to Dissent, Challenges and Future of Democracy	12
	Tutorial	12

Suggested Evaluation Methods

Internal Assessment: 30 Marks Class Participation **05** Seminar/Presentation/Assignment/Quiz/Class Test etc. **10** Mid Term Exam: **15**	**End Term Examination:** **70 Marks**

Part-C Learning Resources

Recommended Books:

- Chatterjee, P. (2004). The Politics of The Governed: Reflections on Popular Politics in Most of the World. Columbia University Press.
- Chhibber, P. K., & Verma, P. (2014). Ideology and Identity: The Changing Party Systems of India. Oxford University Press.
- Dahl, R. A. (1971). Polyarchy: Participation and Opposition. Yale University Press.
- Dahl, R. A. (2000). On Democracy. Yale University Press.
- Diamond, L. (2008). The Spirit of Democracy: The Struggle to Build Free Societies Throughout the World. Macmillan.
- Diamond, L., Linz, J. J., & Lipset, S. M. (1989). Democracy in Developing Countries: Latin America. Lynne Rienner Publishers.
- Elster, J. (Ed.). (1998). Deliberative Democracy. Cambridge University Press.
- Gopalakrishnan, R. (2017). Democracy in India: A Critical Examination. Cambridge Scholars Publishing.
- Guha, R. (2019). Democrats and Dissenters. Penguin.
- Held, D. (2006). Models of Democracy. Polity.
- Huntington, S. P. (1991). The Third Wave: Democratization in the Late Twentieth Century. University of Oklahoma Press.

- Kohli, A. (2001). The Success of India's Democracy. Cambridge University Press.
- Lijphart, A. (2012). Patterns of Democracy: Government Forms and Performance in Thirty-Six Countries. Yale University Press.
- Przeworski, A. (1991). Democracy and the Market: Political and Economic Reforms in Eastern Europe and Latin America. Cambridge University Press.
- Przeworski, A., Alvarez, M. E., Cheibub, J. A., & Limongi, F. (2000). Democracy and Development: Political Institutions and Well-Being in The World, 1950-1990. Cambridge University Press.
- Rustow, D. A. (1970). Transitions to Democracy: Toward A Dynamic Model. Comparative Politics, 2(3), 337-363.
- Sharma, R. (2006). Democracy and Development in India: From Socialism to Pro-Business. Oxford University Press.
- Tilly, C. (2007). Democracy. Cambridge University Press.

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Undergraduate Programme (Political Science) Syllabus, Semester-IV

DSE-1			
Session 2023-2024			
Part-A Introduction			
Subject	**Political Science**		
Semester	**IV**		
Name of the Course	**Perspectives on Democracy**		
Course Code	**B23-POL-405**		
Course Type: (CC/MCC/MDC/ CCM/ DSEC/VOC/DSE/PC/AEC/ VAC	**DSE**		
Level of the course (As per Annexure-I)	**200-299**		
Pre-requisite for the course (if any)	**NA**		
Course Learning Outcomes (CLO)	After completing this course, the learner will be able to: 1. Understand the meaning, nature, significance, origin and growth of human rights. 2. Understand the UN human rights declaration of 1948, its significance and limitations. 3. Comprehend the different generations of human rights 4. Develop a thorough understanding of constitutional provisions and civil and democratic rights movements in India.		
Credits	**Theory**	**Tutorial**	**Total**
	3	1	4
Contact Hours	3 per week	1 per week	4 per week
Max. Marks: 100 **Internal Assessment Marks: 30** **End Term Exam Marks: 70**	**Time: 3 Hours**		
Part-B Contents of the Course			
Instructions for Paper Setters 1. Total NINE Questions will be set and students will be required to attempt FIVE questions. 2. Question No. 1 will be compulsory and will consist of 7 short answer type questions of 2 marks each spread over the entire syllabus. 3. The remaining EIGHT questions will be set taking TWO questions from each of the four units. The candidate would be required to attempt ONE question from each unit in addition to the compulsory			

question.

4. Each question will carry 14 marks.

Unit	Topics	Contact Hours
I	Introduction to Human Rights: Meaning and Significance, Origin and Growth of Human Rights	12
II	UN Human Rights Declaration, 1948, Significance and limitations of the Human Rights Declaration	12
III	Three Generations of Human Rights: Civil and Political; Social, Economic and Cultural Rights; Environmental rights	12
IV	Human Rights in India: Constitutional Provisions as safeguard of Human Rights; Civil Liberties and Democratic Rights movements in India, Gender and Human Rights in India	12
	Tutorial	12

Suggested Evaluation Methods

Internal Assessment: 30 Marks	**End Term Examination:**
Class Participation **05** Seminar/Presentation/Assignment/Quiz/Class Test etc. **10** Mid Term Exam: **15**	**70 Marks**

Part-C Learning Resources

Recommended Books:

- Gregg Benjamin (2016) *The Human Rights State: Justice Within and Beyond Sovereign Nations*. Philadelphia, PA: University of Pennsylvania Press.
- Fraser Nancy (1995) From Redistribution to Recognition? Dilemmas of justice in a 'post-socialist age'. *New Left Review* 212(July–August): 68–93.
- Greenhill Brian (2015) *Transmitting Rights*. New York, NY: Oxford University Press.
- Hafner-Burton Emilie M (2013) *Making Human Rights a Reality*. Princeton, NJ: Princeton University Press.
- Jensen Steven LB (2016) *The Making of International Human Rights*. Cambridge: Cambridge University Press.
- May John D'Arcy (2006) Human Dignity, Human Rights, and Religious Pluralism: Buddhist and Christian perspectives. *Buddhist–Christian Studies* 26(1)
- Satvinder, Juss, *Human Rights in India*, Routledge, 2021.
- Karnatka Women's information and resource Center, *Human Rights Education for the Beginners,* National Human Rights Commission, New Delhi, 2005.

Kurukshetra University Kurukshetra

Scheme of Examination for Undergraduate subject in Human Rights

According to Curriculum Framework for Undergraduate Subjects as per NEP 2020

(Multiple Entry-Exit, Internships and Choice Based Credit System)

Semester	Course Type	Course Code	Nomenclature of paper	Credits	Credits	Contact hours		Internal marks	End term Marks	Total Marks	Duration of exam (Hrs)
					Theory	Tutorial	T+T				
1	CC-1	B23-HRT-101	Human Rights and Duties in India - I	4	3	1	4	30	70	100	3
	CC-M1	B23-HRT-102	Environment and Human Rights - I	2	2	NA	2	15	35	50	3
	MDC -1	B23-HRT-103	Introduction to Human Rights in India - I	3	2	1	3	25	50	75	3
2	CC-2	B23-HRT-201	Human Rights and Duties in India - II	4	3	1	4	30	70	100	3
	CC - M2	B23-HRT-202	Environment and Human Rights - II	2	2	NA	2	15	35	50	3
	MDC 2	B23-HRT-203	Introduction to Human Rights in India - II	3	2	1	3	25	50	75	3
3	CC-3	B23-HRT-301	Societal issues of Human Rights in India - I	4	3	1	4	30	70	100	3
	MDC 3	B23-HRT-302	Introduction to Human Rights in India - III	3	2	1	3	25	50	75	3
4	CC-4	B23-HRT-401	Societal issues of Human Rights in India - II	4	3	1	4	30	70	100	3
5	CC-5	B23-HRT-501	Environment and Human Rights and Duties-I	4	3	1	4	30	70	100	3
6	CC-6	B23-HRT-601	Environment and Human Rights and Duties-II	4	3	1	4	30	70	100	3

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Syllabus for the Subject of Human Rights as per NEP -2020, Semester-I

CC-1			
Session 2023-2024			
Part-A Introduction			
Subject	**Human Rights**		
Semester	**I**		
Name of the Course	**Human Rights and Duties in India-I**		
Course Code	**B23-HRT-101**		
Course Type: (CC/MCC/MDC/ CCM/ DSEC/VOC/DSE/PC/AEC/ VAC	**CC**		
Level of the course (As per Annexure-I)	**100-199**		
Pre-requisite for the course (if any)	**NA**		
Course Learning Outcomes (CLO)	After completing this course, the learner will be able to: 1. Understand the meaning, nature and scope of human rights in India. 2. Understand the natural, Liberal, Marxist and Social theories of rights. 3. Comprehend the human rights from constitutional perspective along with its co-relations with fundamental rights and duties. 4. Understand the role of Legislature, Executive and Judiciary in the enforcement of human rights.		
Credits	**Theory**	**Tutorial**	**Total**
	3	1	4
Contact Hours	3 per week	1 per week	4 per week
Max. Marks: 100 **Internal Assessment Marks: 30** **End Term Exam Marks: 70**	**Time: 3 Hours**		
Part-B Contents of the Course			
Instructions for Paper Setters 1. Total NINE Questions will be set and students will be required to attempt FIVE questions. 2. Question No. 1 will be compulsory and will consist of 7 short answer type questions of 2 marks each spread over the entire syllabus. 3. The remaining EIGHT questions will be set taking TWO questions from each of the four units. The candidate would be required to attempt ONE question from each unit in addition to the			

compulsory question.

4. Each question will carry 14 marks.

Unit	Topics	Contact Hours
I	Concept of Human Rights: Meaning, Definition and Nature and Scope of Human Rights	12
II	Theories of Rights: Natural, Liberal, Marxist and Social Theory	12
III	Constitutional Perspective: Fundamental Rights, Fundamental Duties and their Co-relation.	12
IV	Constitutional Mechanism for Enforcement of Human Rights: Legislative Executive and Judiciary.	12
	Tutorial	12

Suggested Evaluation Methods

Internal Assessment: 30 Marks	**End Term Examination:**
Class Participation **05** Seminar/Presentation/Assignment/Quiz/Class Test etc. **10** Mid Term Exam: **15**	**70 Marks**

Part-C Learning Resources

Recommended Books:

- Desai, A.R. (ed.), (1986), Violations of Democratic Rights in India, Bombay, Poplar Prakashan.
- Sathe S.P., (2004), Judicial Activism in India, New Delhi OUP.
- Austin, Granville, (2000), Working of Democratic Constitutions: The Indian Experience, New Delhi: Oxford University Press.
- Austin, Granville (2002), The Indian Constitutions: Cornerstone of a Nation, New Delhi, OUP
- Dikshit, R.C. (1998), Human Rights and the Law, Universal and Indian, New Delhi,Deep and Deep.
- Kashyap, Subhash C., (1978), Human Rights and Parliament, Delhi: Metropolitan Kirpal, B.N. et al., (2004), Supreme but not Infallible, New Delhi: OUP
- Mehta P.L., and Neena Verma, (1995), Human Rights Under the Indian Constitutions, New Delhi: Deep and Deep Publications.
- Sathe S.P., (2004), Judicial Activism in India, New Delhi; OUP
- Rao K. Subha,(1962), Fundamental Rights under Constitution of India, Madras: Madras University
- Sehgal, B.P. Singh (ed), (1999), Human Rights in India: Problems and Perspectives, New Delhi: Deep and Deep.

Syllabus for the Subject of Human Rights as per NEP -2020, Semester-I

CC-M 1			
Session 2023-2024			
Part-A Introduction			
Subject	**Human Rights**		
Semester	**I**		
Name of the Course	**Environment and Human Rights - I**		
Course Code	**B23-HRT-102**		
Course Type: (CC/MCC/MDC/ CCM/ DSEC/VOC/DSE/PC/AEC/ VAC	**CC-M**		
Level of the course (As per Annexure-I)	**100-199**		
Pre-requisite for the course (if any)	**NA**		
Course Learning Outcomes (CLO)	After completing this course, the learner will be able to: 1. Understand the meaning and concerns related to environment 2. Comprehend the historical perspective on environment 3. Understand major environmental threats in India. 4. Understand the consequences of indiscriminate industrial expansion, depletion of rare species and biodiversity.		
Credits	**Theory**	**Tutorial**	**Total**
	2	NA	2
Contact Hours	2 per week	NA	2 per week
Max. Marks: 50 **Internal Assessment Marks: 15** **End Term Exam Marks: 35**	**Time: 3 Hours**		
Part-B Contents of the Course			
Instructions for Paper Setters 1. Total NINE Questions will be set and students will be required to attempt FIVE questions. 2. Question No. 1 will be compulsory and will consist of 7 short answer type questions of 1 mark each spread over the entire syllabus. 3. The remaining EIGHT questions will be set taking TWO questions from each of the four units. The candidate would be required to attempt ONE question from each unit in addition to the compulsory question. 4. Each question will carry 07 marks.			

Unit	Topics	Contact Hours
I	Environment: Meaning and Concerns related to Environment.	08
II	Historical Perspective; and Pollution and its effects on environment and life on earth	08
III	Environment Threats in India: Forest Denudation; and Pollution of Rivers.	08
IV	Indiscriminate Industrial Expansion; Depletion of Rare Species; and Bio-Diversity.	08
Suggested Evaluation Methods		
Internal Assessment: 15 Marks Class Participation: **04** Seminar/Presentation/Assignment/Quiz/Class Test etc: **04** Mid Term Exam: **07**		**End Term Examination:** **35**

Part-C Learning Resources

Recommended Books:

- Balasubramanium, V., "Environment and Human Rights: A New Form of Imperialism", Economic and Political Weekly, Vol. 33. No. 8, 22-27 Feb. 1998
- Birnie, Patricia and Allan Boyle, (1992) International Law and the Environment; Clarendon, Oxford.
- Desai, Bharat, "Enforcement of the Right to Environmental Protection through Public Interest Litigation in India", Indian Journal of International Law, vol. 33, 1993.
- Finnies, J. (1987), Natural Law and Natural Rights, Clarendon Press. Oxford.
- Mahawal, S., "Right to Safe Environment", World Focus, vol. 13, no.2, March 1992
- RLEK, (1997), Community Forestry Management in Protected Areas: A Van Gujjar Proposal, Natraj Publishers, New Delhi.
- Sachs. Aaron, Eco-Justice: (1995) Linking Human Rights and the Environment, World Watch Institute, Washington D.C.
- Shelton, Dinah, "Human Rights, Environmental Rights and the Right to Environment", Stanford Journal of International Law, Vol.28, no.1, 1991.
- Singh, Nagendra, "Right to Environment and Sustainable Development as a Principle of International Law", Journal of Indian Law Institute, 1987.
- Singh, Rajkumar Deepak, "Response of Indian Judiciary to Environmental Protection", Indian Journal of International Law, vol.39, no.3, July-Sept. 1999
- Trindade, A.C., (1998), "Human Rights and the Environment", in Janusz Symonides, ed., Human Rights: New Dimensions and Challenges, UNESCO, Sydney.

Syllabus for the Subject of Human Rights as per NEP -2020, Semester-I

MDC-1			
Session 2023-2024			
Part-A Introduction			
Subject	**Human Rights**		
Semester	**I**		
Name of the Course	**Introduction to Human Rights in India - I**		
Course Code	**B23-HRT-103**		
Course Type: (CC/MCC/MDC/ CCM/ DSEC/VOC/DSE/PC/AEC/ VAC	**MDC**		
Level of the course (As per Annexure-I)	**100-199**		
Pre-requisite for the course (if any)	**NA**		
Course Learning Outcomes (CLO)	After completing this course, the learner will be able to: 1. Understand the meaning, nature and scope of human rights in India. 2. Understand the Liberal, Marxist and Social theories of rights. 3. Comprehend human rights from constitutional perspective along with its co-relations with fundamental rights and duties. 4. Understand the role of Legislature, Executive and Judiciary in the enforcement of human rights.		
Credits	**Theory**	**Tutorial**	**Total**
	2	1	3
Contact Hours	2 per week	1 per week	3 per week
Max. Marks: 75 **Internal Assessment Marks: 25** **End Term Exam Marks: 50**	**Time: 3 Hours**		

Part-B Contents of the Course

Instructions for Paper Setters

1. Total NINE Questions will be set and students will be required to attempt FIVE questions.
2. Question No. 1 will be compulsory and will consist of 5 short answer type questions of 2 marks each spread over the entire syllabus.
3. The remaining EIGHT questions will be set taking TWO questions from each of the four units. The candidate would be required to attempt ONE question from each unit in addition to the compulsory question.
4. Each question will carry 10 marks.

Unit	**Topics**	**Contact Hours**

I	Concept of Human Rights: Meaning, Definition, Nature and Scope of Human Rights	09
II	Theories of Rights: Natural, Liberal, Marxist and Social Theory	09
III	Constitutional Perspective: Fundamental Rights, Fundamental Duties and their interrelationship	09
IV	Constitutional Mechanism for Enforcement of Human Rights: Legislative Executive and Judiciary.	09
	Tutorial	09
Suggested Evaluation Methods		
Internal Assessment: 25 Marks Class Participation: **05** Seminar/Presentation/Assignment/Quiz/Class Test etc: **07** Mid Term Exam: **13**		**End Term Examination:** **50**

Part-C Learning Resources

Recommended Books:

- Desai, A.R. (ed.), (1986), Violations of Democratic Rights in India, Bombay, Poplar Prakashan.
- Sathe S.P., (2004), Judicial Activism in India, Newl Delhi OUP.
- Austin, Granville, (2000), Working of Democratic Constitutions: The Indian Experience, New Delhi: Oxford University Press.
- Austin, Granville (2002), The Indian Constitutions: Cornerstone of a Nation, New Delhi, OUP
- Dikshit, R.C. (1998), Human Rights and the Law, Universal and Indian, new Delhi,Deep and Deep.
- Kashyap, Subhash C., (1978), Human Rights and Parliament, Delhi: Metropolitan Kirpal, B.N. et al., (2004), Supreme but not Infallible, New Delhi: OUP
- Mehta P.L., and Neena Verma, (1995), Human Rights Under the Indian Constitutions, New Delhi: Deep and Deep Publications.
- Sathe S.P., (2004), Judicial Activism in India, NewDelhi; OUP
- Rao K. Subha, (1962), Fundamental Rights under Constitution of India, Medras: Medras University
- Sehgal, B.P. Singh (ed), (1999), Human Rights in India: Problems and Perspectives, New Delhi: Deep and Deep.

Syllabus for the Subject of Human Rights as per NEP -2020, Semester-II

CC-2			
Session 2023-2024			
Part-A Introduction			
Subject	**Human Rights**		
Semester	**II**		
Name of the Course	**Human Rights and Duties in India-II**		
Course Code	**B23-HRT-201**		
Course Type: (CC/MCC/MDC/ CCM/ DSEC/VOC/DSE/PC/AEC/ VAC	**CC**		
Level of the course (As per Annexure-I)	**100-199**		
Pre-requisite for the course (if any)	**NA**		
Course Learning Outcomes (CLO)	After completing this course, the learner will be able to: 1. Understand the national freedom movement, dalit and women movements in India. 2. Understand the socio-political problems of human rights in India. 3. Comprehend the role of NHRC and SHRCs in the enforcement of human rights. 4. Understand the role of national commission and committee for SC/ST in the enforcement of human rights.		
Credits	**Theory**	**Tutorial**	**Total**
	3	1	4
Contact Hours	3 per week	1 per week	4 per week
Max. Marks: 100 **Internal Assessment Marks: 30** **End Term Exam Marks: 70**	**Time: 3 Hours**		

Part-B Contents of the Course

Instructions for Paper Setters

1. Total NINE Questions will be set and students will be required to attempt FIVE questions.
2. Question No. 1 will be compulsory and will consist of 7 short answer type questions of 2 marks each spread over the entire syllabus.
3. The remaining EIGHT questions will be set taking TWO questions from each of the four units. The candidate would be required to attempt ONE question from each unit in addition to the compulsory question.
4. Each question will carry 14 marks.

Unit	**Topics**	**Contact Hours**

I	Human Rights Movements in India: National Freedom Movement, Dalit and Women's Movement.	12
II	Societal and Political Problems of Human Rights in India: Violence against Women and Children, Terrorism and Regionalism	12
III	Statutory Mechanism for Enforcement of Human Rights in India: National Human Rights Commission (NHRC) and State Human Rights Commissions (SHRCs)-Evolution, Composition and their Roles.	12
IV	Statutory Mechanism for Enforcement of Human Rights in India: National Commission and Committees for SCs/STs, Minorities Commission, Women' Commission- Consumer Rights and Courts.	12
	Tutorial	12
Suggested Evaluation Methods		
Internal Assessment: 30 Marks Class Participation **05** Seminar/Presentation/Assignment/Quiz/Class Test etc. **10** Mid Term Exam: **15**		**End Term Examination:** **70 Marks**

Part-C Learning Resources

Recommended Books:

- Desai, A.R. (ed.), (1986), Violations of Democratic Rights in India, Bombay, Poplar Prakashan.
- Sathe S.P., (2004), Judicial Activism in India, New Delhi OUP.
- RLEK, (1997), Community Forestry Management in Protected Areas: A Van Gujjar Proposal, Natraj Publishers, New Delhi.
- Sachs. Aaron, Eco-Justice: (1995) Linking Human Rights and the Environment, World Watch Institute, Washington D.C.
- Shelton, Dinah, "Human Rights, Environmental Rights and the Right to Environment", Stanford Journal of International Law, Vol.28, no.1, 1991.
- Singh, Nagendra, "Right to Environment and Sustainable Development as a Principle of International Law", Journal of Indian Law Institute, 1987.
- Singh, Rajkumar Deepak, "Response of Indian Judiciary to Environmental Protection", Indian Journal of International Law, vol.39, no.3, July-Sept. 1999
- Trindade, A.C., (1998), "Human Rights and the Environment", in Janusz Symonides, ed., Human Rights: New Dimensions and Challenges, UNESCO, Sydney.

Syllabus for the Subject of Human Rights as per NEP -2020, Semester-II

<table>
<tr><td colspan="4">CC-M 2</td></tr>
<tr><td colspan="4">Session 2023-2024</td></tr>
<tr><td colspan="4">Part-A Introduction</td></tr>
<tr><td>Subject</td><td colspan="3">Human Rights</td></tr>
<tr><td>Semester</td><td colspan="3">II</td></tr>
<tr><td>Name of the Course</td><td colspan="3">Environment and Human Rights - II</td></tr>
<tr><td>Course Code</td><td colspan="3">B23-HRT-202</td></tr>
<tr><td>Course Type: (CC/MCC/MDC/ CCM/ DSEC/VOC/DSE/PC/AEC/ VAC</td><td colspan="3">CC-M</td></tr>
<tr><td>Level of the course (As per Annexure-I)</td><td colspan="3">100-199</td></tr>
<tr><td>Pre-requisite for the course (if any)</td><td colspan="3">NA</td></tr>
<tr><td>Course Learning Outcomes (CLO)</td><td colspan="3">After completing this course, the learner will be able to:
1. Understand the content and scope of Right to Environment along with the Right to Development.
2. Comprehend the idea of Globalization and Global Commons.
3. Understand the issue of environmental protection in developing countries.
4. Understand the national regime of environmental protection.</td></tr>
<tr><td rowspan="2">Credits</td><td>Theory</td><td>Tutorial</td><td>Total</td></tr>
<tr><td>2</td><td>NA</td><td>2</td></tr>
<tr><td>Contact Hours</td><td>2 per week</td><td>NA</td><td>2 per week</td></tr>
<tr><td>Max. Marks: 50
Internal Assessment Marks: 15
End Term Exam Marks: 35</td><td colspan="3">Time: 3 Hours</td></tr>
<tr><td colspan="4">Part-B Contents of the Course</td></tr>
<tr><td colspan="4">Instructions for Paper Setters
1. Total NINE Questions will be set and students will be required to attempt FIVE questions.
2. Question No. 1 will be compulsory and will consist of 7 short answer type questions of 1 mark each spread over the entire syllabus.
3. The remaining EIGHT questions will be set taking TWO questions from each of the four units. The candidate would be required to attempt ONE question from each unit in addition to the compulsory question.
4. Each question will carry 07 marks.</td></tr>
</table>

Unit	Topics	Contact Hours
I	Right to clean environment: Its Content and Scope; Right to Environment v/s Right to Development	08
II	Globalization of the Right: The Planet Earth and Global Commons.	08
III	Issue of Environmental Protection in Developing Countries: Inter-Generational Equity; Preservation of Natural Resources; Poverty, Illiteracy and environment: and City Dwellers and Villagers.	08
IV	National Regime of Environment Protection: Constitutional Rights and Duties and Statutory Rights and Duties.	08
Suggested Evaluation Methods		
Internal Assessment: 15 Marks Class Participation: **04** Seminar/Presentation/Assignment/Quiz/Class Test etc: **04** Mid Term Exam: **07**		**End Term Examination:** **35**

Part-C Learning Resources

Recommended Books:

- Balasubramanium, V., "Environment and Human Rights: A New Form of Imperialism", Economic and Political Weekly, Vol. 33. No. 8, 22-27 Feb. 1998
- Birnie, Patricia and Allan Boyle, (1992) International Law and the Environment; Clarendon, Oxford.
- Desai, Bharat, "Enforcement of the Right to Environmental Protection through Public Interest Litigation in India", Indian Journal of International Law, vol. 33, 1993.

Syllabus for the Subject of Human Rights as per NEP -2020, Semester-II

<table>
<tr><td colspan="4">MDC-2</td></tr>
<tr><td colspan="4">Session 2023-2024</td></tr>
<tr><td colspan="4">Part-A Introduction</td></tr>
<tr><td>Subject</td><td colspan="3">Human Rights</td></tr>
<tr><td>Semester</td><td colspan="3">II</td></tr>
<tr><td>Name of the Course</td><td colspan="3">Introduction to Human Rights in India - II</td></tr>
<tr><td>Course Code</td><td colspan="3">B23-HRT-203</td></tr>
<tr><td>Course Type: (CC/MCC/MDC/ CCM/ DSEC/VOC/DSE/PC/AEC/ VAC</td><td colspan="3">MDC</td></tr>
<tr><td>Level of the course (As per Annexure-I)</td><td colspan="3">100-199</td></tr>
<tr><td>Pre-requisite for the course (if any)</td><td colspan="3">NA</td></tr>
<tr><td>Course Learning Outcomes (CLO)</td><td colspan="3">After completing this course, the learner will be able to:
1. Understand the national freedom movement, Dalit and women movements in India.
2. Understand the socio-political problems of human rights in India.
3. Comprehend the role of NHRC and SHRCs in the enforcement of human rights.
4. Understand the role of national commission and committee for SC/ST in the enforcement of human rights.</td></tr>
<tr><td rowspan="2">Credits</td><td>Theory</td><td>Tutorial</td><td>Total</td></tr>
<tr><td>2</td><td>1</td><td>3</td></tr>
<tr><td>Contact Hours</td><td>2 per week</td><td>1 per week</td><td>3 per week</td></tr>
<tr><td>Max. Marks: 75
Internal Assessment Marks: 25
End Term Exam Marks: 50</td><td colspan="3">Time: 3 Hours</td></tr>
<tr><td colspan="4">Part-B Contents of the Course</td></tr>
<tr><td colspan="4">Instructions for Paper Setters
1. Total NINE Questions will be set and students will be required to attempt FIVE questions.
2. Question No. 1 will be compulsory and will consist of 5 short answer type questions of 2 marks each spread over the entire syllabus.
3. The remaining EIGHT questions will be set taking TWO questions from each of the four units. The candidate would be required to attempt ONE question from each unit in addition to the compulsory question.
4. Each question will carry 10 marks.</td></tr>
</table>

Unit	Topics	Contact Hours
I	Human Rights Movements in India: National Freedom Movement, Dalit and Women's Movement.	09
II	Societal and Political Problems of Human Rights in India: Violence against Women and Children; Terrorism	09
III	Statutory Mechanism for Enforcement of Human Rights in India: National Human Rights Commission (NHRC) and State Human Rights Commissions (SHRCs)-Evolution, Composition and their Roles.	09
IV	Statutory Mechanism for Enforcement of Human Rights in India: National Commission and Committees for SCs/STs, Minorities Commission, Women' Commission.	09
	Tutorial	09
Suggested Evaluation Methods		
Internal Assessment: 25 Marks Class Participation: **05** Seminar/Presentation/Assignment/Quiz/Class Test etc: **07** Mid Term Exam: **13**		**End Term Examination:** **50**

Part-C Learning Resources

Recommended Books:

- Desai, A.R. (ed.), (1986), Violations of Democratic Rights in India, Bombay, Poplar Prakashan.
- Sathe S.P., (2004), Judicial Activism in India, New Delhi OUP.
- Kumar, Bindal, (2000), Problems of Working Children, APH Publications, New Delhi
- Mehta P.L., (1996), Child Labor and the law, Deep and Deep, (New Delhi)
- Prakash S.S. (1990), Bonded Labor and Social Justice, Deep and Deep, New Delhi;
- Jha, R.C. (1995) Resurrecting: Human Right in India, Sheridan Book Company, New Delhi
- Mishra, Pramod (ed.), (2000), Human Rights in South Asia, Delhi; Kalpaz Publications.
- Ray, Aswani K, (1986), Civil Rights Movement and Social Struggle in India, Economic and Political Weekly, Vol. XXXI, No. 28, 12 July
- Verma R.S. (2000), Human Rights; Burning Issues of the World, Volumes I, II and III: Radiant Publishers Delhi.

Syllabus for the Subject of Human Rights as per NEP -2020, Semester-III

CC-3			
Session 2023-2024			
Part-A Introduction			
Subject	**Human Rights**		
Semester	**III**		
Name of the Course	**Societal Issues of Human Rights in India-I**		
Course Code	**B23-HRT-301**		
Course Type: (CC/MCC/MDC/ CCM/ DSEC/VOC/DSE/PC/AEC/ VAC	**CC**		
Level of the course (As per Annexure-I)	**200-299**		
Pre-requisite for the course (if any)	**NA**		
Course Learning Outcomes (CLO)	After completing this course, the learner will be able to: 1. Understand the concept of societal problems and human rights in India. 2. Understand the theoretical approaches to social problems and social change. 3. Comprehend the social problems of SC/ST, aged and disabled person and women. 4. Understand the problems of working classes.		
Credits	**Theory**	**Tutorial**	**Total**
	3	1	4
Contact Hours	3 per week	1 per week	4 per week
Max. Marks: 100 **Internal Assessment Marks: 30** **End Term Exam Marks: 70**	**Time: 3 Hours**		

Part-B Contents of the Course

Instructions for Paper Setters

1. Total NINE Questions will be set and students will be required to attempt FIVE questions.
2. Question No. 1 will be compulsory and will consist of 7 short answer type questions of 2 marks each spread over the entire syllabus.
3. The remaining EIGHT questions will be set taking TWO questions from each of the four units. The candidate would be required to attempt ONE question from each unit in addition to the compulsory question.
4. Each question will carry 14 marks.

Unit	Topics	Contact Hours
I	Concepts and Approaches: Concept of Societal Problems and Human	12

	Rights	
II	Theoretical approaches to Social Problems and Social Changes.	12
III	Social Problems: Causes and Types: Problems of Hierarchy. Problems of Minorities, Scheduled Caste and Scheduled Tribes; Population Explosion; Problems of Aged and Disabled; and Problems of Women.	12
IV	Problems of Working Classes: Definition and Classification of working class; Status and exploitation of working class; (i) Casual Worker's (ii) Bonded Labour (iii) Agriculture Labour (iv) Migrant Workers (v) Child Labour (vi) Unorganized Labour.	12
	Tutorial	12

Suggested Evaluation Methods

Internal Assessment: 30 Marks Class Participation **05** Seminar/Presentation/Assignment/Quiz/Class Test etc. **10** Mid Term Exam: **15**	**End Term Examination:** **70 Marks**

Part-C Learning Resources

Recommended Books:

- ILO, (1974), Migrant Workers, Geneva, International Labor Office.
- ILO, (1970), Trade Union Rights and Their Relation to Civil Liberties, Geneva; International Labor Office.
- Jain, Mahavir (1997) Bonded Labor Justice through Judiciary; Manak Publications, New Delhi
- Jenks, C.W. (1960) Human Rights and International Labor Standards, Stevens London.
- Kumar, Bindal, (2000), Problems of Working Children, APH Publications, New Delhi
- Mehta P.L., (1996), Child Labor and the law, Deep and Deep, (New Delhi)
- Prakash S.S. (1990), Bonded Labor and Social Justice, Deep and Deep, New Delhi;
- Jha, R.C. (1995) Resurrecting: Human Right in India, Sheridan Book Company, New Delhi
- Mishra, Pramod (ed.), (2000), Human Rights in South Asia, Delhi; Kalpaz Publications.
- Ray, Aswani K, (1986), Civil Rights Movement and Social Struggle in India, Economic and Political Weekly, Vol. XXXI, No. 28, 12 July
- Verma R.S. (2000), Human Rights; Burning Issues of the World, Volumes I, II and III: Radiant Publishers Delhi.

Syllabus for the Subject of Human Rights as per NEP -2020, Semester-III

MDC-3			
Session 2023-2024			
Part-A Introduction			
Subject	**Human Rights**		
Semester	**III**		
Name of the Course	**Introduction to Human Rights in India - III**		
Course Code	**B23-HRT-302**		
Course Type: (CC/MCC/MDC/ CCM/ DSEC/VOC/DSE/PC/AEC/ VAC	**MDC**		
Level of the course (As per Annexure-I)	**200-299**		
Pre-requisite for the course (if any)	**NA**		
Course Learning Outcomes (CLO)	After completing this course, the learner will be able to: 1. Understand the concept of societal problems and human rights in India. 2. Understand the theoretical approaches to social problems and social change. 3. Comprehend the social problems of SC/ST, aged and disabled person and women. 4. Understand the problems of working classes.		
Credits	**Theory**	**Tutorial**	**Total**
	2	1	3
Contact Hours	2 per week	1 per week	3 per week
Max. Marks: 75 **Internal Assessment Marks: 25** **End Term Exam Marks: 50**	**Time: 3 Hours**		

Part-B Contents of the Course

Instructions for Paper Setters

1. Total NINE Questions will be set and students will be required to attempt FIVE questions.
2. Question No. 1 will be compulsory and will consist of 5 short answer type questions of 2 marks each spread over the entire syllabus.
3. The remaining EIGHT questions will be set taking TWO questions from each of the four units. The candidate would be required to attempt ONE question from each unit in addition to the compulsory question.
4. Each question will carry 10 marks.

Unit	**Topics**	**Contact Hours**
I	Concept of Societal Problems and Human Rights	09

II	Theoretical approaches to Social Problems and Social Changes	09
III	Social Problems in India: Causes and Types: Problems of Hierarchy, Problems of Minorities, Scheduled Caste and Scheduled Tribes; Population Explosion; Problems of Aged and Disabled; and Problems of Women.	09
IV	Problems of Working Classes: Definition and Classification of working class; Status and exploitation of working class; (i) Casual Workers (ii) Bonded Labour (iii) Agriculture Labour (iv) Migrant Workers (v) Child Labour	09
	Tutorial	09
Suggested Evaluation Methods		
Internal Assessment: 25 Marks Class Participation: **05** Seminar/Presentation/Assignment/Quiz/Class Test etc: **07** Mid Term Exam: **13**		**End Term Examination:** **50**

Part-C Learning Resources

- ILO, (1974), Migrant Workers, Geneva, International Labor Office.
- ILO, (1970), Trade Union Rights and Their Relation to Civil Liberties, Geneva; International Labor Office.
- Jain, Mahavir (1997) Bonded Labor Justice through Judiciary; Manak Publications, New Delhi
- Jenks, C.W. (1960) Human Rights and International Labor Standards, Stevens London.
- Kumar, Bindal, (2000), Problems of Working Children, APH Publications, New Delhi
- Mehta P.L., (1996), Child Labor and the law, Deep and Deep, (New Delhi)
- Prakash S.S. (1990), Bonded Labor and Social Justice, Deep and Deep, New Delhi;
- Jha, R.C. (1995) Resurrecting: Human Right in India, Sheridan Book Company, New Delhi
- Mishra, Pramod (ed.), (2000), Human Rights in South Asia, Delhi; Kalpaz Publications.
- Ray, Aswani K, (1986), Civil Rights Movement and Social Struggle in India, Economic and Political Weekly, Vol. XXXI, No. 28, 12 July
- Verma R.S. (2000), Human Rights; Burning Issues of the World, Volumes I, II and III: Radiant Publishers Delhi.

Syllabus for the Subject of Human Rights as per NEP -2020, Semester-IV

CC-4			
Session 2023-2024			
Part-A Introduction			
Subject	**Human Rights**		
Semester	**IV**		
Name of the Course	**Societal Issues of Human Rights in India-II**		
Course Code	**B23-HRT-401**		
Course Type: (CC/MCC/MDC/ CCM/ DSEC/VOC/DSE/PC/AEC/ VAC	**CC**		
Level of the course (As per Annexure-I)	**200-299**		
Pre-requisite for the course (if any)	**NA**		
Course Learning Outcomes (CLO)	After completing this course, the learner will be able to: 1. Understand human rights and criminal justice system in India. 2. Understand the rights of accused, inmates and custodial persons. 3. Comprehend the judicial aspects of human rights. 4. Understand human rights and reforms in police and jail.		
Credits	**Theory**	**Tutorial**	**Total**
	3	1	4
Contact Hours	3 per week	1 per week	4 per week
Max. Marks: 100 **Internal Assessment Marks: 30** **End Term Exam Marks: 70**	**Time: 3 Hours**		

Part-B Contents of the Course

Instructions for Paper Setters

1. Total NINE Questions will be set and students will be required to attempt FIVE questions.
2. Question No. 1 will be compulsory and will consist of 7 short answer type questions of 2 marks each spread over the entire syllabus.
3. The remaining EIGHT questions will be set taking TWO questions from each of the four units. The candidate would be required to attempt ONE question from each unit in addition to the compulsory question.
4. Each question will carry 14 marks.

Unit	Topics	Contact Hours
I	Human Rights and Criminal Justice System: Criminal Justice System and Prosecution of Human Rights.	12

II	Offence involving Human Rights; and Rights of Accrued, Rights of Inmates of Persons and Custodial Homes.	12
III	Administration of Criminal Justice and Reforms: Administration of Criminal Justice. Ordinary Courts, Special Courts, District Human Rights Courts.	12
IV	Rights of Legal Aid, Punishments and Human Rights; and Reforms in Police and Jails.	12
	Tutorial	12
Suggested Evaluation Methods		
Internal Assessment: 30 Marks Class Participation **05** Seminar/Presentation/Assignment/Quiz/Class Test etc. **10** Mid Term Exam: **15**		**End Term Examination:** **70 Marks**

Part-C Learning Resources

Recommended Books:

- Bag, R.K. (1997), Domestic Violence .and crime against women: Criminal Justice Response in India. Journal of Indian Law Institute, Vol. 39 and nos. 2-4
- Bakken, T. (1985) International Law and Human Rights for Defendants in Criminal Trails, Indian Journal of Law Vol. 25.
- Austin, Granville (2002), The Indian Constitutions: Cornerstone of a Nation, New Delhi, OUP
- Dikshit, R.C. (1998), Human Rights and the Law, Universal and Indian, new Delhi,Deep and Deep.
- Kashyap, Subhash C., (1978), Human Rights and Parliament, Delhi: Metropolitan Kirpal, B.N. et al., (2004), Supreme but not Infallible, New Delhi: OUP
- Mehta P.L., and Neena Verma, (1995), Human Rights Under the Indian Constitutions, New Delhi: Deep and Deep Publications.

Kurukshetra University Kurukshetra

Scheme of Examination for Undergraduate Subject

Subject: Political Science

Course: Constitutional Values and Fundamental Duties (Value Added Course)

According to Curriculum Framework for Undergraduate Subject as per NEP 2020

Semester	Course Type	Course Code	Nomenclature of paper	Credits	Credits	Contact hours		Internal marks	End term Marks	Total Marks	Duration of exam (Hrs.)
					Theory	Tutorial	T+T				
3	VAC -3	B23-VAC-301	Constitutional Values and Fundamental Duties	2	2	NA	2	15	35	50	3

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Syllabus of Examination for Undergraduate subject (Value Added Course): Semester-III

VAC - 3			
Session 2023-2024			
Part-A Introduction			
Subject	**Political Science**		
Semester	**III**		
Name of the Course	**Constitutional Values and Fundamental Duties**		
Course Code	**B23-VAC-301**		
Course Type: (CC/MCC/MDC/ CCM/ DSEC/VOC/DSE/PC/AEC/ VAC	**VAC**		
Level of the course (As per Annexure-I)	**200-299**		
Pre-requisite for the course (if any)	**NA**		
Course Learning Outcomes (CLO)	After completing this course, the learner will be able to: 1. Understand the constitutional values like sovereignty, democracy and secularism. 2. Develop an understanding of constitutional values of Justice, Liberty and Equality. 3. Comprehend the fundamental duties of protection of institution, symbols and environment and development of scientific temper. 4. Comprehend the fundamental duties of preservation of unity and integrity of the nation and culture and harmony.		
Credits	**Theory**	**Tutorial**	**Total**
	2	NA	2
Contact Hours	2 per week	NA	2 per week
Max. Marks: 50 **Internal Assessment Marks: 15** **End Term Exam Marks: 35**	**Time: 3 Hours**		
Part-B Contents of the Course			
Instructions for Paper Setters 1. Total NINE Questions will be set and students will be required to attempt FIVE questions. 2. Question No. 1 will be compulsory and will consist of 7 short answer type questions of 1 mark each spread over the entire syllabus. 3. The remaining EIGHT questions will be set taking TWO questions from each of the four units. The			

candidate would be required to attempt ONE question from each unit in addition to the compulsory question.

4. Each question will carry 07 marks.

Unit	Topics	Contact Hours
I	Key Constitutional Values: Sovereignty, Democracy and Secularism	08
II	Key Constitutional Values: Justice, Liberty and Equality	08
III	Fundamental Duties: Protection of Institutions, Symbols and Environment; Development of Scientific Temper	08
IV	Fundamental Duties: Preservation of Unity and Integrity of the nation, composite culture and harmony	08

Suggested Evaluation Methods

Internal Assessment: 15 Marks	**End Term Examination:**
Class Participation: **04** Seminar/Presentation/Assignment/Quiz/Class Test etc: **04** Mid Term Exam: **07**	**35 Marks**

Part-C Learning Resources

Recommended Books:

- Austin, G. (1966). The Indian Constitution: Corner Stone of a Nation. Oxford, Oxford University Press.
- Austin, G. (2000). Working a Democratic Constitution: The Indian Experience. Delhi, Oxford University Press.
- Basu, D. D. (1994). An Introduction to the Constitution of India. New Delhi, Prentice Hall.
- Pylee, M. V. (1998). An Introduction to the Constitution of India. New Delhi.

Kurukshetra University Kurukshetra

Scheme of Examination for Undergraduate Programmes

Subject: DEFENCE STUDIES

According to Curriculum Framework for Undergraduate Programmes as per NEP 2020

(Multiple Entry-Exit, Internships and Choice Based Credit System)

Semester	Course Type	Course Code	Nomenclature of paper	Credits	Credits		Contact hours	Internal marks		End term Marks		Total Marks	Duration of exam (Hrs)
					Theory	Practical (P) / Tutorial (T)	T+T/P	T	P	T	P		
1	CC-1 MCC-1	B23-DFS-101	Conceptual Aspects of War, **Practical-**Basics of Operational Exercises-I	4	3	1 (P)	5	20	10	50	20	100	3+3
	MCC-2	B23-DFS-102	Study of Terrorism	4	3	1 (T)	4	30	NA	70	NA	100	3
	CC-M1	B23-DFS-103	Introduction to Defence Studies	2	2	NA	2	15	NA	35	NA	50	3
	MDC 1	B23-DFS-104	Introduction to Military History	3	2	1 (T)	3	25	NA	50	NA	75	3
2	CC-2 MCC-3	B23-DFS-201	Evolution of Indian Military System, **Practical-**Basics of Operational Exercises-II	4	3	1 (P)	5	20	10	50	20	100	3+3
	DSEC-1	B23-DFS-202	Defence Journalism	4	3	1 (T)	4	15	NA	35	NA	50	3
	MDC 2	B23-DFS-203	Introduction to Military Studies	3	2	1 (T)	3	25	NA	50	NA	75	3
	CC - M2	B23-DFS-204	Public and Private Security Management	2	2	NA	2	15	NA	35	NA	50	3
3	CC-3 MCC-4	B23-DFS-301	Military History of India, **Practical-**Basics of Operational Exercises-III	4	3	1 (P)	5	20	10	50	20	100	3+3
	MCC-5	B23-DFS-302	Science and Technology in relation to Warfare	4	3	1 (T)	4	30	NA	70	NA	100	3
	MDC 3	B23-DFS-303	Non-Traditional Security Threats	3	2	1 (T)	3	25	NA	50	NA	75	3

4	CC-4 MCC-6	B23-DFS-401	National Security-Conceptual Aspects, **Practical-**Basics of TEWTs/Sand Model Exercises, Sketching, Discussion	4	3	1 (P)	5	20	10	50	20	100	3+3
	MCC-7	B23-DFS-402	Industrial Security Management	4	3	1 (T)	4	30	NA	70	NA	100	3
	MCC-8	B23-DFS-403	Cyber Security	4	3	1 (T)	4	30	NA	70	NA	100	3
	DSE-1	B23-DFS-404	Strategic Leadership	4	3	1 (T)	4	30	NA	70	NA	100	3
		OR											
		B23-DFS-405	Armed Forces & Society	4	3	1	4	30	NA	70	NA	100	3
5	CC-5 MCC-9	B23-DFS-501	National Security of India, **Practical-** Military use of Electro-magnetic Spectrum, Press Clipping, Tour	4	3	1 (P)	5	20	10	50	20	100	3+3
	MCC-10	B23-DFS-502	India'sMaritime Security	4	3	1 (T)	4	30	NA	70	NA	100	3
	DSE-2	B23-DFS-503	Indian Strategic Thought	4	3	1 (T)	4	30	NA	70	NA	100	3
		OR											
		B23-DFS-504	Western Strategic Thought	4	3	1 (T)	4	30	NA	70	NA	100	3
	DSE-3	B23-DFS-505	Human Rights & Humanitarian Laws	4	3	1 (T)	4	30	NA	70	NA	100	3
		OR											
		B23-DFS-506	Conflict Resolution in Peace Building	4	3	1	4	30	NA	70	NA	100	3
6	CC-6 MCC-11	B23-DFS-601	International Relations, **Practical-**Spotting Strategic Locations, Military Models, Presentations	4	3	1 (P)	5	20	10	50	20	100	3+3
	MCC-12	B23-DFS-602	Aviation Security Management	4	3	1 (T)	4	30	NA	70	NA	100	3
	DSE-4	B23-DFS-603	Contemporary Strategic Environment in India	4	3	1 (T)	4	30	NA	70	NA	100	3
		OR											

		B23-DFS-604	Remote Sensing & National Security	4	3	1 (T)	4	30	NA	70	NA	100	3
	DSE-5	B23-DFS-605	Conflict & Media	4	3	1 (T)	4	30	NA	70	NA	100	3
		OR											
		B23-DFS-606	Legal Aspects of International Security	4	3	1 (T)	4	30	NA	70	NA	100	3
7	CC-H1	B23-DFS-701	Research Methodology -I	4	3	1 (T)	4	30	NA	70	NA	100	3
	CC-H2	B23-DFS-702	Disaster Management-I	4	3	1 (T)	4	30	NA	70	NA	100	3
	CC-H3	B23-DFS-703	Regional Security and Cooperation	4	3	1 (T)	4	30	NA	70	NA	100	3
	DSE-6	B23-DFS-704	WMD & National Security	4	3	1 (T)	4	30	NA	70	NA	100	3
		OR											
		B23-DFS-705	Non-Proliferation & National Security	4	3	1 (T)	4	30	NA	70	NA	100	3
	PC-H1	B23-DFS-706	Theories of War – I	4	3	1 (T)	4	30	NA	70	NA	100	3
8	CC-H4	B23-DFS-801	Research Methodology -II	4	3	1 (T)	4	30	NA	70	NA	100	3
	CC-H5	B23-DFS-802	Disaster Management-II	4	3	1 (T)	4	30	NA	70	NA	100	3
	CC-H6	B23-DFS-803	Geopolitics and Military Geography	4	3	1 (T)	4	30	NA	70	NA	100	3
	DSE-7	B23-DFS-804	Defence Mechanism of a Modern State	4	3	1 (T)	4	30	NA	70	NA	100	3
		OR											
		B23-DFS-805	Indian Defence Mechanism	4	3	1 (T)	4	30	NA	70	NA	100	3
	PC-H2	B23-DFS-806	Theories of War – II	4	3	1 (T)	4	30	NA	70	NA	100	3

OR SEMESTER-8 (FOR HONOURS WITH RESEARCH IN DEFENCE STUDIES)

8	CC-H4	B23-DFS-801	Research Methodology -II	4	3	1 (T)	4	30	NA	70	NA	100	3
	CC-H5	B23-DFS-802	Disaster Management-II	4	3	1 (T)	4	30	NA	70	NA	100	3
	Research	B23-DFS-807	Dissertation	12								300	

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Syllabus of Undergraduate programme in the subject **Defence Studies** as per NEP 2020 with Multiple Entry-Exit, Internships and Choice Based Credit System- Learning Outcomes Based Curriculum Framework - (CBCS-LOCF) in accordance with (NEP) 2020 with effect from the session 2023-24 (In Phased Manner).

Undergraduate Programme (Defence Studies) Syllabus, Semester-I

CC– 1/MCC-1			
Session 2023-2024			
Part-A Introduction			
Subject	**Defence Studies**		
Semester	**I**		
Name of the Course	**Conceptual Aspects of War**		
Course Code	**B23-DFS-101**		
Course Type: (CC/MCC/MDC/ CCM/ DSEC/VOC/DSE/PC/AEC/ VAC)	**CC/MCC**		
Level of the course (As per Annexure-I)	**100-199**		
Pre-requisite for the course (if any)	**NA**		
Course Learning Outcomes (CLO)	After completing this course, the learner will be able to: 1. Clearly understand the definition, meaning and basic concepts of war. 2. Understand the concept and features of modern warfare and its principles. 3. Comprehend the concept, principles and techniques of guerrilla warfare along with Counter guerrilla measures by Government and Security Forces. 4. Grasp the concept and theories of psychological warfare in detail. 5. *Conduct experiments and tests related with Defence Studies.		
Credits	**Theory**	**Practical**	**Total**
	3	1	4
Contact Hours	3 per week	2 per week/per group	5 per week
Max. Marks: 100 **Internal Assessment Marks: 30** **End Term Exam Marks: 70**	**Time: 3 Hours**		
Part-B Contents of the Course			
Instructions for Paper Setters 1. Total NINE Questions will be set and students will be required to attempt FIVE questions. 2. Question No. 1 will be compulsory and will consist of 5 short answer type questions of 2 marks each spread over the entire syllabus. 3. The remaining EIGHT questions will be set taking TWO questions from each of the four units. The candidate would be required to attempt ONE question from each unit in addition to the compulsory question.			

4. Each question will carry 10 marks.

Unit	Topics	Contact Hours
I	War - Definition and meaning and basic concepts – Understanding various causes of War. Basic Concepts - War, Campaign, Battle, Strategy, Tactics, Security and Defence.	12
II	Modern Warfare: Concept and definition. Features of Modern Warfare. Principles of warfare.	12
III	Guerrilla Warfare: Origin and concept. Principles, techniques and characteristics of guerrilla warfare. Counter guerrilla measures by Government and Security Forces.	12
IV	Psychological Warfare. Definition,concept and history. Functions and Limitations	12
V*	**Practical- Basics of Operational Exercises-l** 1. Maps: Definition and Features; Classification and its utility for Military; Enlargement and reduction of Maps. 2. Conventional Signs: Military and Geographical 3. GRID System: Four Figure and Six figure Map References. 4. North: Types of North and finding out True North; The Pole Star Method; The equal altitude method; Watch method & Compass method. 5. Scale: Definition, Methods of Representing Scale: Interconversion of scale into Representative Fraction, construction of simple scale line and the comparative scale lines.	30

Suggested Evaluation Methods

Internal Assessment:	**End Term Examination**
➢ **Theory (20 Marks)** Class Participation: **05 Marks** Seminar/Presentation/Assignment/Quiz/Class Test etc.: **05 Marks** Mid Term Exam:**10 Marks**	**50 Marks**
➢ **Practical (10 Marks)** Class Participation: **Nil** Seminar/Demonstration/Viva Voce/Lab Records etc.: **10 Marks** Mid Term Exam:**Nil**	**20 Marks**

Part-C Learning Resources

Recommended Books:

- Andreski S., (1968) Military Organization and Society, Univ. California Press,Berkeley.
- Anthony James Joes, (1996)Guerrilla Conflict before the Cold War, Praeger Publishers.
- Aron R., (1966) Peace and War: A Theory of International Relations, Praeger, New York.
- Barringer R., (1972) War: Patterns of Conflict, MIT Press, Cambridge, Mass.
- Blainey G., (1973) The Causes of War, Macmillan, London.
- Montgomery Viscount, (1983) A History of Warfare, William Morrow & Co, New York City.
- Mukherji and ShyamLal, (1952) A Textbook of Military Science, Vol. II., Navayuga, New Delhi.
- Osanka, F.M., (1962) Modern Guerrilla Warfare, Free Press of Glencoe, New York.
- Sidhu, K.S., (1988) War and Its Principles, Atlantic, New Delhi.
- Tripathi, K.S., (1970) Evolution of Nuclear Strategies, Vikas, New Delhi.

- Van Evara, Stephen, (1999), Causes of War: Power and the Roots of Conflict, Cornell University Press,Ithaca.
- Wright, Quincy, (1942) Study of War, University of Chicago Press.

* Applicable for courses having practical component.

Undergraduate Programme (Defence Studies) Syllabus, Semester-I

MCC-2			
Session 2023-2024			
Part-A Introduction			
Subject	**Defence Studies**		
Semester	**I**		
Name of the Course	**Study of Terrorism**		
Course Code	**B23-DFS-102**		
Course Type: (CC/MCC/MDC/ CCM/DSEC/VOC/DSE/PC/AEC/ VAC)	**MCC**		
Level of the course (As per Annexure-I)	**100-199**		
Pre-requisite for the course (if any)	**NA**		
Course Learning Outcomes (CLO)	After completing this course, the learner will be able to: 1. Understand the concept, ideologies and causes of terrorism 2. Understand the meaning and types of International terrorism. 3. Gain academic insight into major academic groups and the sources, methods and channels of terrorism. 4. Understand the strategies of combating terrorism.		
Credits	**Theory**	**Tutorial**	**Total**
	3	1	4
Contact Hours	3 per week	1 per week	4 per week
Max. Marks: 100 **Internal Assessment Marks: 30** **End Term Exam Marks: 70**	**Time: 3 Hours**		

Part-B Contents of the Course

Instructions for Paper Setters

1. Total NINE Questions will be set and students will be required to attempt FIVE questions.
2. Question No. 1 will be compulsory and will consist of 7 short answer type questions of 2 marks each spread over the entire syllabus.
3. The remaining EIGHT questions will be set taking TWO questions from each of the four units. The candidate would be required to attempt ONE question from each unit in addition to the compulsory question.
4. Each question will carry 14 marks.

Unit	**Topics**	**Contact Hours**
I	Terrorism: Meaning, Concept, Ideologies, Aims and Motivations. Causes of Terrorism: Social, Economic, Political and Religious.	12
II	International Terrorism: Meaning, Concept, Ideologies, Aims and Motivations.	12

	Types of Terrorism: State Terrorism, State Sponsored Terrorism, Religious Terrorism and Ideological Terrorism.	
III	Major Terrorist Groups: Regional and Global Perspective. Financing of Terrorism: Sources, Methods and Channels.	12
IV	Terrorism and National Security Strategies of Combating Terrorism.	12
	Tutorial	12

Suggested Evaluation Methods

Internal Assessment: 30 Marks Class Participation **05Marks** Seminar/Presentation/Assignment/Quiz/Class Test etc. **10Marks** Mid Term Exam: **15Marks**	**End Term Examination** **70 Marks**

Part-C Learning Resources

Recommended Books:

- David J. Whittaker (eds.) (2012), The Terrorism Reader, Routledge: New York.
- Gupta, D. K. (2008), Understanding terrorism and political violence: The life cycle of birth, growth, transformation, and demise, London: Routledge.
- Hocking, J. & C. Lewis (eds.) (2007), Counter-terrorism and the Post-democratic State, UK: Elgar Publishing.
- Hoffman, Bruce (2006), Inside Terrorism, New York: Columbia University Press.
- Laquer, W. (1998), Origins of terrorism: Psychologies, ideologies, theologies, states of mind, U.S.: Woodrow Wilson Center Press.
- Mockaitis, T. R. (2007), The" new" terrorism: myths and reality, U.S.: Standford University Press.
- Martin, G. (2013), Essentials of terrorism: Concepts and controversies, London: Sage Publications.
- O'Day, A. (eds.) (2004), Dimensions of terrorism (Vol. 1), VT: Ashgate Publication Limited.
- Richardson, L. (2013), The roots of terrorism: an overview, Routledge: New York.
- Weimann, Gabriel & Conrad Winn (1994), The Theatre of Terror: Mass Media and International Terrorism, New York: Longman.
- Byman, Daniel (2005), Deadly Connections: States that Sponsor Terrorism, UK: Cambridge University Press.
- Colarik, A. M. (2006), Cyber terrorism: political and economic implications, New Zealand: IGI Global.
- Freilich, Joshua (eds.) (2006), Migration, Culture Conflict, Crime and Terrorism, London: Routledge.
- Krueger, Alan B (2008), What Makes a Terrorist: Economics and the Roots of Terrorism, NJ: Princeton University Press.
- Kumar, Anand (2012), The Terror Challenge in South Asia and Prospect of Regional Cooperation, New Delhi: Pentagon Security International.

Undergraduate Programme (Defence Studies) Syllabus, Semester-I

CC-M1			
Session 2023-2024			
Part-A Introduction			
Subject	**Defence Studies**		
Semester	**I**		
Name of the Course	**Introduction to Defence Studies**		
Course Code	**B23-DFS-103**		
Course Type: (CC/MCC/MDC/ CCM/DSEC/VOC/DSE/PC/AEC/ VAC)	**CC-M**		
Level of the course (As per Annexure-I)	**100-199**		
Pre-requisite for the course (if any)	**NA**		
Course Learning Outcomes (CLO)	After completing this course, the learner will be able to: 1. Understand the concept, scope and significance of Defence Studies and its relations with other disciplines. 2. Understand the meaning, concept and Principles of War. 3. Understand the meaning of Atomic, Biological and Chemical warfare and the Defence Mechanism of India. 4. Understand issues related to global peace and security.		
Credits	**Theory**	**Tutorial**	**Total**
	2	NA	2
Contact Hours	2 per week	NA	2 per week
Max. Marks: 50 **Internal Assessment Marks: 15** **End Term Exam Marks: 35**	**Time: 3 Hours**		
Part-B Contents of the Course			
Instructions for Paper Setters 1. Total NINE Questions will be set and students will be required to attempt FIVE questions. 2. Question No. 1 will be compulsory and will consist of 7 short answer type questions of 1 mark each spread over the entire syllabus. 3. The remaining EIGHT questions will be set taking TWO questions from each of the four units. The candidate would be required to attempt ONE question from each unit in addition to the compulsory question. 4. Each question will carry 07 marks.			
Unit	**Topics**		**Contact Hours**

I	DefenceStudies: Concept, Scope, and Importance. Defence Studies: Its relation with other disciplines –Geography, Economics, Political Science, History, Psychology and Sociology.	08
II	Meaning and Concept of War. Principles of War.	08
III	ABC Warfare (Atomic, Biological and Chemical); Defence Mechanism of India.	08
IV	Global Peace & Security Issues. International Organizations.	08
Suggested Evaluation Methods		
Internal Assessment: 15 Marks Class Participation: **04Marks** Seminar/Presentation/Assignment/Quiz/Class Test etc: **04Marks** Mid Term Exam: **07Marks**		**End Term Examination** **35 Marks**

Part-C Learning Resources

Recommended Books:

- Clausewitz, Carl Von (1972) Principal of War" Army Publication New Delhi.
- Fuller," J.F.C. (1992)The Conduct of War: 1789-1961: A Study of The Impact of The French, Industrial, And Revaluations On War And Its Conduct, Publisher: Da Capo Press.
- Nanda, Col. Ravi, (1987) Evolution of National Strategy. South Asia Books; 1st edition.
- Singh, Lallanji,(2003) Art of War in India, 1947 up to date (Hindi).Parkash BooksDepot,Bareilly.
- Singh, Major Jodh, War Its Principles Tactics and Strategies, (Defence Studies-II) Surjeet Publications.

Undergraduate Programme (Defence Studies) Syllabus, Semester-I

MDC-1			
Session 2023-2024			
Part-A Introduction			
Subject	**Defence Studies**		
Semester	**I**		
Name of the Course	**Introduction to Military History**		
Course Code	**B23-DFS-104**		
Course Type: (CC/MCC/MDC/ CCM/DSEC/VOC/DSE/PC/AEC/ VAC)	**MDC**		
Level of the course (As per Annexure-I)	**100-199**		
Pre-requisite for the course (if any)	**NA**		
Course Learning Outcomes (CLO)	After completing this course, the learner will be able to: 1. Understand the military history of Ancient India. 2. Understand the military history of Medieval India 3. Understand the military history of British India 4. Understand the role of Indian Army in World war I and II.		
Credits	**Theory**	**Tutorial**	**Total**
	2	1	3
Contact Hours	2 per week	1 per week	3 per week
Max. Marks: 75 **Internal Assessment Marks: 25** **End Term Exam Marks: 50**	**Time: 3 Hours**		

Part-B Contents of the Course

Instructions for Paper Setters

1. Total NINE Questions will be set and students will be required to attempt FIVE questions.
2. Question No. 1 will be compulsory and will consist of 5 short answer type questions of 2 marks each spread over the entire syllabus.
3. The remaining EIGHT questions will be set taking TWO questions from each of the four units. The candidate would be required to attempt ONE question from each unit in addition to the compulsory question.
4. Each question will carry 10 marks.

Unit	**Topics**	**Contact Hours**
I	Military History of Ancient India	09

	Warrior System in Ancient India Armies in Ancient Age Military Ethos	
II	Military History of Medieval India Maurya and Gupta Armies Establishment of the Delhi Sultanate Military System of the Mughals	09
III	Military History of the Colonial Era Colonial Era and the Indian Sepoy Battles Fought in the Colonial Era Revolt of 1857 and Reforms in the Indian Army	09
IV	Indian Army in World War I & II Illustrate the contribution of Indian troops in World War I and World War II Recognize the sacrifices of Indian Army Victoria cross winners in World II.	09
	Tutorial	09
Suggested Evaluation Methods		
Internal Assessment: 25 Marks Class Participation: **05Marks** Seminar/Presentation/Assignment/Quiz/Class Test etc: **07Marks** Mid Term Exam: **13Marks**		**End Term Examination** **50Marks**

Part-C Learning Resources

Recommended Books:

- Alfred, David., (1953) Indian Art of War, AtmaRam , Delhi.
- Bajwa F.S., (1964) Military System of the Sikhs, MotiLal, Banarsi Das, Delhi.
- Bruce, George., (1969) Six Battles of India, Rupa& Company, Calcutta.
- Das, S.T., (1969) Indian Military - Its History and Development, Sagar, New Delhi.
- Dikshitar, Ramachandra V. R. (1999) War in Ancient India. Cosmo, New Delhi.
- Fuller, J.F.C., (1958) Generalship of Alexander The Great, Natraj Publishes, Dehradun.
- Gustav Oppert, (1967) Weapons, Army Organisation and Political Maxims of Ancient Hindus, R.F Patel Rajratan Press, Ahmedabad.
- Kangle, R.P., (1963) Kautilya`ArthShastra, University of Bombay, Mumbai.
- Majumdar, B.K., (1960) Military System in Ancient India, Firma K.L. Mukhopadhyoy, Calcutta.
- Majumdar, B.N., (1963) Study of Indian Military History. Army Educational Store, Delhi.
- Roy, Kaushik, (2004) From Hydaspes to Kargil: A History of Warfare in India from 326 BC to AD 1999. Manohar, New Delhi.
- Roy, Kaushik (2011, War, Culture and Society in Early Modern South Asia, 1740–1849, Routledge.
- Roy, Kaushik Ed., (2011), The Indian Army in the Two World Wars Brill.
- Singh, Sarva Daman. (1997) Ancient Indian Warfare: With Special Reference to the Vedic Period. Motilal Banarsidas, New Delhi.

Undergraduate Programme (Defence Studies) Syllabus, Semester-II

CC-2 MCC-3			
Session 2023-2024			
Part-A Introduction			
Subject	**Defence Studies**		
Semester	**II**		
Name of the Course	**Evolution of Indian Military System**		
Course Code	**B23-DFS-201**		
Course Type: (CC/MCC/MDC/ CCM/DSEC/VOC/DSE/PC/AEC/ VAC)	**CC/MCC**		
Level of the course (As per Annexure-I)	**100-199**		
Pre-requisite for the course (if any)	**NA**		
Course Learning Outcomes (CLO)	After completing this course, the learner will be able to: 1. Understand the Military system in Vedic, Ramayana and Mahabharata period. 2. Understand Kautilya's philosophy of war along with military system of the Mauryas. 3. Understand the Hindu military system during the age of the Guptas and Harsha. 4. Understand the Sikh military system under Dal Khalsa along with the rise of the autonomous state of Bharatpur. 5. *Conduct experiments and tests related with Defence Studies.		
Credits	Theory	Practical	Total
	3	1	4
Contact Hours	3 per week	2 per week/per group	5 per week
Max. Marks: 100 **Internal Assessment Marks: 30** **End Term Exam Marks: 70**	**Time: 3 Hours**		

Part-B Contents of the Course

Instructions for Paper Setters

1. Total NINE Questions will be set and students will be required to attempt FIVE questions.
2. Question No. 1 will be compulsory and will consist of 5 short answer type questions of 2 marks each spread over the entire syllabus.
3. The remaining EIGHT questions will be set taking TWO questions from each of the four units. The candidate would be required to attempt ONE question from each unit in addition to the compulsory question.
4. Each question will carry 10 marks.

Unit	**Topics**	**Contact Hours**
I	Military System in Vedic Period Military System of Ramayana Period. Military System of Mahabharata Period.	12
II	Kautilya's Philosophy of War. Maurya Military System as described by Greek historians.	12
III	Hindu Military System during the age of Gupta.	12

	Hindu Military System during the age of Harsh.	
IV	Sikh Military System under Dal Khalsa and Battle of Sobraon 1846 A.D. Historical Background and Rise of Autonomous State Bharatpur.Role of Maharaja Suraj Mal.	12
V*	**Practical- Basics of Operational Exercises-II** 1. Bearing: Definition, Inter conversion of Bearing in detail. 2. Liquid Prismatic Compass (LPC): Features and functions of its various parts: Attempt following exercise on the LPC: To determine magnetic north; Setting of the Map. 3. To find out the bearing of a point from other point situated on the ground. 4. To determine one's and enemy's position on the map by resection and intersection methods with the help of compass.	30

Suggested Evaluation Methods

Internal Assessment: ➢ **Theory(20 Marks)** Class Participation:**05 Marks** Seminar/Presentation/Assignment/Quiz/Class Test etc.:**05 Marks** Mid Term Exam:**10 Marks** ➢ **Practical (10 Marks)** Class Participation: **Nil** Seminar/Demonstration/Viva Voce/Lab Records etc.: **10 Marks** Mid Term Exam:**Nil**	**End Term Examination: 50 Marks** **20 Marks**

Part-C Learning Resources

Recommended Books:

- Alfred, David., (1953) Indian Art of War, Atma Ram, Delhi.
- Bajwa F.S., (1964) Military System of the Sikhs, MotiLal, BanarsiDass, Delhi.
- Bruce, George., (1969) Six Battles of India, Rupa& Company, Calcutta.
- Das, S.T., (1969) Indian Military - Its History and Development, Sagar, New Delhi.
- Dikshitar, Ramachandra V. R. (1999) War in Ancient India. Cosmo, New Delhi.
- Fuller, J.F.C., (1958) Generalship of Alexander The Great, Natraj Publishes, Dehradun.
- Gustav Oppert, (1967) Weapons, Army Organisation and Political Maxims of Ancient Hindus, R.F Patel Rajratan Press, Ahmedabad.
- Kangle, R.P., (1963) Kautilya`ArthShastra, University of Bombay, Mumbai.
- Majumdar, B.K., (1960) Military System in Ancient India, Firma K.L. Mukhopadhyoy, Calcutta.
- Majumdar, B.N., (1963) Study of Indian Military History. Army Educational Store, Delhi.
- Roy, Kaushik, (2004) From Hydaspes to Kargil: A History of Warfare in India from 326 BC to AD 1999. Manohar, New Delhi.
- Roy, Kaushik (2011, War, Culture and Society in Early Modern South Asia, 1740–1849, Routledge.
- Roy, Kaushik Ed., (2011), The Indian Army in the Two World Wars Brill.
- Singh, Sarva Daman. (1997) Ancient Indian Warfare: With Special Reference to the Vedic Period. MotilalBanarsidass, New Delhi.

* Applicable for courses having practical component.

Undergraduate Programme (Defence Studies) Syllabus, Semester-II

DSEC-1			
Session 2023-2024			
Part-A Introduction			
Subject	**Defence Studies**		
Semester	**II**		
Name of the Course	**Defence Journalism**		
Course Code	**B23-DFS-202**		
Course Type: (CC/MCC/MDC/ CCM/DSEC/VOC/DSE/PC/AEC/ VAC)	**DSEC**		
Level of the course (As per Annexure-I)	**100-199**		
Pre-requisite for the course (if any)	**NA**		
Course Learning Outcomes (CLO)	After completing this course, the learner will be able to: 1. Understand the concept, meaning and features of Defence Journalism. 2. Understand the format and forms of defence reporting. 3. Understand Defence terminology, military terms and rank structure in defence services. 4. Comprehend the problems in defence writing along with media ethics and laws.		
Credits	**Theory**	**Tutorial**	**Total**
	3	1	4
Contact Hours	3 per week	1 per week	4 per week
Max. Marks: 100 **Internal Assessment Marks: 30** **End Term Exam Marks: 70**	**Time: 3 Hours**		

Part-B Contents of the Course

Instructions for Paper Setters

1. Total NINE Questions will be set and students will be required to attempt FIVE questions.
2. Question No. 1 will be compulsory and will consist of 7 short answer type questions of 2 marks each spread over the entire syllabus.
3. The remaining EIGHT questions will be set taking TWO questions from each of the four units. The candidate would be required to attempt ONE question from each unit in addition to the compulsory question.
4. Each question will carry 14 marks.

Unit	**Topics**	**Contact Hours**
I	Defence Journalism – Concept, Meaning and Features. Differences between Civil Journalism &Defence journalism.	12

	Definition/Kinds/Sources of Defence News. Defence Writing Procedure.	
II	Defence Reporting:Format languages and grammar. Forms – Eye witness, Computer assigned features. Concept of Graphics and Animation (Role of Modern Technology).	12
III	Defence Terminology: Defence Terms & Abbreviations. Military terms – Weapons, Weapons system. Defence Organization – Rank and Rank structure in the services in India.	12
IV	War Front Reporting, Media Ethics and Laws. Problem in Defence Writing – Political Pressure Official Secrecy – etc.	12
	Tutorial	12
Suggested Evaluation Methods		
Internal Assessment: 30 Marks Class Participation **05Marks** Seminar/Presentation/Assignment/Quiz/Class Test etc. **10Marks** Mid Term Exam: **15Marks**		**End Term Examination** **70 Marks**

Part-C Learning Resources

Recommended Books:

- Allan, Stuart &Barbie Zelizer (ed),(2004) Reporting War: Journalism in Wartime, Publisher Routledge; 1st edition. Paperback.
- Bhatt, S.C., (2005) Practical Journalism, Aavishkar. Jaipur.
- Chatterjee, R.K., (1973) Mass Communication, National Book Trust. New Delhi.
- Dhara, R., (1945) Journalism, Industry Publishers. Calcutta.
- Narayanan, VarunDev (2021) Defence Journalism, Publisher:Sumith Enterprises; 1st edition.
- Saxena, Sangeeta (1997) Defence Journalism in India, Manas Publications.
- Seib, Philip, Piers Robinson, RomyFröhlich (ed)., (2020) Routledge Handbook of Media, Conflict and Security. Paperback.
- Waren,K. Agrie, (ed)., (1968) The Press and the Public Interest, Public Affairs Press. Washington, D.C.

Undergraduate Programme (Defence Studies) Syllabus, Semester-II

CC-M2			
Session 2023-2024			
Part-A Introduction			
Subject	**Defence Studies**		
Semester	**II**		
Name of the Course	**Public and Private Security Management**		
Course Code	**B23-DFS-204**		
Course Type: (CC/MCC/MDC/ CCM/DSEC/VOC/DSE/PC/AEC/ VAC)	**CC-M**		
Level of the course (As per Annexure-I)	**100-199**		
Pre-requisite for the course (if any)	**NA**		
Course Learning Outcomes (CLO)	After completing this course, the learner will be able to: 1. Understand the functioning of public sector security management systems. 2. Understand the functioning of private sector security management systems. 3. Understand the functioning of special security services. 4. Understand the legal basis of security management of public and private sectors.		
Credits	**Theory**	**Tutorial**	**Total**
	2	NA	2
Contact Hours	2 per week	NA	2 per week
Max. Marks: 50 **Internal Assessment Marks: 15** **End Term Exam Marks: 35**	**Time: 3 Hours**		

Part-B Contents of the Course

Instructions for Paper Setters

1. Total NINE Questions will be set and students will be required to attempt FIVE questions.
2. Question No. 1 will be compulsory and will consist of 7 short answer type questions of 1 mark each spread over the entire syllabus.
3. The remaining EIGHT questions will be set taking TWO questions from each of the four units. The candidate would be required to attempt ONE question from each unit in addition to the compulsory question.
4. Each question will carry 07 marks.

Unit	**Topics**	**Contact Hours**
I	Public Sector Security Management Systems: National Security by Defence Forces. Internal Security by Central Armed Police Forces.	08

	Law and Order Security by Police.	
II	Private Sector Security Management Systems: Security in Public places: Security of Banks, Hotels, Hospitals, Malls. Security in Factories, Commercial Areas, Residential Locations.	08
III	Special Security Services: Personal Security Event Security Product Security Coastal Security Rail Security	08
IV	Legal Basis for Public/Private Sectors Security Management: Defence Services CAPF Police Acts PSA (Regulation) Act	08

Suggested Evaluation Methods

Internal Assessment: 15 Marks Class Participation: **04 Marks** Seminar/Presentation/Assignment/Quiz/Class Test etc: **04 Marks** Mid Term Exam: **07Marks**	**End Term Examination** **35Marks**

Part-C Learning Resources

Recommended Books:

- Codes of Ethics for Private Security Management and Private Security Employees. (1976). United States: Advisory Council.
- Dempsey, J. S. (2010). Introduction to Private Security. United States: Cengage Learning.
- Fay, J. (2010). Contemporary Security Management. United States: Elsevier Science.
- Gallati, R. R. J. (1983). Introduction to Private Security. United States: Prentice-Hall.
- Meerts, C. A. (2019). Corporate Investigations, Corporate Justice and Public-Private Relations: Towards a New Conceptualisation. Germany: Springer International Publishing.
- Nemeth, C. P. (2017). Private Security: An Introduction to Principles and Practice. United States: Taylor & Francis.
- Nemeth, C. (2011). Private Security and the Law. Netherlands: Elsevier Science.
- Nemeth, C. P. P. (2016). Homeland Security: An Introduction to Principles and Practice, Third Edition. United States: Taylor & Francis.
- Ortmeier, P. (1998). Public Safety and Security Administration. United Kingdom: Elsevier Science.
- Zalewski, D. T. (2019). An Introduction to Operational Security Risk Management. United States: Xlibris AU.

UnderGraduate Programme (Defence Studies) Syllabus, Semester-II

MDC-2			
Session 2023-2024			
Part-A Introduction			
Subject	**Defence Studies**		
Semester	**II**		
Name of the Course	**Introduction to Military Studies**		
Course Code	**B23-DFS-203**		
Course Type: (CC/MCC/MDC/ CCM/DSEC/VOC/DSE/PC/AEC/ VAC)	**MDC**		
Level of the course (As per Annexure-I)	**100-199**		
Pre-requisite for the course (if any)	**NA**		
Course Learning Outcomes (CLO)	After completing this course, the learner will be able to: 1. Understand the concept, evolution and importance of military studies. 2. Comprehend the basic structure and role of armed forces. 3. Understand the concept of geo-politics and maritime security. 4. Understand the types of war equipment used by armed forces along with the issue of modernization of Indian armed forces.		
Credits	**Theory**	**Tutorial**	**Total**
	2	1	3
Contact Hours	2 per week	1 per week	3 per week
Max. Marks: 75 **Internal Assessment Marks: 25** **End Term Exam Marks: 50**	**Time: 3 Hours**		

Part-B Contents of the Course

Instructions for Paper Setters

1. Total NINE Questions will be set and students will be required to attempt FIVE questions.
2. Question No. 1 will be compulsory and will consist of 5 short answer type questions of 2 marks each spread over the entire syllabus.
3. The remaining EIGHT questions will be set taking TWO questions from each of the four units. The candidate would be required to attempt ONE question from each unit in addition to the compulsory question.
4. Each question will carry 10 marks.

Unit	**Topics**	**Contact Hours**
I	Concept and Evolution of Military Studies Importance of Military Studies Contemporary Need of Military Studies	09

II	Basic Structure and Role of the Armed Forces: Armed Forces Special Forces Para Military Forces	09
III	Security and Geo-Strategy Geo-Politics Maritime Security	09
IV	Indian Armed forces: Weapons and War Equipment; Modernization of the Indian Armed Forces	09
	Tutorial	09
Suggested Evaluation Methods		
Internal Assessment: 25 Marks Class Participation: **05Marks** Seminar/Presentation/Assignment/Quiz/Class Test etc: **07Marks** Mid Term Exam: **13Marks**		**End Term Examination** **50Marks**

Part-C Learning Resources

Recommended Books:

- Adhikari, S. (2016). Military Thinking of Ancient India. India: Pentagon Press.
- Blout, Brian (2012) Global Geostrategy: Mackinder and the Defence of the West. United Kingdom: Taylor & Francis.
- Gray,Colin S., Geoffrey Sloan,(2014) Geopolitics, Geography andStrategy. United Kingdom: Taylor & Francis.
- Heuser, B. (2022). War: A Genealogy of Western Ideas and Practices. United Kingdom: Oxford University Press.
- Huidekoper, F. L. (1904). Military Studies. United States: Hudson-Kimberly Publishing Company.
- Kunju, N. (1998). Free India's Army: Problems at 50. India: Reliance Publishing House.
- McNicholas, M. (2016). Maritime Security: An Introduction. United Kingdom: Elsevier Science.
- Otto, Lisa (2020) Global Challenges in Maritime Security: An Introduction. Germany: Springer International Publishing.
- Pandey, B. K., Hiranandani, G. M., Verma, B. (2008). Indian Armed Forces. India: Lancer Publishers & Distributors.
- Prasad, R. (2010). Complete Book on Indian Armed Forces. India: Cyber Tech Publications.
- Singh, K.K.,(2017) Reality and Belief of Indian Military Affairs. (n.d.). (n.p.): K.K. Publications.
- Singh, P. K. R. (2012). Coastal Security: Maritime Dimensions of India's Homeland Security. India: Vij Books India Private Limited.
- Sloan, G. (2017). Geopolitics, Geography and Strategic History. United Kingdom: Taylor & Francis.

  Soeters, J. (2020). Management and Military Studies: Classical and Current Foundations. United Kingdom: Taylor & Francis.

Undergraduate Programme (Defence Studies) Syllabus, Semester-III

CC– 3/MCC-4			
Session 2023-2024			
Part-A Introduction			
Subject	**Defence Studies**		
Semester	**III**		
Name of the Course	**Military History of India**		
Course Code	**B23-DFS-301**		
Course Type: (CC/MCC/MDC/ CCM/ DSEC/VOC/DSE/PC/AEC/ VAC)	**CC/MCC**		
Level of the course (As per Annexure-I)	**200-299**		
Pre-requisite for the course (if any)	**NA**		
Course Learning Outcomes (CLO)	After completing this course, the learner will be able to: 1. Understand the military organization and fighting techniques of the Marathas. 2. Understand the military organization and fighting techniques of the Sikhs. 3. Understand the development of the Presidency army under East India Company along with its reorganisation under the Crown. 4. Understand the role of India and the contribution of Indian Army in the First and the Second World Wars. 5. *Conduct experiments and tests related with Defence Studies.		
Credits	**Theory**	**Practical**	**Total**
	3	1	4
Contact Hours	3 per week	2 per week/per group	5 per week
Max. Marks: 100 **Internal Assessment Marks: 30** **End Term Exam Marks: 70**	**Time: 3 Hours**		

Part-B Contents of the Course

Instructions for Paper Setters

1. Total NINE Questions will be set and students will be required to attempt FIVE questions.
2. Question No. 1 will be compulsory and will consist of 5 short answer type questions of 2 marks each spread over the entire syllabus.
3. The remaining EIGHT questions will be set taking TWO questions from each of the four units. The candidate would be required to attempt ONE question from each unit in addition to the compulsory question.
4. Each question will carry 10 marks.

Unit	**Topics**	**Contact Hours**
I	Military organization of Marathas under Shivaji; Maratha techniques of fighting; Weakness of Maratha Military System after Shivaji with special reference to Third Battle of Panipat. Anglo-Maratha Warfare with particular reference to the Battle of	12

	Assaye.	
II	Military organization of Sikh Army; Sikh fighting techniques under Maharaja Ranjit Singh. Anglo-Sikh Warfare with particular reference to the Battle of Chillianwala.	12
III	Development of Presidency Army under East India Company; Reforms of Kitchner. Reorganization of Indian Army under the Crown.	12
IV	Role of India and contribution of Indian Army in the First and the Second World Wars; Indian National Army	12
V*	**Practical- Basics of Operational Exercises-III** 1. Relief Features and their representation on the map. 2. Types of slopes and their representation on the map. 3. Gradient – Determination of gradients. 4. Inter visibility – Determination of inter visibility in case of rise or fall of slope	30

Suggested Evaluation Methods

Internal Assessment: ➢ **Theory(20 Marks)** Class Participation:**05 Marks** Seminar/Presentation/Assignment/Quiz/Class Test etc.:**05 Marks** Mid Term Exam:**10 Marks** ➢ **Practical (10 Marks)** Class Participation: **Nil** Seminar/Demonstration/Viva Voce/Lab Records etc.: **10 Marks** Mid Term Exam:**Nil**	**End Term Examination: 50 Marks** **20 Marks**

Part-C Learning Resources

Recommended Books:

- Alfred, David., (1953) Indian Art of War, Atma Ram, Delhi.
- Bajwa F.S., (1964) Military System of the Sikhs, MotiLal, BanarsiDass, Delhi.
- Bruce, George., (1969) Six Battles of India, Rupa& Company, Calcutta.
- Das, S.T., (1969) Indian Military - Its History and Development, Sagar, New Delhi.
- Dikshitar, Ramachandra V. R. (1999) War in Ancient India. Cosmo, New Delhi.
- Fuller, J.F.C., (1958) Generalship of Alexander The Great, Natraj Publishes, Dehradun.
- Gustav Oppert, (1967) Weapons, Army Organisation and Political Maxims of Ancient Hindus, R.F Patel Rajratan Press, Ahmedabad.
- Kangle, R.P., (1963) Kautilya`sArthShastra, University of Bombay, Mumbai.
- Majumdar, B.K., (1960) Military System in Ancient India, Firma K.L. Mukhopadhyoy, Calcutta.
- Majumdar, B.N., (1963) Study of Indian Military History. Army Educational Store, Delhi.
- Roy, Kaushik, (2004) From Hydaspes to Kargil: A History of Warfare in India from 326 BC to AD 1999. Manohar, New Delhi.
- Roy, Kaushik (2011, War, Culture and Society in Early Modern South Asia, 1740–1849, Routledge.
- Roy, Kaushik Ed., (2011), The Indian Army in the Two World Wars Brill.
- Singh, Sarva Daman. (1997) Ancient Indian Warfare: With Special Reference to the Vedic Period. MotilalBanarsidass, New Delhi.

* Applicable for courses having practical component.

Undergraduate Programme (Defence Studies) Syllabus, Semester-III

MCC-5			
Session 2023-2024			
Part-A Introduction			
Subject	**Defence Studies**		
Semester	**III**		
Name of the Course	**Science & Technology in Relation to Warfare**		
Course Code	**B23-DFS-302**		
Course Type: (CC/MCC/MDC/ CCM/DSEC/VOC/DSE/PC/AEC/ VAC)	**MCC**		
Level of the course (As per Annexure-I)	**200-299**		
Pre-requisite for the course (if any)	**NA**		
Course Learning Outcomes (CLO)	After completing this course, the learner will be able to: 1. Understand the past and present of science, technology and national security. 2. Gain and understanding of Make in India policy in Defence sector and defence import-export reforms. 3. Understand the issue of international transfer of technology in the defence sector. 4. Understand the applications of science and technology in the defence sector in India and its comparison with China and Pakistan.		
Credits	**Theory**	**Tutorial**	**Total**
	3	1	4
Contact Hours	3 per week	1 per week	4 per week
Max. Marks: 100 **Internal Assessment Marks: 30** **End Term Exam Marks: 70**	**Time: 3 Hours**		

Part-B Contents of the Course

Instructions for Paper Setters

1. Total NINE Questions will be set and students will be required to attempt FIVE questions.
2. Question No. 1 will be compulsory and will consist of 7 short answer type questions of 2 marks each spread over the entire syllabus.
3. The remaining EIGHT questions will be set taking TWO questions from each of the four units. The candidate would be required to attempt ONE question from each unit in addition to the compulsory question.
4. Each question will carry 14 marks.

Unit	**Topics**	**ContactHours**
I	Science, Technology and National Security: Past and Present.	12
II	Make in India Policy in Defence Sector and Defence import export Reforms.	12
III	Transfer of Technology: International interdependence, Role of	12

	Multinational Corporations.	
IV	Science and Technology in India in comparison with China and Pakistan.	12
	Tutorial	12
Suggested Evaluation Methods		
Internal Assessment: 30 Marks Class Participation **05Marks** Seminar/Presentation/Assignment/Quiz/Class Test etc. **10Marks** Mid Term Exam: **15Marks**		**End Term Examination** **70 Marks**

Part-C Learning Resources

Recommended Books:

- Ahmed,Asif, Science Technology and War, 21st Century Publications, Patiala. January, 2014.
- Anand. A. (2003) Information Technology: The future warfare weapons, Ocean Books, New Delhi.
- Arcangelis, Mariode, (1990) Electronics Warfare, Ratna, New Delhi.
- Baranson, Jack. (1978) Technology and the Multinationals, Lexington Books, Lexington.
- UGC Document on LOCF Defence Studies 46.
- Chandrashekar, S., (2015) Space, War and Security – A Strategy for India. NIAS Report No. 36-2015. Bangalore: International Strategic and Security Studies Programme, National Institute of Advanced Studies.
- Jasbir R.K, (1987) Handbook of military science and Armament Technology, Natraj publications, Dehradun.
- Johan Erickson (Ed.) (1966) The Military Technical Revolution: Its Impact on strategic andForeign Policy, Frederick A Praeger, New York.
- Macksey, Kenneth (1986) Technology in War: The impact of Science on weapon development and modern battle, Prentice Hall, New York.
- Mann T.S., (1982) Transfer and Technology, Himalaya Publications House, Bombay.
- Rajan,Y.S. (2001) Empowering India (with Economic Business & Technological strengths for the twenty First Century), HarAnand Publications, New Delhi.
- Rehman, A. (1972) Science Technology and Society, People's Publishing House, NewDelhi.
- Robert H. Latiff, (2017) Future war: Preparing for the new global battlefield, PenguinRandom House, New York.
- Singer, H.W.,(1988) Technology Transfer by Multinational Vol. I& II, Ashish PublishingHouse, New Delhi.
- Tiwari V.M. and Rajinikanth, (1996) The high-tech war at twentieth Century, VikasPublishing, New Delhi.

Undergraduate Programme (Defence Studies) Syllabus, Semester-III

MDC-3			
Session 2023-2024			
Part-A Introduction			
Subject	**Defence Studies**		
Semester	**III**		
Name of the Course	**Non-Traditional Security Threats**		
Course Code	**B23-DFS-303**		
Course Type: (CC/MCC/MDC/ CCM/DSEC/VOC/DSE/PC/AEC/ VAC)	**MDC**		
Level of the course (As per Annexure-I)	**200-299**		
Pre-requisite for the course (if any)	**NA**		
Course Learning Outcomes (CLO)	After completing this course, the learner will be able to: 1. Understand the concepts of Human and Environment security. 2. Understand the concept of Energy security and the issue of illegal cross border migration. 3. Understand the concept of narco-terrorism and the issue of small arms proliferation. 4. Understand the concept of organised crime and the issue of money laundering.		
Credits	**Theory**	**Tutorial**	**Total**
	2	1	3
Contact Hours	2 per week	1 per week	3 per week
Max. Marks: 75 **Internal Assessment Marks: 25** **End Term Exam Marks: 50**	**Time: 3 Hours**		
Part-B Contents of the Course			
Instructions for Paper Setters 1. Total NINE Questions will be set and students will be required to attempt FIVE questions. 2. Question No. 1 will be compulsory and will consist of 5 short answer type questions of 2 marks each spread over the entire syllabus. 3. The remaining EIGHT questions will be set taking TWO questions from each of the four units. The candidate would be required to attempt ONE question from each unit in addition to the compulsory question. 4. Each question will carry 10 marks.			

Unit	**Topics**	**Contact Hours**
I	Human Security and Environment Security: Definition, meaning and concept	09
II	Energy Security - Definition, meaning and concept; Issue of Illegal cross border Migration	09

III	Narco -Terrorism - Definition, meaning and concept; Issue of Small Arms Proliferation	09
IV	Organized Crimes - Definition, meaning and concept; Issue of Money Laundering	09
	Tutorial	09
Suggested Evaluation Methods		
Internal Assessment: 25 Marks Class Participation: **05Marks** Seminar/Presentation/Assignment/Quiz/Class Test etc: **07Marks** Mid Term Exam: **13Marks**		**End Term Examination** **50Marks**

Part-C Learning Resources

Recommended Books:

- Happymon Jacob, (2005), HIV/AIDS as a Security Threat to India.
- Joakim Palme, KristofTamas (2006), Globalizing migration regimes: new challenges to transnational cooperation.
- Kimberley L. Thachuk, (2007), Transnational threats: smuggling and trafficking in arms, drugs, and human life.
- Lal, Marie, (2008), The geopolitics of Energy in South Asia, Institute of Southeast AsianStudies, Singapore.
- Leena, (2009), Energy Infrastructure: Priorities, Constraints and Strategies for India,Oxford, India.
- Margaret E. Beare, (2003), Critical reflections on transnational organized crime, money laundering and corruption.
- Mely Caballero Anthony, Ralf Emmers, AmitavAcharya (Eds), (2006), Non-Traditional Security in Asia: Dilemmas in Securitization, Athenaeum Press Ltd.
- MoufidaGoucha, John Crowley (2008), Rethinking human security.
- Richard A. Matthew and John Barnett, Bryan Macdonald and Karen L. O'Brien (2010)Global environment Change and Human Security.
- Robert Powis, (1992), The Money Launderer, Probus Publishing.
- ShahrbanouTadjbakhsh, Anuradha M. Chenoy (2007) Human security: Concepts andImplications. Routledge Advances in International Relations and Global Politics.
- Sovacool K. Benjamin (2011), TheRoutledge Handbook of Energy Security. Singapore.

Undergraduate Programme (Defence Studies) Syllabus, Semester-IV

CC– 4/MCC-6			
Session 2023-2024			
Part-A Introduction			
Subject	**Defence Studies**		
Semester	**IV**		
Name of the Course	**National Security-Conceptual Aspects**		
Course Code	**B23-DFS-401**		
Course Type: (CC/MCC/MDC/ CCM/ DSEC/VOC/DSE/PC/AEC/ VAC)	**CC/MCC**		
Level of the course (As per Annexure-I)	**200-299**		
Pre-requisite for the course (if any)	**NA**		
Course Learning Outcomes (CLO)	After completing this course, the learner will be able to: 1. Understand the meaning, nature, scope and conceptual aspects of national security along with its difference with national defence. 2. Comprehend the role of geography, mineral resources, social, political and economic factors, scientific and technological developments and military preparedness in the national security. 3. Understand the internal and external challenges to national security. 4. Develop a thorough understanding of contemporary security environment in the world and the threat of proliferation of small arms and weapons of mass destruction.		
	5. *Conduct experiments and tests related with Defence Studies.		
Credits	**Theory**	**Practical**	**Total**
	3	1	4
Contact Hours	3 Per week	2 per week/per group	5 per week
Max. Marks: 100 **Internal Assessment Marks: 30** **End Term Exam Marks: 70**	**Time: 3 Hours**		
Part-B Contents of the Course			
Instructions for Paper Setters 1. Total NINE Questions will be set and students will be required to attempt FIVE questions. 2. Question No. 1 will be compulsory and will consist of 5 short answer type questions of 2 marks each spread over the entire syllabus. 3. The remaining EIGHT questions will be set taking TWO questions from each of the four units. The candidate would be required to attempt ONE question from each unit in addition to the compulsory question.			

4. Each question will carry 10 marks.

Unit	Topics	Contact Hours
I	National Security:Meaning, Nature, Scope: Conceptual Aspects. Difference between National Security and National Defence.	12
II	Elements of National Security a. Geography b. Mineral resources c. Social, Political and Economic factors d. Scientific and Technological development e. Military preparedness	12
III	Challenges to National Security a. Internal Challenges b. External Challenges	12
IV	Contemporary security environment in the world in brief. Military Alliances and their role for National security in 21st century Small arms Proliferation, Weapons of Mass Destruction (WMD) and their proliferation.	12
V*	**Practical- Basicsof TEWTs/Sand ModelExercises, Sketching,Discussion** 1.Elementary knowledge of a.Rank structure of the three services b.Study and description of ground c.Judging distance d.Section formation e.Patrolling or 1.Sand Model Exercises a. Battle of Panipat, 1526 A.D. b. Battle of Assaye, 1803 A.D. 2. Sketching of the Charts of Indian Battles a.Battle of Thagla Ridge, 1962. b.Kargil Conflict, 1999 3. Sketching of the Charts of Western Battles a.Battle of Trafalgar, 1805. b.Battle of Somme, 1916. 4.Lecture and group discussion on current defence topics.	30

Suggested Evaluation Methods

Internal Assessment:	**End Term Examination:**
➢ **Theory(20 Marks)** Class Participation:**05 Marks** Seminar/Presentation/Assignment/Quiz/Class Test etc.:**05 Marks** Mid Term Exam:**10 Marks**	**50 Marks**
➢ **Practical (10 Marks)** Class Participation: **Nil** Seminar/Demonstration/Viva Voce/Lab Records etc.: **10 Marks** Mid Term Exam:**Nil**	**20 Marks**

Part-C Learning Resources

Recommended Books:

- Booth, Ken, (2007), Theory of World Security: Cambridge University Press, Cambridge.
- Buzan, Barry., (1987), People, State and Fear, Trans Asia Publications. New Delhi.

- Chowdhary, Subrata Roy., (1966), Military Alliances and Neutrality in War and Peace, Orient Longman, New Delhi.
- Das, S.T., (1987), National Security in Perspective, Gyan Publishing House, New Delhi.
- Frankel, Joseph, (1970), National Interest, Macmillan London. Military Balance., Latest Edition (IISS).
- Morgenthau, Hans J., (1969), Politics Among Nations, Scientific Book Agency, Calcutta.
- Palmer, Norman D. and Perkins, Howard C., (1968), International Relations, Scientific Book Agency, Calcutta.
- Pandey, Ramsurat (2020). RashtriyaSurakshaEvamAntarrashtriyaSambandh, Fifth Edition Paperback Hindi.
- Singh, Nagendra., (1974), The Defence Mechanism and the Modern State, Asia Publishing House. New Delhi.
- SIPRI Year Book Latest Edition.
- Srivastava, J. M., and Harsh Kumar Sinha, (2017), RashtriyaSuraksha (Hindi) Asr Publications.

* Applicable for courses having practical component.

Undergraduate Programme (Defence Studies) Syllabus, Semester-IV

MCC-7			
Session 2023-2024			
Part-A Introduction			
Subject	**Defence Studies**		
Semester	**IV**		
Name of the Course	**Industrial Security Management**		
Course Code	**B23-DFS-402**		
Course Type: (CC/MCC/MDC/ CCM/DSEC/VOC/DSE/PC/AEC/ VAC)	**MCC**		
Level of the course (As per Annexure-I)	**200-299**		
Pre-requisite for the course (if any)	**NA**		
Course Learning Outcomes (CLO)	After completing this course, the learner will be able to: 1. Understand the background of Industrial Security in India. 2. Comprehend the role of intelligence in industrial security and identification of security threats. 3. Understand the principles of security management. 4. Comprehend the threats to security and designing crime free environment.		
Credits	**Theory**	**Tutorial**	**Total**
	3	1	4
Contact Hours	3 per week	1 per week	4 per week
Max. Marks: 100 **Internal Assessment Marks: 30** **End Term Exam Marks: 70**	**Time: 3 Hours**		

Part-B Contents of the Course

Instructions for Paper Setters

1. Total NINE Questions will be set and students will be required to attempt FIVE questions.
2. Question No. 1 will be compulsory and will consist of 7 short answer type questions of 2 marks each spread over the entire syllabus.
3. The remaining EIGHT questions will be set taking TWO questions from each of the four units. The candidate would be required to attempt ONE question from each unit in addition to the compulsory question.
4. Each question will carry 14 marks.

Unit	**Topics**	**Contact Hours**
I	Introduction to Industrial Security Background of Industrial Security in India	12

	Motivating Security Personnel	
II	Role of Intelligence in Industrial Security Identification of Security Threats; Equipment Support; Perimeter Control	12
III	Principles of SecurityManagement& Total Quality Management Levels of management	12
IV	Current Threats to Security Designing Crime Free Environments	12
	Tutorial	12
Suggested Evaluation Methods		
Internal Assessment: 30 Marks Class Participation **05Marks** Seminar/Presentation/Assignment/Quiz/Class Test etc. **10Marks** Mid Term Exam: **15Marks**		**End Term Examination** **70 Marks**

Part-C Learning Resources
Recommended Books: • Sinha, R.K.(2012) Industrial Security Management, Vikas Publications house ltd, Paperback. • Subramanian, S. (2006) Industrial Security Management, Kalpaz Publications. • Tyagi, S.B.& D C Nath, (2009) Industrial Security: Management & Strategies, Manas Publications

Undergraduate Programme (Defence Studies) Syllabus, Semester-IV

MCC-8			
Session 2023-2024			
Part-A Introduction			
Subject	**Defence Studies**		
Semester	**IV**		
Name of the Course	**Cyber Security**		
Course Code	**B23-DFS-403**		
Course Type: (CC/MCC/MDC/ CCM/DSEC/VOC/DSE/PC/AEC/ VAC)	**MCC**		
Level of the course (As per Annexure-I)	**200-299**		
Pre-requisite for the course (if any)	**NA**		
Course Learning Outcomes (CLO)	After completing this course, the learner will be able to: 1. Understand the nuances of the cyber world. 2. Understand the types of cyber crimes. 3. Understand the impact of cyber crime on national security. 4. Understand the detection and prevention methodologies of cyber crime.		
Credits	**Theory**	**Tutorial**	**Total**
	3	1	4
Contact Hours	3 per week	1 per week	4 per week
Max. Marks: 100 **Internal Assessment Marks: 30** **End Term Exam Marks: 70**	**Time: 3 Hours**		
Part-B Contents of the Course			

Instructions for Paper Setters

1. Total NINE Questions will be set and students will be required to attempt FIVE questions.
2. Question No. 1 will be compulsory and will consist of 7 short answer type questions of 2 marks each spread over the entire syllabus.
3. The remaining EIGHT questions will be set taking TWO questions from each of the four units. The candidate would be required to attempt ONE question from each unit in addition to the compulsory question.
4. Each question will carry 14 marks.

Unit	**Topics**	**Contact Hours**
I	Introduction to Cyber Technologies - Information Systems - Networks/LAN/WAN -Military Sensors	12
II	Types of Cyber Crime - Hacking - Password Cracking - Insecure Network Connection – Theft at Tele Communication Services	12

III	Impact of Cyber Crime on National Security - Impact on Armed Forces & Law enforcement Agencies' Information Systems - Impact on National Economy/Market - Impact on Citizen Security.	12
IV	Detection and Prevention methodologies - Risk Identification - Levels of Protection - Cyber Defensive Measures, Cyber Laws - The INDIAN Cyberspace, National Cyber Security Policy 2013.	12
	Tutorial	12
Suggested Evaluation Methods		
Internal Assessment: 30 Marks Class Participation **05Marks** Seminar/Presentation/Assignment/Quiz/Class Test etc. **10Marks** Mid Term Exam: **15Marks**		**End Term Examination** **70 Marks**

Part-C Learning Resources

Recommended Books:

- Beidleman, Scott W. (2009) Defining and Deterring Cyber War, Master's thesis, U.S. Army War College.
- Borum, Randy, and Ronald Sanders, (2015) Cyber Intelligence: Preparing Today: for Tomorrow's Threats, Intelligence and National Security Alliance.
- Godbole Nina, (2011) Cyber Security, Wiley India, New Delhi.
- UGC Document on LOCF Defence Studies 54.
- Godbole Nina, (2017) Information Systems Security: Security Management, Metrics, Frameworks and Best Practices, Wiley India, New Delhi.
- Shoemaker, Dan and Conklin, Arthur (2011) Cyber Security – The Essential body of Knowledge, Cengage Learning.
- Kim Andreasson, ed., (2012) Cyber Security – Public Sector threats and responses, CRC Press, Boca Raton, FL.
- Lin V Choi ed., (2005) Cyber Security and Homeland Security, Nova Publishers, New York.

Undergraduate Programme (Defence Studies) Syllabus, Semester-IV

DSE-1			
Session 2023-2024			
Part-A Introduction			
Subject	**Defence Studies**		
Semester	**IV**		
Name of the Course	**Strategic Leadership**		
Course Code	**B23-DFS-404**		
Course Type: (CC/MCC/MDC/ CCM/DSEC/VOC/DSE/PC/AEC/ VAC)	**DSE**		
Level of the course (As per Annexure-I)	**200-299**		
Pre-requisite for the course (if any)	**NA**		
Course Learning Outcomes (CLO)	After completing this course, the learner will be able to: 1. Know the concept of Strategic Leadership and Leadership Styles. 2. Understand the behavioural aspects of leadership. 3. Understand the nuances of interpersonal behaviour. 4. Understand the nuances of group dynamics.		
Credits	**Theory**	**Tutorial**	**Total**
	3	1	4
Contact Hours	3 per week	1 per week	4 per week
Max. Marks: 100 **Internal Assessment Marks: 30** **End Term Exam Marks: 70**	**Time: 3 Hours**		

Part-B Contents of the Course

Instructions for Paper Setters

1. Total NINE Questions will be set and students will be required to attempt FIVE questions.
2. Question No. 1 will be compulsory and will consist of 7 short answer type questions of 2 marks each spread over the entire syllabus.
3. The remaining EIGHT questions will be set taking TWO questions from each of the four units. The candidate would be required to attempt ONE question from each unit in addition to the compulsory question.
4. Each question will carry 14 marks.

Unit	**Topics**	**Contact Hours**
I	Introduction to Strategic Leadership a. Meaning and Definition b. Significance of Strategic Leadership c. The Principles of Armed Forces Leadership	12
II	Behavioral Concepts a. Individual Behaviour – Perception – Learning – Attitude Formation and Chang	12

	b. Motivation – Theories of Motivation c. Personality Development.	
III	Interpersonal Behaviour a. Communication – Leadership b. Influencing Relations c. Transactional Analysis.	12
IV	Group Dynamics a. Roles – Morale – Groups b. Inter-Group Behaviour c. Inter-Group Collaboration and Conflict Management.	12
	Tutorial	12
Suggested Evaluation Methods		
Internal Assessment: 30 Marks Class Participation **05Marks** Seminar/Presentation/Assignment/Quiz/Class Test etc. **10Marks** Mid Term Exam: **15Marks**		**End Term Examination** **70 Marks**

Part-C Learning Resources

Recommended Books:

- Aswathappa, (2007) Organisational Behaviour, Himalaya Publishing House, Mumbai.
- Fred Luthans, Organizational Behaviour, (2007) Tata McGraw-Hill Publishing Co., New Delhi.
- Robbins, Stephen P, (1996) Organisational Behaviour, 9th Edition, Prentice Hall of India, New Delhi.
- Carpenter, Mason A., ed. *Handbook of Research on Top Management Teams*. Cheltenham, UK: Edward Elgar, 2011.
- Carpenter, Mason A., and William Gerard Sanders. *Strategic Management: A Dynamic Perspective; Concepts and Cases*. 2d ed. Upper Saddle River, NJ: Pearson Prentice Hall, 2008.
- Dess, Gregory, Gerry McNamara, Alan Eisner, and Seung-Hyun Lee. *Strategic Management: Creating Competitive Advantages*. 10th ed. New York: McGraw Hill Education, 2021.
- Finkelstein, Sydney, Donald C. Hambrick, and Albert A. Cannella Jr. *Strategic Leadership: Theory and Research on Executives, Top Management Teams, and Boards*. Strategic Management. New York: Oxford University Press, 2009.
- Hitt, Michael A., R. Edward Freeman, and Jeffrey S. Harrison, eds. *The Blackwell Handbook of Strategic Management*. Handbooks in Management. Oxford: Blackwell, 2006.
- Hitt, Michael A., R. Duane Ireland, and Robert E. Hoskisson. *Strategic Management: Competitiveness and Globalization; Concepts and Cases*. 13th ed. Stamford, CT: Cengage Learning, 2020.
- House, Robert J., Peter W. Dorfman, Mansour Javidan, Paul J. Hanges, and Mary F. Sully de Luque. *Strategic Leadership across Cultures: The GLOBE Study of CEO Leadership Behavior and Effectiveness in 24 Countries*. 1st ed. Thousand Oaks, CA: SAGE, 2014.
- Northouse, Peter G. *Leadership: Theory and Practice*. 8th ed. Thousand Oaks, CA: SAGE, 2018.
- Pettigrew, Andrew M., Howard Thomas, and Richard Whittington, eds. *Handbook of Strategy and Management*. London: SAGE, 2001.

Undergraduate Programme (Defence Studies) Syllabus, Semester-IV

DSE-1			
Session 2023-2024			
Part-A Introduction			
Subject	**Defence Studies**		
Semester	**IV**		
Name of the Course	**Armed Forces & Society**		
Course Code	**B23-DFS-405**		
Course Type: (CC/MCC/MDC/ CCM/DSEC/VOC/DSE/PC/AEC/ VAC)	**DSE**		
Level of the course (As per Annexure-I)	**200-299**		
Pre-requisite for the course (if any)	**NA**		
Course Learning Outcomes (CLO)	After completing this course, the learner will be able to: 1. Gain a deep understanding of the meaning, types and functioning of the society. 2. Understand the structure, types and importance of social groups. 3. Understand the dynamics of social interaction. 4. Understand the dynamics of civil-military relations.		
Credits	**Theory**	**Tutorial**	**Total**
	3	1	4
Contact Hours	3 per week	1 per week	4 per week
Max. Marks: 100 **Internal Assessment Marks: 30** **End Term Exam Marks: 70**	**Time: 3 Hours**		

Part-B Contents of the Course

Instructions for Paper Setters

1. Total NINE Questions will be set and students will be required to attempt FIVE questions.
2. Question No. 1 will be compulsory and will consist of 7 short answer type questions of 2 marks each spread over the entire syllabus.
3. The remaining EIGHT questions will be set taking TWO questions from each of the four units. The candidate would be required to attempt ONE question from each unit in addition to the compulsory question.
4. Each question will carry 14 marks.

Unit	**Topics**	**Contact Hours**
I	**Study of Society** (a) Definition, forms and types (b) Difference between Society, Community, Association and state. (c) Special features of Military Organizations	12
II	**Social Groups** (a) Definition. (b) Types.	12

	(c) Structure and Importance	
III	**Social Interaction** (a) Motivation, Its types, Methods and Importance (b) Morality, its role and necessity (c) Personality - Definition and determinants	12
IV	**Civil - Military Relations.** (a) Relation in Political Setup (b) Military influence on National Policy (c) Armed forces aid to civil power	12
	Tutorial	12

Suggested Evaluation Methods	
Internal Assessment: 30 Marks Class Participation **05Marks** Seminar/Presentation/Assignment/Quiz/Class Test etc. **10Marks** Mid Term Exam: **15Marks**	**End Term Examination** **70 Marks**

Part-C Learning Resources

Recommended Books:

- Janowitz, Morris (2012) Socioloy and the military establishment. Literary Licensing, LLC.
- Khan, J.A. (2006) Indian Armed Forces & Society-Set of 2 Volumes, Anmol Publications Pvt Ltd.
- Parmar, Leena (1999) Military Sociology: Global Perspectives, Rawat Publications.
- Rosen, Stephen Peter (2019)Societies and Military Power: India and Its Armies. United States, Cornell University Press.
- Sougaijam, Asha. (2018) Military Sociology: Past, Present and Future. India: Mittal Publications.
- Soeters, Joseph (2018) Sociology and Military Studies: Classical and Current Foundations (Cass Military Studies), Routledge.

KURUKSHETRA UNIVERSITY
KURUKSHETRA

Scheme of Examination and Syllabus for

Under-Graduate Programme

Subject: Ancient Indian History, Culture & Archaeology

Under Multiple Entry-Exit, Internship and
CBCS-LOCF in accordance to NEP-2020
w.e.f . 2023-24 (in phased manner)

Department of Ancient Indian History, Culture & Archaeology

Kurukshetra University, Kurukshetra-136119

(Established by the State Legislature Act XII of 1956)

("A+" Grade, NAAC Accredited)

Scheme of Examinations and Syllabus

For Under-Graduate Programme

Subject: Ancient Indian History, Culture & Archaeology

(According to the Curriculum Framework of U.G Programmes under NEP-2020)

To be implemented w.e.f. the session 2023-24 (in phased manner)

(First Year)

Course Type	Paper Code	Name of the paper	Credits	Hours/ Week	Internal Marks	End Term Exam Marks	Total Marks	Exam Duration
SEMESTER-1								
CC-1/MCC-1 AIH	B23-AIH-101	History of Ancient India(from earliest time to C.A.D 319)	4	4	30	70	100	3 hrs.
MCC-2 AIH	B 23-AIH-102	Ancient Indian Societies	4	4	30	70	100	3 hrs
CC-M1-1 AIH	B 23-AIH-103	Sources of Ancient Indian History	2	2	15	35	50	3 hrs
MDC-1 AIH	B 23-AIH-104	Outline of Ancient Indian History(from earliest time to C.A.D 319)	3	3	25	50	75	3 hrs
SEMESTER-2								
CC-2/MCC-3 AIH	B 23-AIH-201	History of Ancient India (From earliest time to c. A.D. 319to 1206 A.D)	**4**	**4**	**30**	**70**	**100**	**3 hrs**
DSEC-1 AIH	B 23-AIH-202	History of Ancient India (From c. A.D. 320 to 1206 A.D)	4	4	30	70	100	3 hrs
CC-MI-2 AIH	B 23-AIH-203	Economic History of Ancient India	2	2	15	35	50	3 hrs
MDC-2 AIH	B 23-AIH-204	Outline of Ancient Indian History (from earliest time to 319 .A.D to 1206 A.D)	3	3	25	50	75	3 hrs

(Second Year)

Course Type	Paper Code	Name of the paper	Credits	Hours/ Week	Internal Marks	End Term Exam Marks	Total Marks	Exam Duration
				SEMESTER-3				
CC-3/MCC-4 AIH	B 23-AIH-301	Pre-Historic India	4	4	30	70	100	3 hrs
MCC-5 AIH	B 23-AIH-302	Proto-Historic India	4	4	30	70	100	3 hrs
MDC-3 AIH	B 23-AIH-303	History & Culture of Ancient Haryana	3	3	25	50	75	3 hrs
				SEMESTER-4				
CC-4/MCC-6 AIH	B 23-AIH-401	Early Historic Archaeology	4	4	30	70	100	3 hrs
MCC-7 AIH	B 23-AIH-402	Elements of Ancient Indian Art	4	4	30	70	100	3 hrs
MCC-8 AIH	B 23-AIH-403	Elements of Ancient Indian Architecture	3	3	25	50	75	3 hrs
DSE-1 AIH	B 23-AIH-404	Science & Technology in Ancient India	4	4	30	70	100	3 hrs
				OR				
	B 23-AIH-405	Socio-Economic Status of Women in Ancient India (from earliest time to 319 A.D.)	4	4	30	70	100	3 hrs

(Third Year)

Course Type	Paper Code	Name of the paper	Credits	Hours/ Week	Internal Marks	End Term Exam Marks	Total Marks	Exam Duration
SEMESTER-5								
CC-5 MCC-9 AIH	B 23-AIH-501	Principles & Methods of Archaeology	4	4	30	70	100	3 hrs
MCC-10 AIH	B 23-AIH-502	Study of Pottery	4	4	30	70	100	3 hrs
DSE-2 AIH	B-23-AIH-503	Elements of Ancient Indian Numismatics	4	4	30	70	100	3 hrs
				OR				
	B23-AIH-504	Socio-Economic Status of Women in Ancient India from 320 A.D to 1200 A.D)	4	4	30	70	100	3 hrs
DSE-3 AIH	B 23-AIH-505	History of Ancient Techniques	4	4	30	70	100	3 hrs
				OR				
	B-23-AIH-506	Epigraphy in Ancient India	4	4	30	70	100	3 hrs

SEMESTER-6

Course	Paper code	Nomenclature of paper	Credits	Hours/ Week	Internal Marks	End Term Exam Marks	Total Marks	Exam Duration
CC-6 MCC-11 AIH	B23-AIH-601	Ancient Indian Iconography	4	4	30	70	100	3 hrs
MCC-12 AIH	B23-AIH-602	Study of Ancient Monuments	4	4	30	70	100	3 hrs
DSE-4 AIH	B23-AIH-603	Field Archaeology	4	4	30	70	100	3 hrs
					OR			
	B23-AIH-604	An Introduction of Ancient Indian Archaeology						
DSE-5 AIH	B23-AIH-605	Museum and Museology	4	4	30	70	100	3 hrs
					OR			
	B23-AIH-606	Epigraphy, Numismatics, Art & Architecture	4	4	30	70	100	3 hrs

(Fourth Year)

Course Type	Paper code	Name of the paper	Credits	Hours/ Week	Internal Marks	End Term Exam Marks	Total Marks	Exam Duration
SEMESTER-7 (FOR HONOURS/HONOURS WITH RESEARCH IN MAJOR SUBJECT)								
CC-H1 AIH	B23-AIH-701	Historiography, Concept, Methods & Tools of Ancient History	**4**	**4**	**30**	**70**	**100**	**3 hrs**
CC-H2 AIH	B23-AIH-702	Research Methodology	**4**	**4**	**30**	**70**	**100**	**3 hrs**
CC-H3 AIH	B23-AIH-703	Political History of Ancient Indian (from earliest time to 1200 A.D)	**4**	**4**	**30**	**70**	**100**	**3 hrs**
DSE-6 AIH	B23-AIH-704	Ancient Indian Society	**4**	**4**	**30**	**70**	**100**	**3 hrs**
					OR			
	B23-AIH-705	Economic History of Ancient India	**4**	**4**	**30**	**70**	**100**	**3 hrs.**
PC-H1	B23-AIH-706	Archaeological Development in India	**4**	**4**	**30**	**70**	**100**	**3 hrs.**
SEMESTER-8 (FOR HONOURS IN MAJOR SUBJECT)								
CC-H4 AIH	B23-AIH-801	Ancient Indian Architecture	**4**	**4**	**30**	**70**	**100**	**3 hrs**
CC-H5 AIH	B23-AIH-802	Principles & Methods of Archaeology	**4**	**4**	**30**	**70**	**100**	**3 hrs**
CC-H6 AIH	B23-AIH-803	Study of Ancient Pottery	**4**	**4**	**30**	**70**	**100**	**3 hrs**
DSE-7 AIH	B23-AIH-804	Field Archaeology	**4**	**4**	**30**	**70**	**100**	**3 hrs**
				OR				
	B23-AIH-805	States in Ancient India	**4**	**4**	**30**	**70**	**100**	**3 hrs.**
PC H2	B23-AIH-806	Modern Technique in Archaeology	**4**	**4**	**30**	**70**	**100**	**3 hrs**
Research	B23-AIH-807	Dissertation/Report	**12**	**-**	**-**	**300**	**300**	**3 hrs**
SEMESTER-8 (FOR HONOURS WITH RESEARCH)								
CC-H4 AIH	B23-AIH-801	Ancient Indian Architecture	**4**	**4**	**30**	**70**	**100**	**3 hrs**
CC-H5 AIH	B23-AIH-802	Principles & Methods of Archaeology	**4**	**4**	**30**	**70**	**100**	**3 hrs**
CC-H6 AIH	B23-AIH-807	Dissertation/Report	**12**	-	-	**300**	**300**	**3 hrs**

KURUKSHETRA UNIVERSITY, KURUKSHETRA
Undergraduate Programs (Ancient Indian History, Culture & Archaeology)
Syllabus, Semester-I

<table>
<tr><td colspan="4">Session: 2023-24</td></tr>
<tr><td colspan="4">Part A- Introduction</td></tr>
<tr><td>Subject</td><td colspan="3">AIH</td></tr>
<tr><td>Semester</td><td colspan="3">I</td></tr>
<tr><td>Name of the Course</td><td colspan="3">History of Ancient Indian (from earliest time to C.A.D 319)</td></tr>
<tr><td>Course Code</td><td colspan="3">B23-AIH-101</td></tr>
<tr><td>Course Type:
(CC/MCC/MDC/CC-M/DSEC/VOC/DSE/PC/AEC/VAA)</td><td colspan="3">CC-1/MCC-1 AIH</td></tr>
<tr><td>Level of the course (As per Annexure-I</td><td colspan="3">100-199</td></tr>
<tr><td>Pre-requisite for the course (if any)</td><td colspan="3">NA</td></tr>
<tr><td>Course Learning Outcomes (CLO):</td><td colspan="3">After completing this course, the learner will be able to:
1: Students will acquaint with the sources of Indian History.
2: Critically analyzed the Indus civilization, Vedic and Post-Vedic Civilization. Critically analyzed the rise of Magadha Empire and Political condition of India.
3: Critically evaluated about the rise of Mauryan Empire, its administration and downfall. Critically analyzed the new developments i.e emergence of Sungas, the Satavahanas, the Indo-Greeks and rise of new Powers i.e. the Saka-kshatrapas, the Pahlavas.
4: Students able to understand about emergence of the Kusanas and the republics i.e. Yaudheyas, Kunindas, Audumbras and Political condition of India before the rise of Gupta. The students came across the general survey of Political History of South India</td></tr>
<tr><td rowspan="2">Credits</td><td>Theory</td><td>Tutorial/Practical</td><td>Total</td></tr>
<tr><td>3</td><td>1</td><td>4</td></tr>
<tr><td>Contact Hours</td><td>3 Per Week</td><td>1 Per Week</td><td>4 Per Week</td></tr>
<tr><td>Max. Marks:100
Internal Asssessment Marks: 30
End Term Exam Marks: 70</td><td colspan="3">Time: 3 Hours</td></tr>
<tr><td colspan="4">Part-B- Contents of the Course</td></tr>
</table>

Instruction for paper-Setter: The question paper will consist of NINE questions out of which the candidate would be required to attempt FIVE. The first question will be compulsory and will have 7 short answer questions uniformly spread over entire syllabus. The remaining EIGHT questions will be set taking TWO questions from each of the four units. Each question will carry 14 marks. The candidates would be required to attempt ONE question from each unit in addition to compulsory question**.**

Unit	Topics	Contact Hours
I	1. Geographical Study of Ancient India: Mountains, Rivers, Plains, Plateaus& Seas 2. Sources: Literary and Archaeological.	12
II	3. Harppan Civilization 4. Vedic Age: Rig Vedic and Later Vedic political condition 5. Emergence of the Mahajanapadas and the political condition of the sixth century B.C. 6. Rise and growth of the Magadhan Empire	12
III	7. Towards Mauryas: Genealogy of Mauryan Period, Extension of Mauryan Empire: ChandraguptaMaurya and Bindusara; Ashoka and his successors.Decline of Maurya's dynasty 8. The Indo-Greeks, the Saka and Pahlavas.	12
IV	9. Rise and fall of the Kushana's Empire : Genealogical Study of Kushana's Dynasty 10. Political History of South India: Sangam age	12
V	Tutorials	12

Suggested Evaluation Methods

Internal Assessment:30 **Theory** **.** Class participation: 05 Marks . Seminar/presentation/assignment/quiz/class/class test etc: 10 Marks . Mid-Term Exam: 15	**End Term Examination:** **70 Marks**

Part C-Learning Resources

Recommended Books/e-resources/LMS:

1. Majumdar, R.C.& Pusalkar, A.D. (Ed.) : Vedic Age.
2. Raychaudhuri, H.C. : Political History of Ancient India (6^{th} Ed.) (English and Hindi)
3. Sastri, K.A.N. : The age of the Nandas and the Mauryas (English and Hindi)
4. Puri, B.N. : India under the Kusanas.
5. Mookarjee, R.K. : Chandragupta Maurya and His Times (English and Hindi).
6. Bhandarkar, D.R. : Ashoka (English and Hindi).
7. Thapar, R. : Ashoka and the Decline of the Mauryas (English and Hindi).
8. Pandey, V.C. : Prachin Bharat Ka Sanskritic Evam Rajnitic Itihas (in Hindi) Vol. I
9. Mukherjee, B.N. : The Rise and Decline of the Kusana Empire
10. Narain, A.K. : The Indo-Greeks.
11. Sastri, K.A.N. (Ed.) : Comprehensive History of India,
12. Rapson, E.J. (Ed.) : Cambridge History of India, Vol. I.

Note: - In addition, student are advised to consult the current Research Journals of History and Archaeology and epathshala (http//epathsahala.nic.in)

KURUKSHETRA UNIVERSITY, KURUKSHETRA

Undergraduate Programs (Ancient Indian History, Culture & Archaeology)

Syllabus, Semester-I

<table>
<tr><td colspan="4">Session: 2023-24</td></tr>
<tr><td colspan="4">Part A- Introduction</td></tr>
<tr><td>Subject</td><td colspan="3">AIH</td></tr>
<tr><td>Semester</td><td colspan="3">I</td></tr>
<tr><td>Name of the Course</td><td colspan="3">Ancient Indian Socities</td></tr>
<tr><td>Course Code</td><td colspan="3">B23-AIH-102</td></tr>
<tr><td>Course Type:
(CC/MCC/MDC/CC-M/DSEC/VOC/DSE/PC/AEC/VAA)</td><td colspan="3">MCC-2 AIH</td></tr>
<tr><td>Level of the course (As per Annexure-I</td><td colspan="3">100-199</td></tr>
<tr><td>Pre-requisite for the course (if any)</td><td colspan="3">NA</td></tr>
<tr><td>Course Learning Outcomes (CLO):</td><td colspan="3">After completing this course, the learner will be able to:
1: Student gets the basic knowledge of the sources of Social History.
2: Student gets the basic knowledge of the Harappans and Post Harappans Socities.
3: The students acquainted with Vedic, Later Vedic society.
4: The students acquainted with Mauryan Age, Gupta Society, Mesoptamian, Sumerian, Roman and Bronze Age civilization</td></tr>
<tr><td rowspan="2">Credits</td><td>Theory</td><td>Tutorial/Practical</td><td>Total</td></tr>
<tr><td>3</td><td>1</td><td>4</td></tr>
<tr><td>Contact Hours</td><td>3 Per Week</td><td>1 Per Week</td><td>4 Per Week</td></tr>
<tr><td>Max. Marks:100
Internal Asssessment Marks: 30
End Term Exam Marks: 70</td><td colspan="3">Time: 3 Hours</td></tr>
<tr><td colspan="4">Part-B- Contents of the Course</td></tr>
</table>

Instruction for paper-Setter: The question paper will consist of NINE questions out of which the candidate would be required to attempt FIVE. The first question will be compulsory and will have 7 short answer questions uniformly spread over entire syllabus. The remaining EIGHT questions will be set taking TWO questions from each of the four units. Each question will carry 14 marks. The candidates would be required to attempt ONE question from each unit in addition to compulsory question**.**

Unit	Topics	Contact Hours
I	1. Sources of social History: Archaeological and Literary. 2. Harappan and Post Harappan Society	12
II	3. Vedic Society 4. Later Vedic Society	12
III	5. Social life of Buddhist Period, Mauryas and Kushanas 6. Society during the Gupta Period	12
IV	7. General Survey of Ancient Indian Society : Sanskaras, Concept of Ashramas, Family system, Caste system, Slavery system, Education system, Ancient Indian Social Philosophy: Purusarth- Asrama and their social context. Origin and development of Varna and Jati, Position of Sudras in Ancient India. 8. Society: Mesopotamian, Sumerian, Roman Civilization and Bronze Age Civilization of China	12
V	Tutorials	12

Suggested Evaluation Methods

Internal Assessment:30 **Theory** . Class participation: 05 Marks . Seminar/presentation/assignment/quiz/class/class test etc:10 Marks . Mid-Term Exam: 15	**End Term Examination:** **70 Marks**

Part C-Learning Resources

Recommended Books/e-resources/LMS:

1. Kane, P.V. : History of Dharmasastra (Relevant Vols.) (English &Hindi)
2. Dutt, N.K. : Origin and Growth of Caste in India.
3. Altekar, A.S. : Position of Women in Hindu Civilization.
4. Prabhu, P.N. : Hindu Social Organization (Englishand Hindi).
5. Sharma, R.S. : Sudras, in Ancient India (English and Hindi).
6. Katiyal, H.S. : Sudras, Slaves and Untouchables in Ancient India.
7. Pandey, R.B. : Hindu Samskaras.
8. Altekar. A.S. : Education in Ancient India.
9. Sharma, R.S. : Light on Early Indian Society and Economy.
10. Sharma, R.S. : Indian Feudalism.
11. Sharma R.S. : Material Culture and Social Formation
12. Channa, D.R. : Slavery in Ancient India.
13. Singh, Y.B. : Social Life in Ancient India.
14. Majumdar, B.P. : Socio-economic History of North India.
15. Chattopadhyaya, S. : Social Life in Ancient India.
16. Mookerji, R.K. : Ancient Indian Education.
17. Chattopadhyaya, B. : Kusana State and Indian Society.
18. Mishra, Jai Shankar : Prachina Bharate Ka Samajik Itihas (in Hindi).
19. Rao, S.R. : Dawn and Devolution of Indus civilization
20. Goyal, S.R. : Visva Ki Prachin Sabhyataon Ka Itihas (In Hindi).
21. Pathak, Sushil Madhava : Visva Ki Prachin Sabhyataon Ka Itihas (In Hindi).
22. Nemisharan Mittal : Prachin Sabhyataein (In Hindi).
23. Rai, U.N. : Visva Ki Prachin Sabhyataon Ka Itihas (In Hindi).
24. Wooley, C. Leonard : The Sumerians.

Note: - In addition, student are advised to consult the current Research Journals of History and Archaeology and epathshala (http//epathsahala.nic.in)

KURUKSHETRA UNIVERSITY, KURUKSHETRA

Undergraduate Programs (Ancient Indian History, Culture & Archaeology)

Syllabus, Semester-I

<table>
<tr><td colspan="4">Session: 2023-24</td></tr>
<tr><td colspan="4">Part A- Introduction</td></tr>
<tr><td>Subject</td><td colspan="3">AIH</td></tr>
<tr><td>Semester</td><td colspan="3">I</td></tr>
<tr><td>Name of the Course</td><td colspan="3">Sources of Ancient Indian History</td></tr>
<tr><td>Course Code</td><td colspan="3">B23-AIH-103</td></tr>
<tr><td>Course Type:
(CC/MCC/MDC/CC-M/DSEC/VOC/DSE/PC/AEC/VAA)</td><td colspan="3">CC/MI-1- AIH</td></tr>
<tr><td>Level of the course (As per Annexure-I</td><td colspan="3">100-199</td></tr>
<tr><td>Pre-requisite for the course (if any)</td><td colspan="3">NA</td></tr>
<tr><td>Course Learning Outcomes (CLO):</td><td colspan="3">After completing this course, the learner will be able to:
1: Student gets the basic Knowledge of sources of Ancient History.
2: Student gets the basic Knowledge of Greek, Roman, Chinese and Tibetan Sources.
3: The students acquainted with Arabic, Persian and Inscriptions as sources of Ancient Indian History.
4: The students acquainted with Coins, Art and Architecture as sources of Ancient Indian History.</td></tr>
<tr><td rowspan="2">Credits</td><td>Theory</td><td>Tutorial/Practical</td><td>Total</td></tr>
<tr><td>2</td><td>0</td><td>2</td></tr>
<tr><td>Contact Hours</td><td>2 Per Week</td><td>0 Per Week</td><td>2 Per Week</td></tr>
<tr><td>Max. Marks:50
Internal Asssessment Marks: 15
End Term Exam Marks: 35</td><td colspan="3">Time: 3 Hours</td></tr>
<tr><td colspan="4">Part-B- Contents of the Course</td></tr>
</table>

Instruction for paper-Setter: The question paper will consist of NINE questions out of which the candidate would be required to attempt FIVE. The first question will be compulsory and will have 7 short answer questions uniformly spread over entire syllabus. The remaining EIGHT questions will be set taking TWO questions from each of the four units. Each question will carry 14 marks. The candidates would be required to attempt ONE question from each unit in addition to compulsory question**.**

Unit	Topics	Contact Hours
I	1. Historical evaluation of the literary sources of Sanskrit. 2. Historical evaluation of the literary sources of Pali and Prakrit.	12
II	3. Greek and Roman Sources 4. Chinese and Tibetan Sources.	12
III	5. Arabic and Persion Sources. 6. Inscriptions as source of Ancient Indian History	12
IV	7. Coins as source of Ancient Indian History 8. Art and Architecture as a source of Ancient Indian History	12
V	Tutorials	12

Suggested Evaluation Methods

Internal Assessment:15 **Theory** . Class participation: 04 Marks . Seminar/presentation/assignment/quiz/class/class test etc:04 Marks . Mid-Term Exam: 07	**End Term Examination:** **35 Marks**

Part C-Learning Resources

Recommended Books/e-resources/LMS:

1. Majumdar, R.C. & : Vedic Age.
   a. Pusalkar, A.D. (Ed.)
   b. ---------do-------- : Age of Imperial Kanauj
2. ---------do-------- : Struggle for the Empire
3. Raychaudhuri, H.C. : Political History of Ancient India (6^{th} Ed.) (English and
   i. Hindi)
4. Thapar, R. : Ashoka and the Decline of the Mauryas (English and Hindi).

5. Pandey, V.C.	:	Prachin Bharat Ka Sanskritic Evam Rajnitic Itihas (in Hindi)Vol. I
6. Mukherjee, B.N.	:	The Rise and Decline of the Kusana Empire
7. Majumdar & Altekar	:	The Vakataka-Gupta Age
8. Gupta P.L.	:	Gupta Samrajya (in Hindi)
9. Devahuti	:	Harsha and his times
10. Singh, U.	:	A History of ancient and early medieval India from stone age i. To12 century
11. Thakur, U. & a. Srivastava, Balram	:	Dakshina Bharata (in Hindi)

Note: - In addition, student are advised to consult the current Research Journals of History and Archaeology and epathshala (http//epathsahala.nic.in)

KURUKSHETRA UNIVERSITY, KURUKSHETRA

Undergraduate Programs (Ancient Indian History, Culture & Archaeology)

Syllabus, Semester-I

<table>
<tr><td colspan="4">Session: 2023-24</td></tr>
<tr><td colspan="4">Part A- Introduction</td></tr>
<tr><td>Subject</td><td colspan="3">AIH</td></tr>
<tr><td>Semester</td><td colspan="3">I</td></tr>
<tr><td>Name of the Course</td><td colspan="3">Outline of Ancient Indian History (form earliest time to C.A.D 319)</td></tr>
<tr><td>Course Code</td><td colspan="3">B23-AIH-104</td></tr>
<tr><td>Course Type:
(CC/MCC/MDC/CC-M/DSEC/VOC/DSE/PC/AEC/VAA)</td><td colspan="3">MDC-1 AIH</td></tr>
<tr><td>Level of the course (As per Annexure-I</td><td colspan="3">100-199</td></tr>
<tr><td>Pre-requisite for the course (if any)</td><td colspan="3">NA</td></tr>
<tr><td>Course Learning Outcomes (CLO):</td><td colspan="3">After completing this course, the learner will be able to:
1: Students understand the sources of Indian History and critically evaluate the knowledge of Stone Age in India.
2: Critically analyzed the Indus civilization, Vedic and Vedic Age.
3: Students acquainted with religious movements, Mauryan Age.
4: Students acquainted with Gupta Age, Pushabhuti dynasty, Harsha Vardhana and his achievements.</td></tr>
<tr><td rowspan="2">Credits</td><td>Theory</td><td>Tutorial/Practical</td><td>Total</td></tr>
<tr><td>3</td><td>1</td><td>4</td></tr>
<tr><td>Contact Hours</td><td>3 Per Week</td><td>1 Per Week</td><td>4 Per Week</td></tr>
<tr><td>Max. Marks:75
Internal Asssessment Marks: 25
End Term Exam Marks: 50</td><td colspan="3">Time: 3 Hours</td></tr>
<tr><td colspan="4">Part-B- Contents of the Course</td></tr>
</table>

Instruction for paper-Setter: The question paper will consist of NINE questions out of which the candidate would be required to attempt FIVE. The first question will be compulsory and will have 7 short answer questions uniformly spread over entire syllabus. The remaining EIGHT questions will be set taking TWO questions from each of the four units. Each question will carry 14 marks. The candidates would be required to attempt ONE question from each unit in addition to compulsory question**.**

Unit	Topics	Contact Hours
I	1. Meaning , Nature & Scope of History 2. Sources of Ancient Indian History. 3. Stone Age, Neolithic Culture.	12
II	4. The Indus Valley Civilization 5. Vedic Age.	12
III	6. Religious Movements: Jainism and Buddhism,. 7. The Mauryan Age: Chandergupta Maurya and Ashoka	12
IV	8. Gupta Age. 9. Pushabhuti Dynasty:HarshaVardhan & his achievements	12
V	Tutorials	12

Suggested Evaluation Methods

Internal Assessment: **Theory 25** **.** Class participation: 05 Marks . Seminar/presentation/assignment/quiz/class/class test etc:07 Marks . Mid-Term Exam: 13	**End Term Examination:** **50 Marks**

Part C-Learning Resources

Recommended Books/e-resources/LMS:

1.	Majumdar, R.C. & Pusalkar, A.D. (Ed.)	:	Vedic Age.
	---------do--------	:	Age of Imperial Kanauj
2.	---------do--------	:	Struggle for the Empire
3.	Raychaudhuri, H.C.	:	Political History of Ancient India (6^{th} Ed.) (English and Hindi)
4.	Thapar, R.	:	Ashoka and the Decline of the Mauryas (English and Hindi).
5.	Pandey, V.C.	:	Prachin Bharat Ka Sanskritic Evam Rajnitic Itihas (in Hindi)Vol. I

6.	Mukherjee, B.N.	:	The Rise and Decline of the Kusana Empire
7.	Majumdar & Altekar	:	The Vakataka-Gupta Age
8.	Gupta P.L.	:	Gupta Samrajya (in Hindi)
9.	Devahuti	:	Harsha and his times
10.	Singh, U.	:	A History of ancient and early medieval India from stone age To12th century
11.	Thakur, U. & Srivastava, Balram	:	Dakshina Bharata (in Hindi)

Note: - In addition, student are advised to consult the current Research Journals of History and Archaeology and epathshala (http//epathsahala.nic.in)

Undergraduate Programs (Ancient Indian History, Culture & Archaeology)

Syllabus, Semester-II

Session: 2023-24			
Part A- Introduction			
Subject	**AIH**		
Semester	**II**		
Name of the Course	**History of Ancient India (form earliest time to C.A.D 319 to 1206)**		
Course Code	**B23-AIH-201**		
Course Type: (CC/MCC/MDC/CC-M/DSEC/VOC/DSE/PC/AEC/VAA)	**CC-2/MCC-3AIH**		
Level of the course (As per Annexure-I	100-199		
Pre-requisite for the course (if any)	NA		
Course Learning Outcomes (CLO):	After completing this course, the learner will be able to: 1: Students get the basic knowledge of Society in Harappan Civilization and Vedic Age. 2: Students get the basic knowledge of Mauryan social traits and Kushana Age. 3: Students get the basice knowledge of social divison in Gupta age. 4: The Students acquainted with early medieval northern Indian society and Ealry medieval southern Indian society.		
Credits	Theory	Tutorial/Practical	Total
	3	1	4
Contact Hours	3 Per Week	1 Per Week	4 Per Week
Max. Marks:100 Internal Asssessment Marks: 30 End Term Exam Marks: 70	**Time: 3 Hours**		
Part-B- Contents of the Course			

Instruction for paper-Setter: The question paper will consist of NINE questions out of which the candidate would be required to attempt FIVE. The first question will be compulsory and will have 7 short answer questions uniformly spread over entire syllabus. The remaining EIGHT questions will be set taking TWO questions from each of the four units. Each question will carry 14 marks. The candidates would be required to attempt ONE question from each unit in addition to compulsory question**.**

Unit	Topics	Contact Hours
I	1. Society in Harappan Civilization. 2. Vedic age.	12
II	3. Mauryas social traits 4. Society in Kushana age	12
III	5. Social division in Gupta age 6. Society in Harsha's times	1 2
IV	7. Early medieval northern Indian society 8. Early medieval southern Indian society.	12
V	Tutorials	12

Suggested Evaluation Methods

Internal Assessment:30 **Theory** . Class participation: 05 Marks . Seminar/presentation/assignment/quiz/class/class test etc:10 Marks . Mid-Term Exam: 15	**End Term Examination:** **70 Marks**

Part C-Learning Resources

Recommended Books/e-resources/LMS:

1. Majumdar & Altekar : The Vakataka-Gupta Age
2. Gupta P.L. : Gupta Samrajya (in Hindi)
3. Ray U.N : History of Gupta Empire
4. Bose, N.S. : History of Chandelas
5. Bhatia, P. : The Paramaras
6. Devahuti : Harsha and his times

7.	Niyogi,R.	:	The History of the Gahadavalas
8.	Sharma Dashrath	:	Early Chauhan Dynastics
9.	Sastri, K.A.N.	:	The Colas
10.	--------do---------	:	History of South India
11.	Gopalan. R.	:	The Pallavas of Kanchi
12.	Tripathi, R.S.	:	History of Kanauj
13.	Dikshit, R.K.	:	The Chandelas of Jejakabhukti
14.	Majumdar. R. C.&	:	Age of Imperial Kanauj
15.	Pusalkar, A.D. (Ed.)		
16.	---------do--------	:	Struggle for the Empire
17.	Thakur, U.	:	Hunas in India
18.	Thakur, U.&	:	Dakshina Bharata (in Hindi)
19.	Srivastava, Balram		
20.	Pieres, E.A.	:	The Maukharis
21.	Puri, B.N	:	History of the Gurjara-Pratiharas

Note: - In addition, student are advised to consult the current Research Journals of History and Archaeology and epathshala (http//epathsahala.nic.in)

KURUKSHETRA UNIVERSITY, KURUKSHETRA
Undergraduate Programs (Ancient Indian History, Culture & Archaeology)
Syllabus, Semester-II

<table>
<tr><td colspan="4">Session: 2023-24</td></tr>
<tr><td colspan="4">Part A- Introduction</td></tr>
<tr><td>Subject</td><td colspan="3">AIH</td></tr>
<tr><td>Semester</td><td colspan="3">II</td></tr>
<tr><td>Name of the Course</td><td colspan="3">History of Ancient India (from C.S.D. 320 to 1206 A.D)</td></tr>
<tr><td>Course Code</td><td colspan="3">B23-AIH-202</td></tr>
<tr><td>Course Type:
(CC/MCC/MDC/CC-M/DSEC/VOC/DSE/PC/AEC/VAA)</td><td colspan="3">MI-2 AIH</td></tr>
<tr><td>Level of the course (As per Annexure-I</td><td colspan="3">100-199</td></tr>
<tr><td>Pre-requisite for the course (if any)</td><td colspan="3">NA</td></tr>
<tr><td>Course Learning Outcomes (CLO):</td><td colspan="3">After completing this course, the learner will be able to:
1: Student get the basic knowledge of the development of archaeology at World level
2: Students will understand the role of Cunnigham, Marshall and Wheeler‘s contribution in Indian Archaeology.
3: The students acquainted with the new technique of various archaeological methods.
4: The students get the basic knowledge of antiquarian laws.</td></tr>
<tr><td rowspan="2">Credits</td><td>Theory</td><td>Tutorial/Practical</td><td>Total</td></tr>
<tr><td>2</td><td>0</td><td>2</td></tr>
<tr><td>Contact Hours</td><td>2 Per Week</td><td>0 Per Week</td><td>2 Per Week</td></tr>
<tr><td>Max. Marks:50
Internal Asssessment Marks: 15
End Term Exam Marks: 35</td><td colspan="3">Time: 3 Hours</td></tr>
<tr><td colspan="4">Part-B- Contents of the Course</td></tr>
</table>

Instruction for paper-Setter: The question paper will consist of NINE questions out of which the candidate would be required to attempt FIVE. The first question will be compulsory and will have 7 short answer questions uniformly spread over entire syllabus. The remaining EIGHT questions will be set taking TWO questions from each of the four units. Each question will carry 14 marks. The candidates would be required to attempt ONE question from each unit in addition to compulsory question**.**

Unit	Topics	Contact Hours
I	1. Origin of Archaeology in World perspective. 2. New Dimensions in Archaeology (i) C^{14} Method (ii) 3D method	12
II	3. Development of Archaeology in India (i). Asiatic Society (ii) Alexander Cunnigham, John Marshall and M. Wheeler	12
III	4. Archaeological Methods (i) Excavation, exploration & site identification	12
IV	5. Indian Antiquarian Laws-1904,1962,1972	12
V	Tutorials	12

Suggested Evaluation Methods

Internal Assessment:15 **Theory** . Class participation: 04 Marks . Seminar/presentation/assignment/quiz/class/class test etc:04 Marks . Mid-Term Exam: 07	**End Term Examination:** **35 Marks**

Part C-Learning Resources

Recommended Books/e-resources/LMS:

1. Mishra, B. : Researches in Archaeology and Conservation.
2. Wheeler, R.E.M. : Archaeology from the Earth.
3. Plender Leith, H.J : The Preservation Antiquities.
4. Agarwal, D.P. : Indian Archaeology.
5. Srivastva, K.M. : New Era of Indian Archaeology.

6.	Pandey,J.N.	:	Puratattva Vimarsha (In Hindi).
7.	Agarwal, D.P.	:	Preservation of Art Objects and Library Materials.
8.	Rao, S.R.	:	Marine Archaeology of Indian Ocean countries -
9.	Rao, S.R.	:	Journal of Indian Ocean Archaeology. Vol-1,2&3

Note: - In addition, student are advised to consult the current Research Journals of History and Archaeology and epathshala (http//epathsahala.nic.in)

KURUKSHETRA UNIVERSITY, KURUKSHETRA

Undergraduate Programs (Ancient Indian History, Culture & Archaeology)

Syllabus, Semester-II

<table>
<tr><td colspan="4">Session: 2023-24</td></tr>
<tr><td colspan="4">Part A- Introduction</td></tr>
<tr><td>Subject</td><td colspan="3">AIH</td></tr>
<tr><td>Semester</td><td colspan="3">II</td></tr>
<tr><td>Name of the Course</td><td colspan="3">Economic History of Ancient India</td></tr>
<tr><td>Course Code</td><td colspan="3">B23-AIH-203</td></tr>
<tr><td>Course Type:
(CC/MCC/MDC/CC-M/DSEC/VOC/DSE/PC/AEC/VAA)</td><td colspan="3">CC-2/MCC-3 AIH</td></tr>
<tr><td>Level of the course (As per Annexure-I</td><td colspan="3">100-199</td></tr>
<tr><td>Pre-requisite for the course (if any)</td><td colspan="3">NA</td></tr>
<tr><td>Course Learning Outcomes (CLO):</td><td colspan="3">After completing this course, the learner will be able to:
1: Students get the basic knowledge of economy of the stone age and Harappan Civilization.
2: Students get the basic knowledge of economic condition of the Vedic age and Mauryan Age.
3: Students get the basic knowledge of economy condition of the Gupta Age and Harsha’s time..
4: The students acquainted with guild in Ancient India and Feudalism.</td></tr>
<tr><td rowspan="2">Credits</td><td>Theory</td><td>Tutorial/Practical</td><td>Total</td></tr>
<tr><td>3</td><td>1</td><td>4</td></tr>
<tr><td>Contact Hours</td><td>3 Per Week</td><td>1 Per Week</td><td>4 Per Week</td></tr>
<tr><td>Max. Marks:100
Internal Asssessment Marks: 30
End Term Exam Marks: 70</td><td colspan="3">Time: 3 Hours</td></tr>
<tr><td colspan="4">Part-B- Contents of the Course</td></tr>
</table>

Instruction for paper-Setter: The question paper will consist of NINE questions out of which the candidate would be required to attempt FIVE. The first question will be compulsory and will have 7 short answer questions uniformly spread over entire syllabus. The remaining EIGHT questions will be set taking TWO questions from each of the four units. Each question will carry 14 marks. The candidates would be required to attempt ONE question from each unit in addition to compulsory question**.**

Unit	Topics	Contact Hours
I	1. Economy of the Stone age 2. Economy of the Harappan Civilization	12
II	3. Economic condition of the Vedic age. 4. Economy during Mauryas age	12
III	5. Economy of the Gupta age 6. Economic condition in Harsha's times	12
IV	7. Guilds in Ancient India 8. Feudalism	12
V	Tutorials	12

Suggested Evaluation Methods

Internal Assessment:30 **Theory** **.** Class participation: 05 Marks . Seminar/presentation/assignment/quiz/class/class test etc:10 Marks . Mid-Term Exam: 15	**End Term Examination:** **70 Marks**

Part C-Learning Resources

Recommended Books/e-resources/LMS:

1. Majumdar & Altekar : The Vakataka-Gupta Age
2. Gupta P.L. : Gupta Samrajya (in Hindi)
3. Ray U.N : History of Gupta Empire
4. Bose, N.S. : History of Chandelas
5. Bhatia, P. : The Paramaras

6. Devahuti	:	Harsha and his times
7. Niyogi,R.	:	The History of the Gahadavalas
8. Sharma Dashrath	:	Early Chauhan Dynastics
9. Sastri, K.A.N.	:	The Colas
10 .--------do---------	:	History of South India
11. Gopalan. R.	:	The Pallavas of Kanchi
12. Tripathi, R.S.	:	History of Kanauj
13. Dikshit, R.K.	:	The Chandelas of Jejakabhukti
14. Majumdar. R. C.& Pusalkar, A.D. (Ed.)	:	Age of Imperial Kanauj
16. ---------do--------	:	Struggle for the Empire
17. Thakur, U.	:	Hunas in India
18. Thakur, U.& Srivastava, Balram	:	Dakshina Bharata (in Hindi)
19. Pieres, E.A.	:	The Maukharis
20. Puri, B.N	:	History of the Gurjara-Pratiharas

Note: - In addition, student are advised to consult the current Research Journals of History and Archaeology and epathshala (http//epathsahala.nic.in)

KURUKSHETRA UNIVERSITY, KURUKSHETRA

Undergraduate Programs (Ancient Indian History, Culture & Archaeology)

Syllabus, Semester-II

<table>
<tr><td colspan="4">Session: 2023-24</td></tr>
<tr><td colspan="4">Part A- Introduction</td></tr>
<tr><td>Subject</td><td colspan="3">AIH</td></tr>
<tr><td>Semester</td><td colspan="3">II</td></tr>
<tr><td>Name of the Course</td><td colspan="3">Outline of Ancient Indian History (from earliest time to 319 A.D to 1206 A.D)</td></tr>
<tr><td>Course Code</td><td colspan="3">B23-AIH-204</td></tr>
<tr><td>Course Type:
(CC/MCC/MDC/CC-M/DSEC/VOC/DSE/PC/AEC/VAA)</td><td colspan="3">MDC-2 AIH</td></tr>
<tr><td>Level of the course (As per Annexure-I</td><td colspan="3">100-199</td></tr>
<tr><td>Pre-requisite for the course (if any)</td><td colspan="3">NA</td></tr>
<tr><td>Course Learning Outcomes (CLO):</td><td colspan="3">After completing this course, the learner will be able to:
CO1: Students get the basic knowledge of society prevailed in Gupta age, Pushabuties dynasty.
CO2: Students get the basic knowledge of rise and fall of the Paratiharas, Palas and Rastrakutas.
CO3: Students get the basic knowledge of the Pallavas abd Chalukyas.
CO4: The students acquainted with Arab and Turk invasions and the Cholas.</td></tr>
<tr><td rowspan="2">Credits</td><td>Theory</td><td>Tutorial/Practical</td><td>Total</td></tr>
<tr><td>3</td><td>1</td><td>4</td></tr>
<tr><td>Contact Hours</td><td>3 Per Week</td><td>1 Per Week</td><td>4 Per Week</td></tr>
<tr><td>Max. Marks:75
Internal Asssessment Marks: 25
End Term Exam Marks: 50</td><td colspan="3">Time: 3 Hours</td></tr>
<tr><td colspan="4">Part-B- Contents of the Course</td></tr>
</table>

Instruction for paper-Setter: The question paper will consist of NINE questions out of which the candidate would be required to attempt FIVE. The first question will be compulsory and will have 7 short answer questions uniformly spread over entire syllabus. The remaining EIGHT questions will be set taking TWO questions from each of the four units. Each question will carry 14 marks. The candidates would be required to attempt ONE question from each unit in addition to compulsory question**.**

Unit	Topics	Contact Hours
I	1. Rise and fall of the Guptas. 2. Pushyabhuties dynasty: Genealogy of Harshvardhan 3. Hieun tsang accounts	12
II	4. Rise and fall of the Paratiharas. 5. Rise and fall of the Palas. 6. Rise and fall of the Rastrakutas.	12
III	7. The Pallavas 8. The Chalukyas.	12
IV	9. The Arab and Turk invasions and the Indian resistance 10 The Cholas	12
V	Tutorials	12

Suggested Evaluation Methods

Internal Assessment:25 **Theory** . Class participation: 05 Marks . Seminar/presentation/assignment/quiz/class/class test etc:07 Marks . Mid-Term Exam: 13	**End Term Examination:** **50 Marks**

Part C-Learning Resources

Recommended Books/e-resources/LMS:

1. Majumdar, R.C. & : Vedic Age.

a. Pusalkar, A.D. (Ed.)

b. ---------do-------- : Age of Imperial Kanauj

2 .---------do-------- : Struggle for the Empire

3. Raychaudhuri, H.C.	:	Political History of Ancient India (6th Ed.) (English and Hindi)
4. Thapar, R.	:	Ashoka and the Decline of the Mauryas (English and Hindi).
5. Pandey, V.C.	:	Prachin Bharat Ka Sanskritic Evam Rajnitic Itihas (in Hindi)Vol. I
6. Mukherjee, B.N.	:	The Rise and Decline of the Kusana Empire
7. Majumdar & Altekar	:	The Vakataka-Gupta Age
8. Gupta P.L.	:	Gupta Samrajya (in Hindi)
9. Devahuti	:	Harsha and his times
10. Singh, U.	:	A History of ancient and early medieval India from stone age To12 century
11. Thakur, U. & Srivastava, Balram	:	Dakshina Bharata (in Hindi)

Note: - In addition, student are advised to consult the current Research Journals of History and Archaeology and epathshala (http//epathsahala.nic.in)

Undergraduate Programs (Ancient Indian History, Culture & Archaeology)

Syllabus, Semester-III

<table>
<tr><td colspan="4">Session: 2023-24</td></tr>
<tr><td colspan="4">Part A- Introduction</td></tr>
<tr><td>Subject</td><td colspan="3">AIH</td></tr>
<tr><td>Semester</td><td colspan="3">III</td></tr>
<tr><td>Name of the Course</td><td colspan="3">Pre-Historic India</td></tr>
<tr><td>Course Code</td><td colspan="3">B23-AIH-301</td></tr>
<tr><td>Course Type:
(CC/MCC/MDC/CC-M/DSEC/VOC/DSE/PC/AEC/VAA)</td><td colspan="3">CC-3/MCC-4 AIH</td></tr>
<tr><td>Level of the course (As per Annexure-I</td><td colspan="3">200-299</td></tr>
<tr><td>Pre-requisite for the course (if any)</td><td colspan="3">NA</td></tr>
<tr><td>Course Learning Outcomes (CLO):</td><td colspan="3">After completing this course, the learner will be able to:
1: Students get the basic knowledge of Pre-Historic India.
2: Students get the basic knowledge of World Pre History.
3: The students acquainted with the middle paleolithic and upper paleolithic cultures of India.
4: The students acquainted with Mesolithic age of India, Neolithic India and tools technology.</td></tr>
<tr><td rowspan="2">Credits</td><td>Theory</td><td>Tutorial/Practical</td><td>Total</td></tr>
<tr><td>3</td><td>1</td><td>4</td></tr>
<tr><td>Contact Hours</td><td>3 Per Week</td><td>1 Per Week</td><td>4 Per Week</td></tr>
<tr><td>Max. Marks:100
Internal Asssessment Marks: 30
End Term Exam Marks: 70</td><td colspan="3">Time: 3 Hours</td></tr>
<tr><td colspan="4">Part-B- Contents of the Course</td></tr>
</table>

Instruction for paper-Setter: The question paper will consist of NINE questions out of which the candidate would be required to attempt FIVE. The first question will be compulsory and will have 7 short answer questions uniformly spread over entire syllabus. The remaining EIGHT questions will be set taking TWO questions from each of the four units. Each question will carry 14 marks. The candidates would be required to attempt ONE question from each unit in addition to compulsory question**.**

Unit	Topics	Contact Hours
I	1. Indian Pre- History: Meaning and Scope. 2. Interpretation of Pre -Historic Sources .	12
II	3. General background of world Prehistory. 4. Lower Paleolithic Cultures of India. 5. Middle Paleolithic and Upper Paleolithic Cultures of India.	12
III	6. Mesolithic Cultures of India Characteristic features. 7. Neolithic cultures of India	12
IV	8. Stone Tools and Technology. 9. Pre-Historic art.	12
V	Tutorials	12

Suggested Evaluation Methods

Internal Assessment:30 **Theory** **.** Class participation: 05 Marks . Seminar/presentation/assignment/quiz/class/class test etc:10 Marks . Mid-Term Exam: 15	**End Term Examination:** **70 Marks**

Part C-Learning Resources

Recommended Books/e-resources/LMS:

1. Agrawal, D.P. : The Archaeology of India.
2. Chakrabarti, D.K. : A History of Indian Archaeology.
3. Allchin, B. & R. : The Rise of Civilization in India and Pakistan.
4. Jain, K. C. : Prehistory and Protohistory of India.
5. Jayaswal, Vidula : Palaeohistory of India
6. -------do---------- : *Bhartiya Itihas Ke Aadi Charan Ki Ruprekha* (in Hindi)

7.	-------do----------	:	*Bhartiya Itihas Ka Madhya Praster Yug* (in Hindi)
8.	Sankalia, H.D.	:	Stone Age Tols: Their Techniques, Name and Probable Function
9.	Sankalia, H.D.	:	Prehistory and Protohistory of India and Pakistan
10.	Verma, Radhakant	:	*Bharatiya Pragaitihasic Sanakritiyan* (in Hindi)
11.	Clark, J.G.D.	:	Archaeology and Society: Reconstructing the Prehistoric Past
12.	Pandey,J.N.	:	*Puratattva Vimarsha* (In Hindi).
13.	Bhattacharya, D.K	:	Prehistoric Archaeology
14.	Daniel Glyn	:	The Origins and Growth of Archaeology.
15.	Rao, S.R.	:	Marine Archaeology of India Ocean Countries.
16.	Wheeler, R.E.M.	:	Archaeology from the Earth
17.	Paddayya, K.	:	New Archaeology and its Aftermath.
18.	Sankalia, H.D.	:	Prehistoric Art in India

Note: - In addition, student are advised to consult the current Research Journals of History and Archaeology and epathshala (http//epathsahala.nic.in)

KURUKSHETRA UNIVERSITY, KURUKSHETRA

Undergraduate Programs (Ancient Indian History, Culture & Archaeology)

Syllabus, Semester-III

<table>
<tr><td colspan="4">Session: 2023-24</td></tr>
<tr><td colspan="4">Part A- Introduction</td></tr>
<tr><td>Subject</td><td colspan="3">AIH</td></tr>
<tr><td>Semester</td><td colspan="3">III</td></tr>
<tr><td>Name of the Course</td><td colspan="3">Proto-Historic India</td></tr>
<tr><td>Course Code</td><td colspan="3">B23-AIH-302</td></tr>
<tr><td>Course Type:
(CC/MCC/MDC/CC-M/DSEC/VOC/DSE/PC/AEC/VAA)</td><td colspan="3">MCC-5 AIH</td></tr>
<tr><td>Level of the course (As per Annexure-I</td><td colspan="3">200-299</td></tr>
<tr><td>Pre-requisite for the course (if any)</td><td colspan="3">NA</td></tr>
<tr><td>Course Learning Outcomes (CLO):</td><td colspan="3">After completing this course, the learner will be able to:
1: Students get the basic knowledge of Proto-Historic India.
2: Students get the basic knowledge of Harappan civilization.
3: Students get the basic knowledge of Ochewr colored Pottery and painted grey ware culture.
4: The students acquainted with the Iron age and Northern Black Polished Ware Culture.</td></tr>
<tr><td rowspan="2">Credits</td><td>Theory</td><td>Tutorial/Practical</td><td>Total</td></tr>
<tr><td>3</td><td>1</td><td>4</td></tr>
<tr><td>Contact Hours</td><td>3 Per Week</td><td>1 Per Week</td><td>4 Per Week</td></tr>
<tr><td>Max. Marks:100
Internal Asssessment Marks: 30
End Term Exam Marks: 70</td><td colspan="3">Time: 3 Hours</td></tr>
<tr><td colspan="4">Part-B- Contents of the Course</td></tr>
</table>

Instruction for paper-Setter: The question paper will consist of NINE questions out of which the candidate would be required to attempt FIVE. The first question will be compulsory and will have 7 short answer questions uniformly spread over entire syllabus. The remaining EIGHT questions will be set taking TWO questions from each of the four units. Each question will carry 14 marks. The candidates would be required to attempt ONE question from each unit in addition to compulsory question**.**

Unit	Topics	Contact Hours
I	1. Indian Proto-history: Meaning and Scope. 2. Early Harappan Cultures.	12
II	3. Harappan Civilization	12
III	4. Ocher colored Pottery Culture. 5. Painted Grey Ware Culture	12
IV	6. The Iron Age 7. Northern Black Polished Ware Culture	12
V	Tutorials	12

Suggested Evaluation Methods

Internal Assessment:30 **Theory** . Class participation: 05 Marks . Seminar/presentation/assignment/quiz/class/class test etc:10 Marks . Mid-Term Exam: 15	**End Term Examination:** **70 Marks**

Part C-Learning Resources

Recommended Books/e-resources/LMS:

1. Agarwal, D.P. : Archaeology of India
2. Allchin,B.& R : The Rise of Civilization in India and Pakistan
3. Agarwal, D.P. & : Essays in Indian Proto history
4. Chakrabarti, D.K.
5. Nautiyal, K.P. : Protohistoric India
6. Dhavlikar, M.K. : Indian Protohistory
7. Jam, K.C. : Prehistory and Proto-history of India
8. Lal B.B. : The Earliest Civilization of South Asia
9. Pande, Jainarain : Puratattva Vimarsh (in Hindi)
10. Sankalia, H.D. : Prehistory and Proto-history of India and Pakistan

11. Verma, Radha Kant : Bhartiya Pragatihasik Sanskritiyan
12. Sankalia, H.D.;Deo,S.B. : Excavation at Ahar
13. & Ansari, Z.D.

Note: - In addition, student are advised to consult the current Research Journals of History and Archaeology and epathshala (http//epathsahala.nic.in)

KURUKSHETRA UNIVERSITY, KURUKSHETRA

Undergraduate Programs (Ancient Indian History, Culture & Archaeology)

Syllabus, Semester-III

<table>
<tr><td colspan="4">Session: 2023-24</td></tr>
<tr><td colspan="4">Part A- Introduction</td></tr>
<tr><td>Subject</td><td colspan="3">AIH</td></tr>
<tr><td>Semester</td><td colspan="3">III</td></tr>
<tr><td>Name of the Course</td><td colspan="3">History & Culture of Ancient Haryana</td></tr>
<tr><td>Course Code</td><td colspan="3">B23-AIH-303</td></tr>
<tr><td>Course Type:

(CC/MCC/MDC/CC-M/DSEC/VOC/DSE/PC/AEC/VAA)</td><td colspan="3">MDC-3 AIH</td></tr>
<tr><td>Level of the course (As per Annexure-I</td><td colspan="3">200-299</td></tr>
<tr><td>Pre-requisite for the course (if any)</td><td colspan="3">NA</td></tr>
<tr><td>Course Learning Outcomes (CLO):</td><td colspan="3">After completing this course, the learner will be able to:

1: Students get the basic knowledge of sources of Haryana.
2: Students get the basic knowledge of Pre-Historic Haryana.
3: Students get the basic knowledge of Proto-Historic Haryana.
4: The students acquainted with the Vedic people of Haryana, Kurus and Political History of Haryana from 6th century BC to 120th century AD.</td></tr>
<tr><td rowspan="2">Credits</td><td>Theory</td><td>Tutorial/Practical</td><td>Total</td></tr>
<tr><td>3</td><td>1</td><td>4</td></tr>
<tr><td>Contact Hours</td><td>3 Per Week</td><td>1 Per Week</td><td>4 Per Week</td></tr>
<tr><td>Max. Marks:75
Internal Asssessment Marks: 25
End Term Exam Marks: 50</td><td colspan="3">Time: 3 Hours</td></tr>
<tr><td colspan="4">Part-B- Contents of the Course</td></tr>
</table>

Instruction for paper-Setter: The question paper will consist of NINE questions out of which the candidate would be required to attempt FIVE. The first question will be compulsory and will have 7 short answer questions uniformly spread over entire syllabus. The remaining EIGHT questions will be set taking TWO questions from each of the four units. Each question will carry 14 marks. The candidates would be required to attempt ONE question from each unit in addition to compulsory question**.**

Unit	Topics	Contact Hours
I	1. Sources — Literary and Archaeological. 2. Pre-Historic Haryana.	12
II	3. Salient features and expansion of Proto-Historic cultures in Haryana - Early Harappan, Harappan, Late Harappan	12
III	4. Expansion of the Vedic culture in the Saraswati Valley; Traditional History of the Kurus, the Bharata War and Aftermath. 5. History of the region from the 6th century B.C. to 2nd century B.C.	12
IV	6. The rise of the Pushyabhuti Dynasty. 7. The rule of Gurjara-Pratiharas, Tomaras and Chahamanas.	12
V	Tutorials	12

Suggested Evaluation Methods

Internal Assessment:25 **Theory** . Class participation: 05 Marks . Seminar/presentation/assignment/quiz/class/class test etc:07 Marks . Mid-Term Exam: 13	**End Term Examination:** **50 Marks**

Part C-Learning Resources

Recommended Books/e-resources/LMS:

1. Raychaudhuri, H.C.	:	Political History of Ancient India.
2. Pargiter, F.E.	:	Ancient Indian Historical Tradition.
3. Gupta, S.P. (Ed.) & 4. Ramachandran, S.K.	:	Mahabharata: Myth and Reality.
5. Buddha Prakash	:	Haryana through the Ages.
6. Buddha Prakash	:	Glimpses of Ancient Haryana.
7. Yadav, K.C. (Ed.)	:	Haryana Studies in History and Culture.
8. Yadav, K.C. (Ed.)	:	Haryana Ka Itihasa (In Hindi).
9. Phadke, H.A.	:	Haryana - Ancient and Medieval.
10. Lal, B.B.	:	Earliest Civilization of South Asia.
11. Gupta, S.P.	:	The Indus, Saraswati Civilization.
12. Suraj Bhan 13. Yamuna Divide	:	Excavations at Mitathal (1960) and other Explorations in Sutlaj
14. Suraj Bhan	:	Excavations of Sugh, Journal of Haryana Studies.
15. Verma, D.C.	:	(*INDIA – THE LAND AND THE PEOPLE*) HARYANA
16. Agrawal, Jagannath	:	Inscriptions of Haryana, Punjab, H.P., J. & K. and adjoining
17. Phogat, S.R.	:	Inscriptions of Haryana.
18. Pandey, D.B.	:	The History and the Coinage of the Yaudheyas.

Note: - In addition, student are advised to consult the current Research Journals of History and Archaeology and epathshala (http//epathsahala.nic.in)

KURUKSHETRA UNIVERSITY, KURUKSHETRA

Undergraduate Programs (Ancient Indian History, Culture & Archaeology)

Syllabus, Semester-IV

<table>
<tr><td colspan="4">Session: 2023-24</td></tr>
<tr><td colspan="4">Part A- Introduction</td></tr>
<tr><td>Subject</td><td colspan="3">AIH</td></tr>
<tr><td>Semester</td><td colspan="3">IV</td></tr>
<tr><td>Name of the Course</td><td colspan="3">Early Historic Archaeology</td></tr>
<tr><td>Course Code</td><td colspan="3">B23-AIH-401</td></tr>
<tr><td>Course Type:
(CC/MCC/MDC/CC-M/DSEC/VOC/DSE/PC/AEC/VAA)</td><td colspan="3">MDC-3 AIH</td></tr>
<tr><td>Level of the course (As per Annexure-I</td><td colspan="3">200-299</td></tr>
<tr><td>Pre-requisite for the course (if any)</td><td colspan="3">NA</td></tr>
<tr><td>Course Learning Outcomes (CLO):</td><td colspan="3">After completing this course, the learner will be able to:
1: Students get the basic knowledge of relationship of Archaeology with History.
2: Students get the basic knowledge of Northern Black polished Ware Culture.
3: The students acquainted with Historical urbanization, museums and pottery.
4: The students acquainted with the excavations of different sites.</td></tr>
<tr><td rowspan="2">Credits</td><td>Theory</td><td>Tutorial/Practical</td><td>Total</td></tr>
<tr><td>3</td><td>1</td><td>4</td></tr>
<tr><td>Contact Hours</td><td>3 Per Week</td><td>1 Per Week</td><td>4 Per Week</td></tr>
<tr><td>Max. Marks:75
Internal Asssessment Marks: 25
End Term Exam Marks: 50</td><td colspan="3">Time: 3 Hours</td></tr>
<tr><td colspan="4">Part-B- Contents of the Course</td></tr>
</table>

Instruction for paper-Setter: The question paper will consist of NINE questions out of which the candidate would be required to attempt FIVE. The first question will be compulsory and will have 7 short answer questions uniformly spread over entire syllabus. The remaining EIGHT questions will be set taking TWO questions from each of the four units. Each question will carry 14 marks. The candidates would be required to attempt ONE question from each unit in addition to compulsory question**.**

Unit	Topics	Contact Hours
I	1. Relationship of Archaeology with History. 2. Northern Black Polished Ware Culture.	12
II	3. Historical Urbanization 4. Methods of conservation and preservation.	12
III	5. Archaeology and Public Awareness; Museums - display of antiquities and Antiquarian Law 6. Significance of Pottery	12
IV	7. Detailed study of the following excavations: (i) Hastinapur (ii) Atranjikhera (iii) Kausambi (iv) Taxila (v) Vaishali	12
V	Tutorials	12

Suggested Evaluation Methods

Internal Assessment:25 **Theory** . Class participation: 05 Marks . Seminar/presentation/assignment/quiz/class/class test etc:07 Marks . Mid-Term Exam: 13	**End Term Examination:** **50 Marks**

Part C-Learning Resources

Recommended Books/e-resources/LMS:

1. Mishra, F. : Researches in Archaeology and Conservation.
2. Paddayya, K. : New Archaeology arid it's Aftermath.
3. Srivastava, K.M : New Era of Indian Archaeology.

4.	Sharma, G.R.	:	Excavations at Kausambi.
5.	Marshall, Sir, John	:	Guide to Taxila.
6.	Ghosh, A. (Ed.) Vols.	:	Archaeological Remains, Monuments and Museums, 2
7.	Ghosh, A.	:	The City in Early Historical India.
8.	Ramchandran,T.N.	:	Najarjunikonda
9.	Subarmanyan, E.(Ed.)	:	Nagarjunikonda
10.	Ojha,S.	:	*Bharatiya Puratattva*
11.	Banerjee,B.P.	:	The Iron Age of India
12.	Sinha,B.P.	:	Potteries in Ancient India
13.	Gaur,R.C.	:	Excavation at Antrajikhera
14.	Dhavalikar, M.K.	:	Historical archaeology of India

Note: - In addition, student are advised to consult the current Research Journals of History and Archaeology and epathshala (http//epathsahala.nic.in)

KURUKSHETRA UNIVERSITY, KURUKSHETRA

Undergraduate Programs (Ancient Indian History, Culture & Archaeology)

Syllabus, Semester-IV

<table>
<tr><td colspan="4">Session: 2023-24</td></tr>
<tr><td colspan="4">Part A- Introduction</td></tr>
<tr><td>Subject</td><td colspan="3">AIH</td></tr>
<tr><td>Semester</td><td colspan="3">IV</td></tr>
<tr><td>Name of the Course</td><td colspan="3">Elements of Ancient Indian Art</td></tr>
<tr><td>Course Code</td><td colspan="3">B23-AIH-402</td></tr>
<tr><td>Course Type:
(CC/MCC/MDC/CC-M/DSEC/VOC/DSE/PC/AEC/VAA)</td><td colspan="3">MDC-3 AIH</td></tr>
<tr><td>Level of the course (As per Annexure-I</td><td colspan="3">200-299</td></tr>
<tr><td>Pre-requisite for the course (if any)</td><td colspan="3">NA</td></tr>
<tr><td>Course Learning Outcomes (CLO):</td><td colspan="3">After completing this course, the learner will be able to:
1: Student get the basic knowledge of Pre-Historic Painting.
2: Students get the basic knowledge of Harappan Art.
3: Students get the basic knowledge of Mauryan Art, Sunga Art, Saka-Kushana Art and Gupta Art..
4: The students acquainted with Early medieval art , Cholas, Pallavas and paintings of Ajanta and Bagh.</td></tr>
<tr><td rowspan="2">Credits</td><td>Theory</td><td>Tutorial/Practical</td><td>Total</td></tr>
<tr><td>3</td><td>1</td><td>4</td></tr>
<tr><td>Contact Hours</td><td>3 Per Week</td><td>1 Per Week</td><td>4 Per Week</td></tr>
<tr><td>Max. Marks:75
Internal Asssessment Marks: 25
End Term Exam Marks: 50</td><td colspan="3">Time: 3 Hours</td></tr>
<tr><td colspan="4">Part-B- Contents of the Course</td></tr>
</table>

Instruction for paper-Setter: The question paper will consist of NINE questions out of which the candidate would be required to attempt FIVE. The first question will be compulsory and will have 7 short answer questions uniformly spread over entire syllabus. The remaining EIGHT questions will be set taking TWO questions from each of the four units. Each question will carry 14 marks. The candidates would be required to attempt ONE question from each unit in addition to compulsory question**.**

Unit	Topics	Contact Hours
I	1. Pre-Historic painting. 2. Harappan Art.	12
II	3. Mauryan Art: Folk Art, Ashokan Pillars. 4. The Sunga art.	12
III	5. Saka-Kushana Art: Mathura and Gandhara school of Art 6. Gupta Art.	12
IV	7. Early medieval art with special reference to The Chalukyas, The Cholas and The Pallavas. 8. Paintings of Ajanta and Bagh.	12
V	Tutorials	12

Suggested Evaluation Methods

Internal Assessment:25 **Theory** . Class participation: 05 Marks . Seminar/presentation/assignment/quiz/class/class test etc:07 Marks . Mid-Term Exam: 13	**End Term Examination:** **50 Marks**

Part C-Learning Resources

Recommended Books/e-resources/LMS:

1. Agarwala, V.S. : Bharatiya Kala (In Hindi)
2. Brown, Percy : Indian painting
3. Chander, Lokesh : Bharat ki Chitarkala ka Sankshipat Itihas (In Hindi)
4. Gupt, Jagdish : Pragatihasic Chitrkala (In Hindi)
5. Khre, M. D. : Bagh ki Guphayen (In Hindi)

6. Mishra, R.N.	:	Bhartiya Murtikala (In Hindi)
7. Ray, N.R.	:	Mauryan and Post-Mauryan Art (In English & Hindi)
8. Ray,N.R.	:	Bharatiya Kala Ka Adhyayan (In Hindi)
9. Rowland, B.	:	The Art and Architecture of India
10. Srivastava, Brijbhushan	:	Prachin Bhartiya Pratima Vigyan Evam Murtikala (In Hindi)
11. Satyawadi, Sudha	:	Proto-historic Pottery of Indus Civilization, study of Painted i. Motifs
12. Sankalia, H.D.	:	Prehistoric Art in India
13. Saraswati, S.K.	:	A Survey of Indian Sculpture.
14. Agrawala, P.K.	:	Prachina Bharatiya Kala Evam Vastukala (in Hindi)

Note: - In addition, student are advised to consult the current Research Journals of History and Archaeology and epathshala (http//epathsahala.nic.in)

KURUKSHETRA UNIVERSITY, KURUKSHETRA

Undergraduate Programs (Ancient Indian History, Culture & Archaeology)

Syllabus, Semester-IV

<table>
<tr><td colspan="4">Session: 2023-24</td></tr>
<tr><td colspan="4">Part A- Introduction</td></tr>
<tr><td>Subject</td><td colspan="3">AIH</td></tr>
<tr><td>Semester</td><td colspan="3">IV</td></tr>
<tr><td>Name of the Course</td><td colspan="3">Elements of Ancient Indian Architecure</td></tr>
<tr><td>Course Code</td><td colspan="3">B23-AIH-403</td></tr>
<tr><td>Course Type:
(CC/MCC/MDC/CC-M/DSEC/VOC/DSE/PC/AEC/VAA)</td><td colspan="3">MDC-3 AIH</td></tr>
<tr><td>Level of the course (As per Annexure-I</td><td colspan="3">200-299</td></tr>
<tr><td>Pre-requisite for the course (if any)</td><td colspan="3">NA</td></tr>
<tr><td>Course Learning Outcomes (CLO):</td><td colspan="3">After completing this course, the learner will be able to:
1: Student get the basic knowledge of Proto-Historic Architecture.
2: Students get the basic knowledge of Mauryan Architecture.
3: Students get the basic knowledge of origin and development of the Stupas, Chaitya caves and Viharas.
4: The students acquainted with the rock cut architecture and evolution of the Gupta temples.</td></tr>
<tr><td rowspan="2">Credits</td><td>Theory</td><td>Tutorial/Practical</td><td>Total</td></tr>
<tr><td>3</td><td>1</td><td>4</td></tr>
<tr><td>Contact Hours</td><td>3 Per Week</td><td>1 Per Week</td><td>4 Per Week</td></tr>
<tr><td>Max. Marks:75
Internal Asssessment Marks: 25
End Term Exam Marks: 50</td><td colspan="3">Time: 3 Hours</td></tr>
</table>

Part-B- Contents of the Course

Instruction for paper-Setter: The question paper will consist of NINE questions out of which the candidate would be required to attempt FIVE. The first question will be compulsory and will have 7 short answer questions uniformly spread over entire syllabus. The remaining EIGHT questions will be set taking TWO questions from each of the four units. Each question will carry 14 marks. The candidates would be required to attempt ONE question from each unit in addition to compulsory question**.**

Unit	Topics	Contact Hours
I	1. The Proto-Historic architecture of the Indus valley. 2. The Mauryan Architecture.	12
II	3. Origin and development of the Stupa. 4. The Stupas at Sanchi, Bharhut Taxila.	12
III	5. Evolution of Chaitya caves and Viharas. 6. Rock-cut architecture-Ajanta and Ellora.	12
IV	7. Evolution of the Gupta temples. 8. Temple Architecture in Early Medieval India.	12
V	Tutorials	12

Suggested Evaluation Methods

Internal Assessment:25 **Theory** . Class participation: 05 Marks . Seminar/presentation/assignment/quiz/class/class test etc:07 Marks . Mid-Term Exam: 13	**End Term Examination:** **50 Marks**

Part C-Learning Resources

Recommended Books/e-resources/LMS:

1. Brown, P. : Indian Architecture, Vol. I.
2. Rowland, B.K. : Art and Architecture of India.
3. Saraswati, S.K. : A Survey of Indian Sculpture.
4. Agrawala, V.S. : Indian Art.

5. Agrawala, V.S.	:	Bharatiya Kala (in Hindi)
6. Agrawala, V.S.	:	Gupta Art.
7. Ray, N.R.	:	Mauryan and Post Muryan art (in English and Hindi).
8. Mishra, R.N.	:	Bharatiya Murti Kala (in Hindi)
9. Majumdar, R.C. & Dasgupta, K.K. (Ed.)	:	Comprehensive History of India,Vol. III. (Relevant Chapters).
10. Agrawala, P.K.	:	Gupta Temples.
11. Sastri, K.A.N. (Ed.)	:	Comprehensive History of India, Vol.II

Note: - In addition, student are advised to consult the current Research Journals of History and Archaeology and epathshala (http//epathsahala.nic.in)

KURUKSHETRA UNIVERSITY, KURUKSHETRA

Undergraduate Programs (Ancient Indian History, Culture & Archaeology)

Syllabus, Semester-IV

<table>
<tr><td colspan="4">Session: 2023-24</td></tr>
<tr><td colspan="4">Part A- Introduction</td></tr>
<tr><td>Subject</td><td colspan="3">AIH</td></tr>
<tr><td>Semester</td><td colspan="3">IV</td></tr>
<tr><td>Name of the Course</td><td colspan="3">Science & Technology in Ancient India</td></tr>
<tr><td>Course Code</td><td colspan="3">B23-AIH-404</td></tr>
<tr><td>Course Type:
(CC/MCC/MDC/CC-M/DSEC/VOC/DSE/PC/AEC/VAA)</td><td colspan="3">DSC-1 AIH</td></tr>
<tr><td>Level of the course (As per Annexure-I</td><td colspan="3">200-299</td></tr>
<tr><td>Pre-requisite for the course (if any)</td><td colspan="3">NA</td></tr>
<tr><td>Course Learning Outcomes (CLO):</td><td colspan="3">After completing this course, the learner will be able to:
1: Students get the basic knowledge of sources of Science and Technology.
2: Students get the basic knowledge of Paeolithic tools, Mesolithic tools and Neolithic tools.
3: Students get the basic knowledge of development of Science & Technology in Harappan period, Vedic period.
4: Students get the basic knowledge of development of Science & Technology in Mauryan period and Early Medieval period.</td></tr>
<tr><td rowspan="2">Credits</td><td>Theory</td><td>Tutorial/Practical</td><td>Total</td></tr>
<tr><td>3</td><td>1</td><td>4</td></tr>
</table>

Contact Hours	3 Per Week	1 Per Week	4 Per Week
Max. Marks:100 Internal Asssessment Marks: 30 End Term Exam Marks: 70	**Time: 3 Hours**		

Part-B- Contents of the Course

Instruction for paper-Setter: The question paper will consist of NINE questions out of which the candidate would be required to attempt FIVE. The first question will be compulsory and will have 7 short answer questions uniformly spread over entire syllabus. The remaining EIGHT questions will be set taking TWO questions from each of the four units. Each question will carry 14 marks. The candidates would be required to attempt ONE question from each unit in addition to compulsory question**.**

Unit	Topics	Contact Hours
I	1. Science & Technology: Sources 2. Prehistoric Tools Techniques: Paleolithic tools, Mesolithic tools, Neolithic tools	12
II	3. Development of Science & Technology in Harappan period 4. Development of Science & Technologyin Vedic Literature	12
III	5. Advancement of Science &Technologyin Mauryan period a. Development of Science & Technology in Kushanas and Satvahanas	12
IV	6. Science & Technology in Early Medieval period	12
V	Tutorials	12

Suggested Evaluation Methods

Internal Assessment:30 **Theory** . Class participation: 05 Marks . Seminar/presentation/assignment/quiz/class/class test etc:10 Marks . Mid-Term Exam: 15	**End Term Examination:** **70 Marks**

Part C-Learning Resources

Recommended Books/e-resources/LMS:

1. Rao, S.R. : Dawn and Devolution of Indus Civilization.
2. Gopalkrishnan, N. : Indian Scientific Heritage, IISH
3. Ray, N.R. : Technology and Social Change in Early Indian History
4. Lal, B.B. & Gupta, S.P. : Frontier of Indus Civilization
5. Bag, A.K. (ed.) : History of Technology, Vol.I.
6. Bhardwaj, H.C. : Aspects of Ancient Indian Technology
7. Bhardwaj, H.C. & : Technology Tools and Appliances
8. Sharma, V.L.
9. Biswas, A.K. & : Minerals and Metals in Ancient India, & Vol. I
10. S. Biswas
11. Bose, D.M., Sen,S.N. : A Concise History of Science In India
12. & Subbarayappa, B.V.
13. Chattopadhyaya, B.D. : History of Science and Technology in Ancient India, Vol. II
14. Chattopadhyaya, B.D. : History of Science & Technology in Ancient India
15. Derry,T.K.& : A Short History of Technology
16. William, T.I.
17. Forbes,R.J. : Studies in Ancient Technology
18. Hegde,K.T.M. : An Introduction to Ancient Metallurgy
19. Kaye,G.R. : Indian Mathematics
20. Panday,L.P. : Botanical Sciences and Economic Growth in Ancient India
21. Rao, S. Balchandra : Indian Mathematics and Astronomy-Some Landmarks
22. Sankalia,H.D. : Some Aspects of Prehistoric Technology in India
23. Saraswati, S.P. : Geometry in Ancient India
24. Subbarayappa, B.V. : History of Sciences in Ancient India

Note: - In addition, student are advised to consult the current Research Journals of History and Archaeology and epathshala (http//epathsahala.nic.in)

KURUKSHETRA UNIVERSITY, KURUKSHETRA

Undergraduate Programs (Ancient Indian History, Culture & Archaeology)

Syllabus, Semester-IV

Session: 2023-24			
Part A- Introduction			
Subject	**AIH**		
Semester	**IV**		
Name of the Course	**Socio-Economic Status of Women in Ancient India form earliest time to 319 A.D.)**		
Course Code	**B23-AIH-405**		
Course Type: (CC/MCC/MDC/CC-M/DSEC/VOC/DSE/PC/AEC/VAA)	**MDC-3 AIH**		
Level of the course (As per Annexure-I	200-299		
Pre-requisite for the course (if any)	NA		
Course Learning Outcomes (CLO):	After completing this course, the learner will be able to: 1: Students get the basic knowledge of women position. 2: The students acquainted with women property rights. 3: The students acquainted with women education in Ancient India. 4: The students acquainted with the position of widow in Ancient India.		
Credits	Theory	Tutorial/Practical	Total
	3	1	4
Contact Hours	3 Per Week	1 Per Week	4 Per Week

Max. Marks:75 Internal Asssessment Marks: 25 End Term Exam Marks: 50	**Time: 3 Hours**

Part-B- Contents of the Course

Instruction for paper-Setter: The question paper will consist of NINE questions out of which the candidate would be required to attempt FIVE. The first question will be compulsory and will have 7 short answer questions uniformly spread over entire syllabus. The remaining EIGHT questions will be set taking TWO questions from each of the four units. Each question will carry 14 marks. The candidates would be required to attempt ONE question from each unit in addition to compulsory question**.**

Unit	Topics	Contact Hours
I	1. Position of Women: Childhood and Marriage. 2. Customary and Legal status - crime and punishment, proprietary rights.	12
II	3. Women and Work - Working women, Prostitute and Servants. 4. Education and women.	12
III	5. Social Institutions and Women — Marriage, Samskara. 6. Parda and Sati System in Ancient India.	12
IV	7. The Position of the Widow. 8. Attitude towards the Woman and her place in the society.	12
V	Tutorials	12

Suggested Evaluation Methods

Internal Assessment:25 **Theory** . Class participation: 05 Marks . Seminar/presentation/assignment/quiz/class/class test etc:07 Marks . Mid-Term Exam: 13	**End Term Examination:** **50 Marks**

Part C-Learning Resources

Recommended Books/e-resources/LMS:

1. Altekar, A.S. : The Position of Women in Hindu Civilization.
2. Gharpure, JR. : Right of Women under Hindu Law, Bombay.

3. Gupta, A.R.	:	Women in Hindu Society.
4. Kapadia, K.M.	:	Marriage and Family in India.
5. Agrawal Ashvini	:	Working Women in Ancient India.
6. Shastri, Sakuntala Rao	:	Women in Vedic Age.
7. Kapadia, KM.	:	Marriage and Family in India.
8. Mainu Heary	:	Ancient Law.
9. Mitter, D.N.	:	The Position of Women in Hindu Law.
10. Prabhu, P.N.	:	Hindu Social Organization.
11. Sharma, T.	:	Women in Ancient India (32 A.D. to 1200 A.D.)
12. Altekar, A.S.	:	Position of Women in Hindu Civilization.
13. Rajpal	;	Women in Early Medieval North India
14. Mishra, Urmila Parkash	:	Prachin Bharat me Nari
15. Altekar, A.S.	:	Position of Women in Hindu Civilization
16. Thakur Renu	:	Women and Society in Early Medieval India: Re-interpreting i. Epigraphs
17. Singh, Vijay Laxmi	:	Women and Gender in Ancient India (A Study of Text and i. Inscriptions

Note: - In addition, student are advised to consult the current Research Journals of History and Archaeology and epathshala (http//epathsahala.nic.in)

Department of Philosophy
Kurukshetra University Kurukshetra
Scheme of Examination and Syllabus for UG Multidisciplinary Degree Programme
Subject: Philosophy
As per National Education Policy (NEP)-2020
w.e.f. 2023-24

Scheme of Examination
Semester Ist to VIIIth

Semester	Course	Paper	Nomenclature of Paper	Contact Hours1		Credits		Internal Marks	External Marks	Total	Time
				Theory teaching hours	Tutorial	Theory	T/P				
I	CC-1/ MCC -1	B23-PHI-101	Introduction to Indian Philosophy	3	1	3	1	30	70	100	3
	MCC-2	B23-PHI-102	Contemporary Indian Philosophy	3	1	3	1	30	70	100	3
	CC-M1	B23-PHI -103	Fundamentals of Indian Philosophy	2	0	2	0	15	35	50	3
	MDC-1	B23-PHI -104	Philosophical Concepts-I	2	1	2	1	25	50	75	3

II	CC-2/ MCC -3	B23-PHI-201	Introduction to Western Philosophy	3	1	3	1	30	70	100	3
	CC-M2	B23-PHI -202	Fundamentals of Western Philosophy	2	0	2	0	15	35	50	3
	DSEC-1	B23-PHI -203	Logical Reasoning	3	1	3	1	30	70	100	3
	MDC-2	B23-PHI -204	Philosophical Concepts-II	2	1	2	1	25	50	75	3
III	CC-3 MCC -4	B23-PHI-301	Introduction to Ethics	3	1	3	1	30	70	100	3
	MCC -5	B23-PHI-302	Social Philosophy	3	1	3	1	30	70	100	3
	MDC-3	B23-PHI -303	Philosophical Concept -III	2	1	2	1	25	50	75	3
IV	CC-4/ MCC -6	B23-PHI-401	History of Ethics	3	1	3	1	30	70	100	3
	MCC -7	B23-PHI-402	Contemporary Western Philosophy	3	1	3	1	30	70	100	3
	MCC -8	B23-PHI-403	Political Philosophy	3	1	3	1	30	70	100	3
	DSE-1 (Choose any one)	B23-PHI-404	Philosophy of Mind	3	1	3	1	30	70	100	3
		B23-PHI-405	Phenomenology and Existentialism	3	1	3	1	30	70	100	3

V	CC-5/MCC -9	B23-PHI-501	Principles of Reasoning-I	3	1	3	1	30	70	100	3
	MCC -10	B23-PHI-502	Bahiranga Yoga	3	1	3	1	30	70	100	3
	DSE – 2 (Choose any one)	B23-PHI-503	Philosophy of Religion	3	1	3	1	30	70	100	3
		B23-PHI-504	Philosophical Counselling	3	1	3	1	30	70	100	3
	DSE – 3 (Choose any one)	B23-PHI-505	Buddhism	3	1	3	1	30	70	100	3
		B23-PHI-506	Sikhism	3	1	3	1	30	70	100	3
VI	CC-6/ MCC -11	B23-PHI-601	Principles of Reasoning-II	3	1	3	1	30	70	100	3
	MCC-12	B23-PHI-602	Antaranga Yoga	3	1	3	1	30	70	100	3
	DSE-4 (Choose any one)	B23-PHI-603	Comparative Religion	3	1	3	1	30	70	100	3
		B23-PHI-604	Aesthetics	3	1	3	1	30	70	100	3
	DSE-5 (Choose any one)	B23-PHI-605	Hinduism	3	1	3	1	30	70	100	3
		B23-PHI-606	Jainism	3	1	3	1	30	70	100	3

VII	CC-H1	B23-PHI-701	Applied Ethics- I	3	1	3	1	30	70	100	3
	CC-H2	B23-PHI-702	Philosophy of Science	3	1	3	1	30	70	100	3
	CC-H3	B23-PHI-703	Research Methodology	3	1	3	1	30	70	100	3
	DSE-6 (Choose any one)	B23-PHI-704	Deconstruction	3	1	3	1	30	70	100	3
		B23-PHI-705	Advanced Symbolic Logic	3	1	3	1	30	70	100	3
	PC-H1	B23-PHI-706	Moral and Spiritual Counselling	3	1	3	1	30	70	100	3
VIII	CC-H4	B23-PHI-801	Applied Ethics- II	3	1	3	1	30	70	100	3
	CC-H5	B23-PHI-802	Cognitive Science	3	1	3	1	30	70	100	3
	CC-H6	B23-PHI-803	Research Paper Writing	3	1	3	1	30	70	100	3
	DSE-7 (Choose any one)	B23-PHI-804	Indian Knowledge System	3	1	3	1	30	70	100	3
		B23-PHI-805	Existential Phenomenology	3	1	3	1	30	70	100	3
	PC-H2	B23-PHI-806	Analytical Writing Techniques	3	1	3	1	30	70	100	3

OR

	CC-H4	B23-PHI-801	Applied Ethics- II	3	1	3	1	30	70	100	3
	CC-H5	B23-PHI-802	Cognitive Science	3	1	3	1	30	70	100	3
		B23-PHI-807	Dissertation/Project	12					300	300	

PSO (Program Specific Outcome) for UG Program, Course: Philosophy

1. Enhancement of Ancient Indian Wisdom.
2. Development of the ability of critical, analytical & logical reasoning of the students.
3. Inculcation of ethical, cultural and social values for a better society.
4. Uplifting of the physical, mental and spiritual aspects of the students through Yoga and Meditation.

Syllabus of the Courses

CC-1 MCC-1

Session: 2023-24			
Part A - Introduction			
Subject	Philosophy		
Semester	First		
Name of the Course	Introduction to Indian Philosophy		
Course Code	B23-PHI-101		
Course Type: (CC/MCC/MDC/CC-M/DSEC/VOC/DSE/PC/AEC/VAC)	CC MCC		
Level of the course (As per Annexure-I	100-199		
Pre-requisite for the course (if any)	N.A		
Course Learning Outcomes(CLO):	After completing this course, the learner will be able to know/understand: 101.1 the meaning & characteristics of Indian Philosophy. 101.2 the basic concepts of Vedic Philosophy. 101.3 the basic concepts of Heterodox and Orthodox schools. 101.4 the basic concepts of Orthodox Schools.		
	Theory	Tutorial	Total
Credits	03	01	04
Contact Hours	03	01	04
Max. Marks:-100 **Internal Assessment Marks:-30** **End Term Exam Marks:**-70		**Time:-3hrs.**	

Part B- Contents of the Course		
Instructions for Paper- Setter The paper-setter is requested to set **Nine** questions in all i.e., One Compulsory Objective Type Question (07x2) without any choice, equitably distributed over the whole syllabi and Two Questions from Each Unit equitably spread over the concerned unit. The examinees will have to attempt **Five** questions in all, selecting one question from each unit. All questions carry equal marks.		
Unit	**Topics**	**Contact Hours**
I	Nature and Scope of Indian Philosophy Main Characteristics of Indian Philosophy Classification of Indian Philosophy	12
II	Vedic Philosophy: Ṛta (the cosmic order): the divine and the human realmsConcept of Rna The Centrality of the Institution of Yajña (sacrifice) Ātman Brahman	11
III	Charvaka: Refutation of Metaphysics Buddhism: Four Noble Truths Jainism: Syadvada Nyaya: Perception Vaisheshika: Substance	11
IV	Sankhya: Theory of Creation Yoga: Ashtangayoga Purva Mimamsa: Concept of Dharma Uttar Mimamsa: Saguna and Nirgun Brahman (Shankracharya)	11
	Tutorial	15

Suggested Evaluation Methods	
Internal Assessment: ➢ **Theory** • Class Participation: **5** • Seminar/presentation/assignment/quiz/class test etc.:**5+5** • Mid-Term Exam: **15** ➢ **Practicum** • Class Participation: • Seminar/Demonstration/Viva-voce/Lab records etc.: • Mid-Term Exam:	**End Term Examination:** **70**

Part C-Learning Resources

Recommended Books/e-resources/LMS:

Baldev Upadhyaya : *Bhartiya Darshan*.

C.D.Sharma : *A Critical Survey of Indian Philosophy* (Hindi version also available).

D.M. Datta & S.C. Chatterjee *: Introduction to Indian Philosophy*. (Hindi version also available).

H.P. Sinha :*Bhartiya Darshan ke Rooprekha.*

Jadunath Sinha : *Bhartiya Darshan* (English version also available).

M. Hiriyanna : *Outlines of Indian Philosophy* (Hindi version also available).

Nand Kishor Devraja : *Bhartiya Darshan*.

S.N. Dasgupta : *A History of Indian Philosophy*, Vols. I to V (Hindi version also available).

S. Radhakrishnan : *Indian Philosophy*, Vols. I to II (Hindi version also available)

MCC-2

Session: 2023-24	
Part A – Introduction	
Subject	Philosophy
Semester	First
Name of the Course	Contemporary Indian Philosophy
Course Code	B23-PHI-102
Course Type: (CC/MCC/MDC/CC-M/DSEC/VOC/DSE/PC/AEC/VAC)	MCC
Level of the course (As per Annexure-I	100-199
Pre-requisite for the course (if any)	N.A
Course Learning Outcomes(CLO):	After completing this course, the learner will be able to know/understand: 102.1. Philosophy of Swami Vivekananada. 102.2 Philosophy of Sri Aurobindo. 102.3 Philosophy of Gandhi. 102.4 Philosophy of Rabindranath Tagore.

	Theory	Tutorial	Total
Credits	03	01	04
Contact Hours	03	01	04

Max. Marks:-100
Internal Assessment Marks:-30End
Term Exam Marks:-70

Time:-3hrs

Part B-Contents of the Course

Instructions for Paper- Setter

The paper-setter is requested to set **Nine** questions in all i.e., One Compulsory Objective Type Question (7x2) without any choice, equitably distributed over the whole syllabi and Two Questions from Each Unit equitably spread over the concerned unit. The examinees will have to attempt **Five** questions in all, selecting one question from each unit. All questions carry equal marks.

Unit	Topics	Contact Hours
I	Swami Vivekananda: Nature of Man – Physical Nature and Spiritual NatureNature of the Liberated Soul Nature of Religion Universal Religion	12
II	Sri Aurobindo: The Nature of Brahman Evolution of the spiritual reality The Integral Yoga The Supermind	11
III	M.K. Gandhi: God is Truth and Truth is God Non-Violence Concept of Religion and Morality Swaraj	11

IV	Rabindranath Tagore: The Religion of Man Humanism Self & God Problem of Evil	11
	Tutorial	15

Suggested Evaluation Methods

Internal Assessment: ➢ **Theory** • Class Participation: **5** • Seminar/presentation/assignment/quiz/class test etc.:**5+5** • Mid-Term Exam: **15** ➢ **Practicum** • Class Participation: • Seminar/Demonstration/Viva-voce/Lab records etc.: • Mid-Term Exam:	**End Term Examination** **70**

Part C-Learning Resources

Recommended Books/e-resources/LMS:

B.K. Lal : *Contemporary Indian Philosophy*. (Hindi version also available).
Swami Vivekananda : *Complete Works*. (Hindi version also available).
Sri Aurobindo : *Life Divine*. (Hindi version also available).
Sri Aurobindo : *Integral Yoga*. (Hindi version also available).
T.M.P. Mahadevan & C.V. Saroja : *Contemporary Indian Philosophy*.
V.S. Naravana : *Modern Indian Thought* (Hindi version also available).

CC-M1

Session: 2023-24			
Part A – Introduction			
Subject	Philosophy		
Semester	First		
Name of the Course	Fundamentals of Indian Philosophy		
Course Code	B23-PHI-103		
Course Type: (CC/MCC/MDC/CC-M/DSEC/VOC/DSE/PC/AEC/VAC)	CC-M		
Level of the course (As per Annexure-I	100-199		
Pre-requisite for the course (if any)	N.A		
Course Learning Outcomes(CLO):	After completing this course, the learner will be able to know /understand 103.1. about the Indian Philosophy. 103.2. about the Vedic & Upanishadic Philosophy. 103.3. about the different concepts of Indian Philosophy. 103.4. about the different concepts of Indian Philosophy.		
	Theory	Tutorial	Total
Credits	02	00	02
Contact Hours	02	00	02

Max. Marks:-50 **Internal Assessment Marks:-15** **End Term Exam Marks:**-35	**Time:-2 hrs.**

Part B-Contents of the Course

Instructions for Paper- Setter

The paper-setter is requested to set **Nine** questions in all i.e., One Compulsory Objective Type Question (7x1) without any choice, equitably distributed over the whole syllabi and Two Questions from Each Unit equitably spread over the concerned unit. The examinees will have to attempt **Five** questions in all, selecting one question from each unit. All questions carry equal marks.

Unit	Topics	Contact Hours
I	Meaning, Definition and Characteristics of Indian PhilosophyThe Main Divisions of Indian Philosophy Relevance of Indian Philosophy	8
II	Vedic Philosophy: Rta (the cosmic order): the divine and the human realmsThe Centrality of the Institution of Yajña (sacrifice) Atman Brahman	7
III	Charvaka: Refutation of Metaphysics Buddhism: Four Noble Truths Jainism: Syadvada	8
IV	Nyaya: Perception Vaisheshika: Padhartha Sankhya: Theory of Evolution	7

Suggested Evaluation Methods	
Internal Assessment: ➢ **Theory 15** • Class Participation: **4** • Seminar/presentation/assignment/quiz/class test etc.:**4** • Mid-Term Exam: **7** ➢ **Practicum** • Class Participation: • Seminar/Demonstration/Viva-voce/Lab records etc.: • Mid-Term Exam:	**End Term Examination:** **35**

Part C-Learning Resources

Recommended Books/e-resources/LMS:

Baldev Upadhyaya : *Bhartiya Darshan*.

C.D.Sharma : *A Critical Survey of Indian Philosophy* (Hindi version also available).

D.M. Datta & S.C. Chatterjee *: Introduction to Indian Philosophy*. (Hindi version also available).

H.P. Sinha :*Bhartiya Darshan ke Rooprekha.*

Jadunath Sinha : *Bhartiya Darshan* (English version also available).

M. Hiriyanna : *Outlines of Indian Philosophy* (Hindi version also available).

Nand Kishor Devraja : *Bhartiya Darshan*.

S.N. Dasgupta : *A History of Indian Philosophy*, Vols. I to V (Hindi version also available).

S .Radhakrishnan : *Indian Philosophy*, Vols. I to II (Hindi version also available)

MDC-1

Session: 2023-24	
Part A – Introduction	
Subject	Philosophy
Semester	First
Name of the Course	Philosophical Concepts –I
Course Code	B23-PHI-104
Course Type: (CC/MCC/MDC/CC-M/DSEC/VOC/DSE/PC/AEC/VAC)	MDC
Level of the course (As per Annexure-I)	100-199
Pre-requisite for the course (if any)	N.A
Course Learning Outcomes (CLO):	After completing this course, the learner will be able to know/ understand: 104.1. the basic concepts of Metaphysics. 104.2. the basic concepts of the Epistemology. 104.3. the basic concepts of Ethics. 104.4. the basic concepts of Logic. _____ 104.5*. Get practical guidance of different kinds of Dhyana *The practical will be conducted by internal examiner.

		Theory	Practical	Total
	Credits	02	01	03
Contact Hours		02	02	04
Max. Marks:-75 **Internal Assessment Marks:-25** **End Term Exam Marks:-50**			**Time:-3 hrs.**	

Part B- Contents of the Course

Instructions for Paper- Setter

The paper-setter is requested to set **Nine** questions in all i.e., One Compulsory Objective Type Question (7x1) without any choice, equitably distributed over the whole syllabi and Two Questions from Each Unit equitably spread over the concerned unit. The examinees will have to attempt **Five** questions in all, selecting one question from each unit. All questions carry equal marks.

Unit	Topics	Contact Hours
I	Metaphysics: Soul, Mind& Consciousness Substance: Monism, Dualism & Pluralism Brahman Atman & Jagata	8
II	Epistemology: Reason, Experience and Intuition Subjectivity vs. Objectivity Analysis vs Synthesis	8
III	Ethics; Axiology; Aesthetics Fact and Value; Evolution of Morality: InstinctiveMorality, Group Morality, Reflective Morality	7

IV	Logic Deductive Logic Inductive Logic Laws of Thought	7
	Tutorial	15

Suggested Evaluation Methods

Internal Assessment: ➢ **Theory** • Class Participation: **5** • Seminar/presentation/assignment/quiz/class test etc.: **7** • Mid-Term Exam: **13**	**End Term Examination:** **50**

Part C-Learning Resources

Recommended Books/e-resources/LMS:

C.D.Sharma : *A Critical Survey of Indian Philosophy* (Hindi version also available).

D.M. Datta & S.C. Chatterjee *: Introduction to Indian Philosophy*. (Hindi version also available).

H.P. Sinha :*Bhartiya Darshan ke Rooprekha.*

Jadunath Sinha : *Bhartiya Darshan* (English version also available).

S.N. Dasgupta : *A History of Indian Philosophy,* Vols. I to V (Hindi version also available).

S .Radhakrishnan : *Indian Philosophy*, Vols. I to II (Hindi version also available)

Daya Krishna : *Paschatya Darshan ka Itihas, Bhag I & II.*

I.M. Copi : *Introduction to Logic* (Sixth edition)

CC-2 MCC-3

Session: 2023-24			
Part A – Introduction			
Subject	Philosophy		
Semester	Second		
Name of the Course	Introduction to Western Philosophy		
Course Code	B23-PHI-201		
Course Type: (CC/MCC/MDC/CC-M/DSEC/VOC/DSE/PC/AEC/VAC)	CC MCC		
Level of the course (As per Annexure-I	100-199		
Pre-requisite for the course (if any)	N.A		
Course Learning Outcomes(CLO):	After completing this course, the learner will be able to know/ understand 201.1. the pre-Socratic Philosophy. 201.2. the post-Socratic Philosophy. 201.3. the key thinkers of Modern Rationalist Philosophy. 201.4. the key thinkers of Modern Empiricist Philosophy.		
	Theory	Tutorial	Total
Credits	03	01	04
Contact Hours	03	01	04

Max. Marks:-100 **Internal Assessment Marks:-30** **End Term Exam Marks:**-70	**Time:-3 hrs.**

Part B-Contents of the Course

Instructions for Paper- Setter

The paper-setter is requested to set **Nine** questions in all i.e., One Compulsory Objective Type Question (7x2) without any choice, equitably distributed over the whole syllabi and Two Questions from Each Unit equitably spread over the concerned unit. The examinees will have to attempt **Five** questions in all, selecting one question from each unit. All questions carry equal marks.

Unit	Topics	Contact Hours
I	Sophists: Protagoras; Gorgias Socrates: The Socratic Method Plato: Theory of Ideas; Theory of Virtue; Theory of Knowledge; Knowledge and Belief	12
II	Aristotle: Matter and Form; Four Causes Epicureanism Stoicism	11
III	Descartes: Cartesian Method; Nature of Substance; Interactionism Spinoza: Nature of Substance; Parallelism Leibnitz: Nature of Substance; Pre-established Harmony	11
IV	Locke: Idea and their Classification Berkeley: *Esse est percipi* Hume: Impression and Ideas Kant: The Critical Philosophy; The Copernican Revolution	11
	Tutorial	15

Suggested Evaluation Methods	
Internal Assessment: ➢ **Theory** • Class Participation: **5** • Seminar/presentation/assignment/quiz/class test etc.:**5+5** • Mid-Term Exam: **15** ➢ **Practicum** • Class Participation: • Seminar/Demonstration/Viva-voce/Lab records etc.: • Mid-Term Exam:	**End Term Examination:** **70**

Part C-Learning Resources

Recommended Books/e-resources/LMS:

B.N. Singh: *Paschatya Darshan ki Ruprekha*

Daya Krishna: *Paschatya Darshan ka Itihas, Bhag I & II.*

Jagdish Sahay Srivastava*: Paschatya Darshan ki Darshnik Parvirtiyan*

Haridya Narayana Mishra*: Paschatya Darshan ka Itihas avm Samsyayen.*

W.T. Stace: *A Critical History of Greek Philosophy.*

W.K. Wright*: A History of Modern Philosophy.*

Yacub Mashih*: Paschtya Darshan ka Smikshatmak Itihas*

CC-M2

Session: 2023-24	
Part A – Introduction	
Subject	Philosophy
Semester	Second
Name of the Course	Fundamentals of Western Philosophy
Course Code	B23-PHI-202
Course Type: (CC/MCC/MDC/CC-M/DSEC/VOC/DSE/PC/AEC/VAC)	CC-M
Level of the course (As per Annexure-I	100-199
Pre-requisite for the course (if any)	N.A
Course Learning Outcomes(CLO):	After completing this course, the learner will be able to: 202.1. Learn about the nature and definition of Western Philosophy. 202.2. Learn about the branches of Western Philosophy. 202.3. Learn about the relation of Philosophy with other Disciplines. 202.4. Learn about the methods of Western Philosophy.

	Theory	Tutorial	Total
Credits	02	00	02
Contact Hours	02	00	02
Max. Marks:-50 **Internal Assessment Marks:-15** **End Term Exam Marks:-35**		**Time:-2 hrs.**	

Part B-Contents of the Course

Instructions for Paper- Setter

The paper-setter is requested to set **Nine** questions in all i.e., One Compulsory Objective Type Question (7x1) without any choice, equitably distributed over the whole syllabi and Two Questions from Each Unit equitably spread over the concerned unit. The examinees will have to attempt **Five** questions in all, selecting one question from each unit. All questions carry equalmarks.

Unit	Topics	ContactHours
I	Definition and Nature of Philosophy Scope of Philosophy Relevance of Philosophy	8
II	Branches of Philosophy: Metaphysics Epistemology Ethics Aesthetics Logic	7

III	Relation of Philosophy with Science Relation of Philosophy with Religion Relation of Philosophy with Psychology Relation of Philosophy with Sociology	8
IV	Methods of Western Philosophy: Dialectic Method Skeptic Method Analytical Method Phenomenological Method	7
Suggested Evaluation Methods		
Internal Assessment: ➢ **Theory** • Class Participation: **5** • Seminar/presentation/assignment/quiz/class test etc.: **5** • Mid-Term Exam: **5** ➢ **Practicum** • Class Participation: • Seminar/Demonstration/Viva-voce/Lab records etc.: • Mid-Term Exam:		**End Term Examination:** **35**
Part C-Learning Resources		
Recommended Books/e-resources/LMS: B.N. Singh: *Paschatya Darshan ki Ruprekha* Daya Krishna: *Paschatya Darshan ka Itihas, Bhag I & II.* Jagdish Sahay Srivastava*: Paschatya Darshan ki Darshnik Parvirtiyan* Haridya Narayana Mishra*: Paschatya Darshan ka Itihas avm Samsyayen.* W.T. Stace: *A Critical History of Greek Philosophy.* W.K. Wright*: A History of Modern Philosophy.* Yacub Mashih*: Paschtya Darshan ka Smikshatmak Itihas.*		

DSEC-I

Session: 2023-24	
Part A – Introduction	
Subject	Philosophy
Semester	Second
Name of the Course	Logical Reasoning
Course Code	B23-PHI-203
Course Type: (CC/MCC/MDC/CC-M/DSEC/VOC/DSE/PC/AEC/VAC)	DSEC
Level of the course (As per Annexure-I	100-199
Pre-requisite for the course (if any)	N.A
Course Learning Outcomes(CLO):	After completing this course, the learner will be able to get : 203.1. the practical guidance for Inference Exercises. 203.2. the practical guidance for Series Completion Exercises. 203.3. the practical guidance for Analogy test & Blood Relation Test etc. 203.4. the practical guidance for the coding- decodingExercises.

	Theory	Tutorial	Total
Credits	03	01	04
Contact Hours	03	01	04
Max. Marks:-100 **Internal Assessment Marks:-30** **End Term Exam Marks:**-70		**Time:-3 hrs.**	

Part B-Contents of the Course

Instructions for Paper- Setter- Out of the Four Units, Eight questions are to be set. Each of the Eight questions will contain at least four items of Practical Exercises related to the topics contained in the unit concerned. The examinees will have to attempt any five questions. All questions carry equal marks.

	Topics	**Contact Hours**
I	Practical Guidance for solving of various types of exercises of Mediate and Immediate Inference Forcefulness of Arguments Discovering implied meaning of Proposition Logical Venn Diagram	12
II	Series Completion: Number Series; Letter Series Classification: Choosing the Odd Pair; Numeral Pair	11
III	Analogy Test: Kinds of Relationship Simple Analogy Choosing the Analogous Pair Blood Relation	11

IV	Coding- Decoding: Number Coding Letter Coding Mixed Types Coding Substitution	11
	Tutorial	15

Suggested Evaluation Methods

Internal Assessment: ➢ **Theory** • Class Participation: **5** • Seminar/presentation/assignment/quiz/class test etc.:**5+5** • Mid-Term Exam: **15** ➢ **Practicum** • Class Participation: • Seminar/Demonstration/Viva-voce/Lab records etc.: • Mid-Term Exam:	**End Term Examination:** **70**

Part C-Learning Resources

Recommended Books/e-resources/LMS: .

1. Ravi Chopra: *Reasoning N' Reasoning*, Galgotia Publications Pvt. Ltd., 5 Ansari Road, New Delhi-110002.
2. Edgor Thorpe : *A Course in Mental Ability and Quantitative Aptitude*, Tata McGraw Hill Company, 4/12 Asaf Ali Road, New Delhi-110002
3. K.K. Sharma: *Verbal Reasoning for Competitions,* Krishna Prakashan Media (P) Ltd, Meerut (U.P.).
4. R.S. Aggarwal: *A Modern Approach to Verbal & Non-Verbal Reasoning*, S. Chand & Company Ltd., Ram Nagar, New Delhi.
5. Sanjay Sinha: *Test of Reasoning (Verbal & Non-Verbal),* Jawahar Publishers, New Delhi

MDC-2

Session: 2023-24	
Part A – Introduction	
Subject	Philosophy
Semester	Second
Name of the Course	Philosophical Concepts-II
Course Code	B23-PHI-204
Course Type: (CC/MCC/MDC/CC-M/DSEC/VOC/DSE/PC/AEC/VAC)	MDC
Level of the course (As per Annexure-I	100-199
Pre-requisite for the course (if any)	N.A

Course Learning Outcomes(CLO):	After completing this course, the learner will be able to know/understand: 204.1. the basic concepts of Epistemology. 204.2. the basic concepts of Metaphysics. 204.3. the basic concepts of Ethics. 204.4. the basic concepts of Logic.		
	Theory	Tutorial	Total
Credits	02	01	03
Contact Hours	02	01	04
Max. Marks:-75 **Internal Assessment Marks:-25** **End Term Exam Marks:-50**		**Time:-3 hrs.**	

Part B- Contents of the Course

Instructions for Paper- Setter

The paper-setter is requested to set **Nine** questions in all i.e., One Compulsory Objective Type Question (7x1) without any choice, equitably distributed over the whole syllabi and Two Questions from Each Unit equitably spread over the concerned unit. The examinees will have to attempt **Five** questions in all, selecting one question from each unit. All questions carry equal marks.

Unit	Topics	ContactHours
I	Concept of Truth, Rta and Satya Truth: Relativism and Objectivism Difference between Concentration and Awareness	7

II	Concept of Moksha and Resurrection Transmigration of Soul: Buddhism and Islam Philosophical Explanation of Liberation	7
III	Concept of Happiness Eudemonia Epicureanism Stoicism Sat-Chit-Ananda	8
IV	Hypothesis Types of Hypothesis Stages of Hypothesis Informal Fallacies	8
	Tutorial	15
Suggested Evaluation Methods		
Internal Assessment: ➢ **Theory** • Class Participation: 5 • Seminar/presentation/assignment/quiz/class test etc.:**7** • Mid-Term Exam: 13		**End Term Examination:** **50**

Part C-Learning Resources	
Recommended Books/e-resources/LMS:	
C.D.Sharma	: *A Critical Survey of Indian Philosophy* (Hindi version also available).
D.M. Datta & S.C. Chatterjee	*: Introduction to Indian Philosophy*. (Hindi version also available).
H.P. Sinha	:*Bhartiya Darshan ke Rooprekha.*
Jadunath Sinha	: *Bhartiya Darshan* (English version also available).
S.N. Dasgupta	: *A History of Indian Philosophy*, Vols. I to V (Hindi version also available).
S Radhakrishnan	: *Indian Philosophy*, Vols. I to II (Hindi version also available)
Daya Krishna	: *Paschatya Darshan ka Itihas, Bhag I & II.*
I.M. Copi	: *Introduction to Logic* (Sixth edition)
Ashok Kumar Verma	: *Saral Nigman Tarkshastra*.
S.N. Gupta	: *Logic*
B.L. Sharma	: *Tarkshastra Praveshika*

Syllabus of the Courses

CC-3 MCC-4

Session: 2023-24			
Part A – Introduction			
Subject	Philosophy		
Semester	Third		
Name of the Course	Introduction to Ethics.		
Course Code	B23-PHI-301		
Course Type: (CC/MCC/MDC/CC-M/DSEC/VOC/DSE/PC/AEC/VAC)	CC MCC		
Level of the course (As per Annexure-I	200-299		
Pre-requisite for the course (if any)	N.A		
Course Learning Outcomes(CLO):	After completing this course, the learner will be able to know/understand: 301.1.the Meaning and Definition of Ethics. 301.2.the Values. 301.3.the basic concepts of Indian Ethics. 301.4.the Contemporary Concepts of Indian Ethics.		
	Theory	Tutorial	Total
Credits	03	01	04
Contact Hours	03	01	04

Max. Marks:-100 **Internal Assessment Marks:-30** **End Term Exam Marks:**-70	**Time:-3 hrs.**

Part B-Contents of the Course

Instructions for Paper- Setter

The paper-setter is requested to set **Nine** questions in all i.e., One Compulsory Objective Type Question (07x2) without any choice, equitablydistributed over the whole syllabi and Two Questions from Each Unit equitably spread over the concerned unit. The examinees will have to attempt **Five** questions in all, selecting one question from each unit. All questions carry equal marks.

Unit	Topics	ContactHours
I	The Definition and Nature of Ethics Meaning, Nature and Problems of Indian Ethics Relation of Ethics to Psychology Relation of Ethics to Religion	12
II	Freedom of Will and Moral Responsibility Concept of Moral Judgment and its CharacteristicNature, Definition and Types of Values Fundamental Ethical Concepts: Good, Right & Duty	11
III	Concept of Sreyas and Preyas Concept of Dharma Loksangraha Panchmahavrata Indian Hedonism	11
IV	Rights and Duties (Gandhi) Karma Yoga (Tilak) Naturalism (Tagore) Seva Bhava (Vivekananda)	11
	Tutorial	15

Suggested Evaluation Methods	
Internal Assessment: ➢ **Theory** • Class Participation: **5** • Seminar/presentation/assignment/quiz/class test etc.:**5+5** • Mid-Term Exam: **15** ➢ **Practicum** • Class Participation: • Seminar/Demonstration/Viva-voce/Lab records etc.: • Mid-Term Exam:	**End Term Examination:** **70**

Part C-Learning Resources

Recommended Books/e-resources/LMS:

Ashok Kumar Verma : Nitishastra ki Rooprekha
B.G. Tilak :Karam yoga.
I.C. Sharma : Ethical Philosophies of India.
R. Prasad : Varnadharma, Niskama Karma and Practical Morality.
Sri Aurobindo : Essays on the Gita.
S.K. Maitra : The Ethics of the Hindus.
J.N. Sinha : Manual of Ethics (Hindi Version also Available).\
V.P.Verma : Nitishastra Ke Mool Sidhanta.
Dr. H.N. Mishra : Nitishastra ki Bhumika.
Dr. H.N. Mishra: Nitishastra ke Pramukh Sidhanta.
Dr. R.P.Mishra : Nitishastra
Dr. Ramnath Sharma : Nitishastra ki Ruprekha.

MCC-5

Session: 2023-24			
Part A – Introduction			
Subject	Philosophy		
Semester	Third		
Name of the Course	Social Philosophy		
Course Code	B23-PHI-302		
Course Type: (CC/MCC/MDC/CC-M/DSEC/VOC/DSE/PC/AEC/VAC)	MCC		
Level of the course (As per Annexure-I	200-299		
Pre-requisite for the course (if any)	N.A		
Course Learning Outcomes(CLO):	After completing this course, the learner will be able to know/understand: 302.1.the nature of Social Philosophy. 302.2.the meaning and definition of Society. 302.3.the different concepts of Social Philosophy. 302.4.the family and social problems.		
	Theory	Tutorial	Total
Credits	03	01	04
Contact Hours	03	01	04

Max. Marks:-100 **Internal Assessment Marks:-30** **End Term Exam Marks:**-70	**Time:-3 hrs.**

Part B-Contents of the Course

Instructions for Paper- Setter

The paper-setter is requested to set **Nine** questions in all i.e., One Compulsory Objective Type Question (07x2) without any choice, equitably distributed over the whole syllabi and Two Questions from Each Unit equitably spread over the concerned unit. The examinees will have to attempt **Five** questions in all, selecting one question from each unit. All questions carry equal marks.

Unit	Topics	Contact Hours
I	The Nature, Scope & Problems of Social PhilosophyRelation with Sociology & Political Science Views of Gandhi & Ambedkar on Varna System	12
II	Meaning & Definition of Society Theories of Society: Individualistic Theory, Idealistic Theory and Organic Theory of Society	11
III	Concept of Justice (Aristotle & Rawls) Natural Rights Human Rights Legal Rights	11
IV	Nuclear and Joint Family: Merits and Demerits Institution of Marriage Concept of Women Empowerment and its Actualization Problem of Female Foeticide	11
	Tutorial	15

Suggested Evaluation Methods	
Internal Assessment: ➢ **Theory** • Class Participation: **5** • Seminar/presentation/assignment/quiz/class test etc.:**5+5** • Mid-Term Exam: **15** ➢ **Practicum** • Class Participation: • Seminar/Demonstration/Viva-voce/Lab records etc.: • Mid-Term Exam:	**End Term Examination:** **70**

Part C-Learning Resources

Recommended Books/e-resources/LMS:

Ajit Kumar Sinha : Outlines of Social Philosophy,
Barbara Goodwin: Using Political Ideas.
J.S.Makenzi : Samaj Darshan Ki Ruprekha,
Satyapal Gautam : Samaj Darshan,.
Shivbhanu Singh : Samaj Darshan Ka Sarvekshan,
Ramender : Samaj Avam Rajniti Darshan,

MDC-3

Session: 2023-24			
Part A – Introduction			
Subject	Philosophy		
Semester	Third		
Name of the Course	Philosophical Concepts-III		
Course Code	B23-PHI-303		
Course Type: (CC/MCC/MDC/CC-M/DSEC/VOC/DSE/PC/AEC/VAC)	MDC		
Level of the course (As per Annexure-I	200-299		
Pre-requisite for the course (if any)	N.A		
Course Learning Outcomes(CLO):	After completing this course, the learner will be able to know/understand: 304.1.the language and its uses. 304.2.the definition. 304.3.the proposition and terms. 304.4.the symbolical logic. 304.5 the recognizing statement form by truth table. *The practical will be conducted by internal examiner.		
	Theory	Practical	Total
Credits	02	01	03
Contact Hours	02	01	03

Max. Marks:-75 **Internal Assessment Marks:-25** **End Term Exam Marks:-50**	**Time:-3 hrs.**

Part B-Contents of the Course

Instructions for Paper- Setter

The paper-setter is requested to set **Nine** questions in all i.e., One Compulsory Objective Type Question (7x1) without any choice, equitably distributed over the whole syllabi and Two Questions from Each Unit equitably spread over the concerned unit. The examinees will have to attempt **Five** questions in all, selecting one question from each unit. All questions carry equal marks.

Unit	Topics	Contact Hours
I	Uses of Language: Three Basic Functions of Language Language forms and Functions Emotive Language and Neutral Language	8
II	Definition its Kinds and Uses Rules for Definitions Connotation and Denotation	7
III	Meaning and Definition of Proposition Four fold classification of Proposition Definition of Terms; Distribution of Terms	7
IV	Symbolical Logic Symbols of Negation, Conjunction, DisjunctionSymbols of Implication and Equivalence	8
	Tutorial	15

Suggested Evaluation Methods	
Internal Assessment: ➢ **Theory** • Class Participation: **5** • Seminar/presentation/assignment/quiz/class test etc.: **7** • Mid-Term Exam: **13**	**End Term Examination:** **50**

Part C-Learning Resources

Recommended Books/e-resources/LMS:

I.M. Copi (Carl Cohen, Priyedarshi Jateli, Monika Prabhakar) : *Introduction to Logic*, Pearson Education, 2006.

I.M. Copi : *Introduction to Logic*. (Hindi Version available)

Ashok Kumar Verma *: Saral Nigman Tarkshastra.*

Patrick Suppes : *Introduction to Logic.*

B.L. Sharma : *Tarka Shastra Pravesh.*

Ramnath Shrama : *Tarkashastra.*

CC-4 MCC-6

Session: 2023-24			
Part A – Introduction			
Subject	Philosophy		
Semester	Fourth		
Name of the Course	History of Ethics		
Course Code	B23-PHI-401		
Course Type: (CC/MCC/MDC/CC-M/DSEC/VOC/DSE/PC/AEC/VAC)	CC MCC		
Level of the course (As per Annexure-I	200-299		
Pre-requisite for the course (if any)	N.A		
Course Learning Outcomes (CLO):	After completing this course, the learner will be able to know/understand 401.1. the ethics of Socrates, Plato & Aristotle 401.2. the Ethical Theories. 401.3. Evolutionary Ethics 401.4. some Indian Ethical Concepts		
	Theory	Tutorial	Total
Credits	03	01	04
Contact Hours	03	01	04

Max. Marks:-100 Internal Assessment Marks:-30 End Term Exam Marks:-70	Time:-3 hrs.

Part B-Contents of the Course

Instructions for Paper- Setter

The paper-setter is requested to set **Nine** questions in all i.e., One Compulsory Objective Type Question (07x2) without any choice, equitably distributed over the whole syllabi and Two Questions from Each Unit equitably spread over the concerned unit. The examinees will have to attempt **Five** questions in all, selecting one question from each unit. All questions carry equal marks.

Unit	Topics	Contact Hours
I	Socrates: Knowledge is Virtue and Unity of Virtues Plato: Four Cardinal Virtues; Aristotle Golden Mean; Epicurus: Egoistic Hedonism	12
II	Utilitarianism :Quantitative and Qualitative H. Sidgwick: Universalistic Hedonism Kant: Theory of Categorical Imperative	11
III	My Station & its Duties: F.H. Bradley Evolutionary Ethics: Herbert Spencer Perfectionism: T.H. Green; Intuitionism: G. Butler; G.E. Moore Verification Principle: A.J Ayer	11
IV	Law of Karma: Ethical Implications Yoga Kshema (Bhagwat Gita) Tri-Rtna (Jainism) Upaya-Kaushal (Buddhism); Brahma-Vihara (Buddhism)	11
	Tutorial	15

Suggested Evaluation Methods	
Internal Assessment: ➢ **Theory** • Class Participation: **5** • Seminar/presentation/assignment/quiz/class test etc.:**5+5** • Mid-Term Exam: **15** ➢ **Practicum** • Class Participation • Seminar/Demonstration/Viva-voce/Lab records etc. • Mid-Term Exam	**End Term Examination:** **70**

Part C-Learning Resources

Recommended Books/e-resources/LMS:

W. Lillie : *Manual of Ethics*.
J.N. Sinha : *Manual of Ethics* (Hindi Version also Available).
V.P. Verma : *Nitishastra Ke Mool Sidhanta*.
V.P. Verma : *Adhinitishastra Ke Mool Sidhant.*
Dr .H.N. Mishra : *Nitishastra ki Bhumika.*
Dr. R.P. Mishra : *Nitishastra*
Dr. Ramnath Sharma : *Nitishastra ki Ruprekha*.
Aristotle : *Nichomachean Ethics*.
J.Benthem : *Principles of Morals and Legislation*.
J.S.Mill : *Utilitarianism*.
Immanual Kant : *Foundations of the Metaphysics of Morals*.
Immanual Kant : *Critique of Practical Reason*.

MCC-7

Session: 2023-24			
Part A – Introduction			
Subject	Philosophy		
Semester	Fourth		
Name of the Course	Contemporary Western Philosophy		
Course Code	B23-PHI-402		
Course Type: (CC/MCC/MDC/CC-M/DSEC/VOC/DSE/PC/AEC/VAC)	MCC		
Level of the course (As per Annexure-I	200-299		
Pre-requisite for the course (if any)	N.A		
Course Learning Outcomes(CLO):	After completing this course, the learner will be able to know/understand 402.1. the analytical philosophy of Moore and Russell. 402.2. the theories of meaning of Frege and Wittgenstein. 402.3. the philosophies of A.J. Ayer and J.L. Austin. 402.4. the contemporary philosophical theories of William James and G. Ryle.		
Credits	Theory	Tutorial	Total
	03	01	04
Contact Hours	03	01	04

Max. Marks:-100 **Internal Assessment Marks:-30End** **Term Exam Marks:-70**	**Time:-3 hrs.**

Part B-Contents of the Course

Instructions for Paper- Setter

The paper-setter is requested to set **Nine** questions in all i.e., One Compulsory Objective Type Question (07x2) without any choice, equitably distributed over the whole syllabi and Two Questions from Each Unit equitably spread over the concerned unit. The examinees will have to attempt **Five** questions in all, selecting one question from each unit. All questions carry equal marks.

Unit	Topics	Contact Hours
I	B. Russell: Logical Atomism Knowledge by Acquaintance and Knowledge by Description G.E. Moore: A Defense of Common-sense; Refutation of Idealism	12
II	G. Frege: Sense and Reference; L. Wittgenstein: Meaning as Reference; Meaning as Use; Nature of Philosophical Problems and their Solutions	11
III	A.J Ayer: Rejection of Metaphysics Verification Principle; Functions of Philosophy J.L. Austin: Speech Acts; Performative Utterances	11
IV	William James: Radical Empiricism Pragmatism; G. Ryle Category-Mistake; Descartes' Myth	11
	Tutorial	15

Suggested Evaluation Methods	
Internal Assessment: ➢ **Theory** • Class Participation: **5** • Seminar/presentation/assignment/quiz/class test etc.:**5+5** • Mid-Term Exam: **15** ➢ **Practicum** • Class Participation: • Seminar/Demonstration/Viva-voce/Lab records etc.: • Mid-Term Exam:	**End Term Examination:** **70**

Part C-Learning Resources

Recommended Books/e-resources/LMS:

Ajit Kumar Sinha : *Samkalin Darshan*.B.K.Lal : *Samkalin Paschatya Darshan*.Laxmi Saxena : *Samkalin Darshan*.
Jagdish Sahay Shrivastav *: Paschatya Darshan ki parmukh Darshnik Parvartiyan*.
Y. Masiha : *A Critical History of Western Philosophy* (Hindi versionalso available)
Nicholas Bunnin : *The Blackwell Companion to Philosophy* (Second Edition).
E.P. Tsui-James(Ed.)
Sobha Nigam : *Paschatya Darshan ke samprdaay*.

MCC-8

Session: 2023-24			
Part A – Introduction			
Subject	Philosophy		
Semester	Fourth		
Name of the Course	Political Philosophy		
Course Code	B23-PHI-403		
Course Type: (CC/MCC/MDC/CC-M/DSEC/VOC/DSE/PC/AEC/VAC)	MCC		
Level of the course (As per Annexure-I	200-299		
Pre-requisite for the course (if any)	N.A		
Course Learning Outcomes (CLO):	After completing this course, the learner will be able to know/understand 403.1 .the nature and scope of Political Philosophy. 403.2. the different political concepts. 403.3. Democracy. 403.4. the different modern concepts of Political Philosophy.		
	Theory	Tutorial	Total
Credits	03	01	04
Contact Hours	03	01	04

Max. Marks:-100 **Internal Assessment Marks:-30End** **Term Exam Marks:**-70	**Time:-3 hrs.**

Part B-Contents of the Course

Instructions for Paper- Setter

The paper-setter is requested to set **Nine** questions in all i.e., One Compulsory Objective Type Question (07x2) without any choice, equitably distributed over the whole syllabi and Two Questions from Each Unit equitably spread over the concerned unit.The examinees will have to attempt **Five** questions in all, selecting one question from each unit. All questions carry equal marks.

Unit	Topics	Contact Hours
I	Nature and Scope of Political Philosophy Political Concepts: State; Nation; Sovereignty	12
II	Concept of Liberty Concept of Equality Concept of Justice Concept of Revolution	11
III	Democracy: Definition and Characteristics of DemocracyMerits and Demerits of Democracy Socialism Communism	11
IV	Humanism Anarchism Satyagraha Sarvodya	11
	Tutorial	15

Suggested Evaluation Methods	
Internal Assessment: ➢ **Theory** • Class Participation: **5** • Seminar/presentation/assignment/quiz/class test etc.:**5+5** • Mid-Term Exam: **15**	**End Term Examination:** **70**

Part C-Learning Resources

Recommended Books/e-resources/LMS:

J. C Johari: *Political Theory and Scoio- Political Philsophy*, Sterling Publications Pvt. Lmt, New Delhi, 2019

David Miller: *Poltical Philosophy: Avery Short Introduction*, Oxford University Press, 2021

O. P Gauba: *Social and Political Philosophy*, Mayur Books, New Delhi, 2018.

Dr. Vimal Agrawal: *Samajik- Rajnaitik Darshan*, SBPD, Publications.

Prof. Haridwar Shukla: *Modern Political Philsophy*, Mahavir Publications, 2022.

Session: 2023-24			
Part A – Introduction			
Subject	Philosophy		
Semester	Fourth		
Name of the Course	Philosophy of Mind		
Course Code	B23-PHI-404		
Course Type: (CC/MCC/MDC/CC-M/DSEC/VOC/DSE/PC/AEC/VAC)	DSE		
Level of the course (As per Annexure-I)	200-299		
Pre-requisite for the course (if any)	N.A		
Course Learning Outcomes (CLO):	After completing this course, the learner will be able to know/understand : 404.1 the nature and Scope of Philosophy of Mind. 404.2 the Relevance of Various IndianConsciousness Theories. 404.3 Western Concepts of Self and Body- MindProblem. 404.4 Comparing Various Solution to Body andConsciousness Problem.		
	Theory	Tutorial	Total
Credits	03	01	04
Contact Hours	03	01	04

Max. Marks:-100 **Internal Assessment Marks:-30End** **Term Exam Marks:**-70	**Time:-3 hrs.**

Part B-Contents of the Course

Instructions for Paper- Setter

Unit	Topics	Contact Hours
I	Nature and Scope Philosophy of Mind Upanishad: Concept of Panchkosh Buddhism: Theory of non-self, Five Aggregates (Panch Skand)Jainism: Concept of Jiva and Consciousness	12
II	Sāṅkhya: Nature of Personality: Triguṇa Theory Yoga: States of Consciousness (Chitta Bhumis) Types of Consciousness (Chitta Vrittis) Overcoming of Vrittis (Chitta Vritti Nirodh)	11
III	Some Western Conceptions of Soul, Mind and Consciousness Traditional Mind-Body Problem: Dualism, Materialism Double Aspect Theory, The Person Theory	11
IV	Consciousness and Body: Interactionism Parallelism Epiphenomenalism Pre-established Harmony	11
	Tutorial	15

Suggested Evaluation Methods	
Internal Assessment: ➢ **Theory** • Class Participation: **5** • Seminar/presentation/assignment/quiz/class test etc.:**5+5** • Mid-Term Exam: **15** ➢ **Practicum** • Class Participation: • Seminar/Demonstration/Viva-voce/Lab records etc.: • Mid-Term Exam:	**End Term Examination:** **70**

Part C-Learning Resources

Recommended Books/e-resources/LMS:

B. Kuppuswamy : *Elements Of Ancient Indian Psychology*, Vikas Publisher, New Delhi, 1979.

Chennakesavan, Sarasvati : *Concept of Mind in Indian Philosophy*. Motilal Banarsidash Publisher Pvt. Ltd.:Delhi, 1991.

Dutta & Chatterjee : *An Introduction to Indian Philosophy*. University of Calcutta, 1984.

Kireet, Joshi et al (Eds) : *Consciousness, Indian Psychology and Yoga*, Indian Book Corporation, 2005.

N. Ross Reat : *Origins of Indian Psychology*, Asian Humanities Press, 1990.

Jadunath Sinha : *Indian Psychology: Cognition; Emotion and Will; Epistemology of Perception* (3 Vols.), Motilal Banarsidass, New Delhi, 1986.

Raghunath Safaya : *Indian Psychology: A Critical and Historical Analysis of Psychological Speculation* in Indian Philosophical Literature, Munshiram Manoharlal Publishers Pvt., New Delhi, 1976.

Ram Nath Sharma: *Bhartiya Manovijyana*, Atlantic Publishers and Distributors, New Delhi, 2005.

Jerome A. Shaffer: *Philosophy of Mind,* Prentice Hall of India Pvt. Lmt. New Delhi, 2003

John Heil : *Philosophy of Mind,* Rutledge Publications, 1998

DSE-1

Session: 2023-24			
Part A – Introduction			
Subject	Philosophy		
Semester	Fourth		
Name of the Course	Phenomenology and Existentialism		
Course Code	B23-PHI-405		
Course Type: (CC/MCC/MDC/CC-M/DSEC/VOC/DSE/PC/AEC/VAC)	DSE		
Level of the course (As per Annexure-I	200-299		
Pre-requisite for the course (if any)	N.A		
Course Learning Outcomes(CLO):	After completing this course, the learner will be able to know/understand: 404B.1 the philosophy of Husserl and Heidegger. 404B.2 the Existential Philosophy of Kierkegaard andJaspers. 404B.3 the questions regarding Sartre's existentialism. 404B.4 the different existential concepts of Marceland Nietzsche.		
	Theory	Tutorial	Total
Credits	03	01	04
Contact Hours	03	01	04

Max. Marks:-100 **Internal Assessment Marks:-30** **End Term Exam Marks:**-70	**Time:-3 hrs.**

Part B- Contents of the Course

Instructions for Paper- Setter

Unit	Topics	Contact Hours
I	E. Husserl: Phenomenological Method; Intentionality of Consciousness M. Heidegger: Modes of Dasein; Authentic Existence and Inauthentic Existence ;Difference between Being and beings	12
II	S.A. Kierkegaard: Truth is Subjectivity; Three stages of Existence K. Jaspers: Modes of Existence; Ultimate Situations, Encompassing andTranscendence	11
III	Jean Paul Sartre: Existence precedes Essence; Being-in-itself; Being-for-itself;Being-for others; Consciousness and Nothingness; Inauthentic Existence	11
IV	G. Marcel: Problem and Mystery: I and Thou; Freedom and Experiencing God F. Nietzsche: Atheistic Existentialism; Will to Power; Criticism of Christianity	11
	Tutorial	15

Suggested Evaluation Methods	
Internal Assessment: ➢ **Theory** • Class Participation: **5** • Seminar/presentation/assignment/quiz/class test etc.:**5+5** • Mid-Term Exam: **15** ➢ **Practicum** • Class Participation: • Seminar/Demonstration/Viva-voce/Lab records etc.: • Mid-Term Exam:	**End Term Examination:** **70**

Part C-Learning Resources

Recommended Books/e-resources/LMS:

Ajit Kumar Sinha : *Samkalin Darshan.*
B.K. Lal : *Samkalin Paschatya Darshan*.
Laxmi Saxena : *Samkalin Darshan.*
Jagdish Sahay Shrivastav : *Paschaty*a *Darshan ki parmukh Darshnik Parvartiyan*.
Y. Masiha : A *Critical History of Western Philosophy (*Hindi version also available)
M.K. Bhadra : *A Critical Survey of Phenomenology and Existentialism*.
Martine Heidegger : *Introduction to Metaphysics*.
Sobha Nigam *: Paschatya Darshan ke samprdaay*.

Scheme and Syllabus of VAC Pool Courses (Department of Philosophy)

Semester	Course	Paper	Nomenclature of Paper	Contact Hours		Credits		Internal Marks	External Marks	Total
				Theory teaching hours	Tutorial/ Practical (T/P)	Theory	T/P			
I	VAC	B-VAC 101	Human Values and Ethics	2	0	2	0	15	35	50
II	VAC	B-VAC 203	Ethics and Culture	2	0	2	0	15	35	2

VAC Session: 2023-24	
Part A – Introduction	
Subject	Philosophy
Semester	First
Name of the Course	Human Values and Ethics
Course Code	B- VAC 101
Course Type: (CC/MCC/MDC/CC-M/DSEC/VOC/DSE/PC/AEC/VAC)	VAC
Level of the course (As per Annexure-I	100-199
Pre-requisite for the course (if any)	N.A

Course Learning Outcomes (CLO):	After completing this course, the learner will be able to know/understand: 301.1. the Need, Content and Process for Value Education. 301.2. the Human Values and Ethics 301.3. the theories of Integrated Personality and Well-being 301.4. the Professional Ethics and Global Citizenship		
	Theory	Practical	Total
Credits	02	00	02
Contact Hours	02	00	02
Max. Marks:-50 **Internal Assessment Marks:-15End** **Term Exam Marks:-35**		**Time:-3 hrs.**	

Part B-Contents of the Course

Instructions for Paper- Setter

The paper-setter is requested to set **Nine** questions in all i.e., One Compulsory Objective Type Question (7x1) without any choice, equitably distributed over the whole syllabi and Two Questions from Each Unit equitably spread over the concerned unit. The examinees will have to attempt **Five** questions in all, selecting one question from each unit. All questions carry equalmarks.

Unit	Topics	Contact Hours
I	Course Introduction - Need, Content and Process for Value Education • Understanding the need, content and process for Value Education. (Students should be aware of the difference among skills, values and ethics and their respective needsin life.) • Classification of Value Education: understanding Personal Values, Social Values, • Moral Values & Spiritual Values; Understanding the difference between ideology andvalues. • Understanding Harmony with self, Society and Nature. • Practical: Debate and discussion on the need and nature of value education; • Students should be encouraged to find and analyze suitable case studies to • Understand various types of values.	8

II	Human Values and Ethics • Meaning and nature of human values; Significance of human values in life; • Relation between values and ethics. • Relevance of Human values: Integrity Empathy, Loksangrah, Brahmvihara. • Theory of Naya (Jainism), Deontology, Virtue Ethics, Utilitarianism • **Practical:** Students should be divided in small groups and should be motivated to reflect upon their values. Teacher should make an environment to make them realizethat everyone has a set of values arisen from their family, social, cultural, religious, and political contexts, some of which correspond to more "human" and "universal" frameworks. This exercise is to encourage students to articulate their values and put them into conversation with values from other contexts.	8
III	Integrated Personality and Well-being • Understanding the relationship among: Self, Identity and Personality. • Understanding Integrated Personality – with the three gunas theory of Sankhya, thefour • Antah-karanas (inner instruments) in Yoga, and Panchkosha (five sheaths) in Upanishad. • Approaching comprehensive understanding of well-being and its relation to Happiness. • **Practical**: Bhrumadhya Dhyan, Chakra Dhyan, Preksha Dhyan, Sakshi Bhava Dhyan, Vipassana, Yog Nidra, Partipakshabhava (yogic way of cognitive restructuring)	7
IV	Professional Ethics and Global Citizenship • Nature, characteristics and scope of professional ethics; Types of Professional Ethics • Professional Values: Trusteeship, Inclusiveness, Commitment, Sustainability, Accountability, Transparency, Impartiality. • Values for Global Citizenship: Equality, Justice, and Human Dignity. • Nature and need of competency based education; Types of Competencies, Core • Competencies: communication, teamwork, planing and achieving goals, Functional • Competencies: analytical thinking, knowledge sharing and learning, decision making, partnership building.	7

Suggested Evaluation Methods	
Internal Assessment: ➢ **Theory** • Class Participation: **5** • Seminar/presentation/assignment/quiz/class test etc.:**5** • Mid-Term Exam: **5** ➢ **Practicum** • Class Participation: • Seminar/Demonstration/Viva-voce/Lab records etc.: • Mid-Term Exam:	**End Term Examination:** **35**

Part C-Learning Resources

Recommended Books/e-resources/LMS:

1. R. R. Gaur R Sangal G P Bagaria (2009): A Foundation Course in Human Values and Professional Ethics,Excel Books.
2. D.R. Kiran (2014) Professional Ethics and Human Values, McGraw Hill Education (India).
3. Happiness and Well-Being, NIOS Module V (Health and well-being)
4. Kiran Kumar K. Salagame (2016): Meaning and Well-Being: Indian Perspectives, Journal of Constructivist Psychology
5. Dan P. McAdams, Kali Trzesniewski, Jennifer Lilgendahl, Veronica Benet-Martinez, Richard W. Robins (2021) Self and Identity in Personality Psychology, Personality Science, 2021, Vol. 2, Article e6035, https://doi.org/10.5964/ps.603
6. S. K. Kiran Kumar (2003): An Indian conception of well being, in Henry, J. (Ed) European PositivePsychology Proceedings 2002. Leicester, UK: British Psychological Society.
7. Vivian L Vignoles (2017): Identity: Personal and Social, Chapter to appear in Oxford Handbook of Personality and Social Psychology (2nd ed.), edited by Kay Deaux and Mark Snyder.
8. Wong, S.-C. (2020). Competency Definitions, Development and Assessment: A Brief Review.International Journal of Academic Research in Progressive Education and Development, 9(3), 95–114.

VAC Session: 2023-24	
Part A – Introduction	
Subject	Philosophy
Semester	Second
Name of the Course	Ethics and Culture
Course Code	B- VAC 203
Course Type: (CC/MCC/MDC/CC-M/DSEC/VOC/DSE/PC/AEC/VAC)	VAC
Level of the course (As per Annexure-I	100-199
Pre-requisite for the course (if any)	N.A
Course Learning Outcomes(CLO):	After completing this course, the learner will be able to know/understand: 301.1. the ethical values from Indian Cultural Heritage. 301.2. the Values and Life Skills. 301.3. the Ethical Dilemmas and Various Ethical Dimensions. 301.4. the Effective Communication in Everyday Life.

	Theory	Tutorial	Total
Credits	02	00	02
Contact Hours	02	00	02

Max. Marks:-50
Internal Assessment Marks:-15
End Term Exam Marks:-35

Time:-3 hrs.

Part B-Contents of the Course

Instructions for Paper- Setter

The paper-setter is requested to set Nine questions in all i.e., One Compulsory Objective Type Question (7x1) without any choice, equitably distributed over the whole syllabi and Two Questions from Each Unit equitably spread over the concerned unit. The examinees will have to attempt Five questions in all, selecting one question from each unit. All questions carry equal marks.

Unit	Topics	Contact Hours
I	Ethical Values from Indian Cultural Heritage: Vasudhaiva Kutumbakam; PrursharthaLoksangrah Value of Service (Sikhism)	8
II	Life Skills: Empathy; Adaptability; Conserving our natural resources;	8
III	Ethical Dilemmas: Meaning and Relevance to understand contemporary issues. Various Ethical Dimensions: Media Ethics: Challenges and Way forward Gender Ethics : Challenges and Way forward	7

IV	Cultural Values of Festivals: Lohri; Holi; Baisakhi; Navratri; Roza Ramzan; Onam; Deepawali; Christmas	7

Suggested Evaluation Methods

Internal Assessment: ➢ **Theory** • Class Participation: **5** • Seminar/presentation/assignment/quiz/class test etc.:**5** • Mid-Term Exam: **5** ➢ **Practicum** • Class Participation: • Seminar/Demonstration/Viva-voce/Lab records etc.: • Mid-Term Exam:	**End Term Examination:** **35**

Part C-Learning Resources

Recommended Books/e-resources/LMS:

Ashok Kumar Verma : Nitishastra ki Rooprekha.

J.N.Sinha : Manual of Ethics (Hindi Version also Available).

Sri Aurobindo : Essays on the Gita.

S.K. Maitra : The Ethics of the Hindus.

H.P. Sinha: Dharma Darshan ki Ruprekha.

Kurukshetra University
Kurukshetra

Scheme of Examination and Syllabus for Under-Graduate Programme (Multidisciplinary)

Subject: Sanskrit

Under Multiple Entry-Exit, Internship and CBCS-LOCF in accordance to NEP-2020 w.e.f 2023-24 (in phased manner)

Kurukshetra University Kurukshetra
Scheme of Courses in Sanskrit for U.G Programme Subject Sanskrit
as per NEP 2020 (Multiple Entry-Exit, Internships and Choice Based Credit System)
(in the phased manner)

Semester	CORE COURSES Sanskrit	Paper	Nomenclature of Paper	Credits	Contact hours (Theory+ Tutorial)	Internal Marks	External Marks	Total	Duration of Exam (Hrs.)
I	CC-1/ MCC-1	B23-SKT-101	नीतिसाहित्यं व्याकरणं च	4	4	30	70	100	3
	MCC-2	B23-SKT--102	रघुवंशं बुद्धचरितं च	4	4	30	70	100	3
	MDC-1	B23-SKT-103	संस्कृत–सम्भाषणम्	3	3	25	50	75	3
	CC-M1	B23-SKT-104	प्रयोगात्मक–संस्कृतम्	2	2	15	35	50	2
II	CC-2/ MCC-3	B23-SKT-201	श्रीमद्भगवद्गीता, स्वस्थवृत्तं छन्दशास्त्रं च	4	4	30	70	100	3
	DSEC-1	B23-SKT-202	किरातार्जुनीयं नीतिशतकं च	4	4	30	70	100	3
	MDC-2	B23-SKT-203	योगासनम् एवं ध्यानम्	3	3	25	50	75	3
	CC-M2	B23-SKT-204	संस्कृत–चयनिका	2	2	15	35	50	2
Internship of 4 Credits of 4-6 weeks duration after 2nd Semester									
III	CC-3/ MCC-4	B23-SKT-301	ऐतिहासिकमहाकाव्यम् एवं व्याकरणम्	4	4	30	70	100	3
	MCC-5	B23-SKT-302	स्वप्नवासवदत्तम्	4	4	30	70	100	3

	MDC-3	B23-SKT-303	यज्ञप्रक्रियायाः वैज्ञानिकाधारः एवं वर्णोच्चारणम्	3	3	25	50	75	3
IV	CC-4 / MCC-6	B23-SKT-401	महाकाव्यम् उपन्यासः एवं शब्दप्रक्रिया	4	4	30	70	100	3
	MCC-7	B23-SKT-402	आधुनिक–संस्कृतसाहित्यम्	4	4	30	70	100	3
	MCC-8	B23-SKT-403	काव्यशास्त्रम्	4	4	30	70	100	3
	DSE-1	B23-SKT-404	काव्यदीपिका वृत्तरत्नाकरः च	4	4	30	70	100	3
		OR							
		B23-SKT-405	संस्कृतसाहित्ये राष्ट्रवादः	4	4	30	70	100	3
Internship of 4 Credits of 4-6 weeks duration after 4th Semester									
V	CC-5/ MCC-9	B23-SKT-501	वैदिकसाहित्यपरिचयः, नाटकम् एवं व्याकरणम्	4	4	30	70	100	3
	MCC-10	B23-SKT-502	लघुसिद्धांतकौमुदी प्रक्रिया च	4	4	30	70	100	3
	DSE-2	B23-SKT-503	दशकुमारचरितं शिवराजविजयं च	4	4	30	70	100	3
		OR							
		B23-SKT-504	धर्म, संस्कृतिः दर्शनं च	4	4	30	70	100	3
	DSE-3	B23-SKT-505	भारतीयपरिप्रेक्ष्ये व्यक्तित्वविकासः	4	4	30	70	100	3
		OR							
		B23-SKT-506	संस्कृतमहाकाव्यकाराः गद्यकाराः नाट्यकाराः च	4	4	30	70	100	3

VI	CC-6/ MCC-11	B23-SKT-601	नाटकं, लौकिकसाहित्यम् एवं व्याकरणम्	4	4	30	70	100	3
	MCC-12	B23-SKT-602	उपनिषद्–गीतानुसारं जीवनदर्शनम्	4	4	30	70	100	3
	DSE-4	B23-SKT-603	संस्कृतसाहित्ये नीतिः आचारः च	4	4	30	70	100	3
		OR							
		B23-SKT-604	संहिता, व्याकरणम् एवं दर्शनम्	4	4	30	70	100	3
	DSE-5	B23-SKT-605	आयुर्वेद एवं वास्तुशास्त्रम्	4	4	30	70	100	3
		OR							
		B23-SKT-606	सन्तुलितजीवन–पद्धतिः	4	4	30	70	100	3

Scheme of Courses in **Sanskrit** for **UG Honours** Programme

Semester	Core courses Sanskrit	Paper	Nomenclature	credits	Contact hours	Internal Assessment Marks	External Marks	Total	Duration of Exam (Hrs.)
VII	CC-H1	B23-SKT-701	वेद : विशिष्ट–अध्ययनम् 1	4	4	30	70	100	3
	CC-H2	B23-SKT-702	साहित्यम् : विशिष्ट–अध्ययनम् 1	4	4	30	70	100	3
	CC-H3	B23-SKT-703	भारतीयदर्शनम् : विशिष्ट–अध्ययनम् 1	4	4	30	70	100	3
	DSE-H1	B23-SKT-704	व्याकरणम् एवं भाषाविज्ञानम्	4	4	30	70	100	3
			OR						
		B23-SKT-705	धर्मशास्त्रम्	4	4	30	70	100	3
	PC-H1	B23-SKT-706	व्याकरणप्रक्रिया	4	4	30	70	100	3
VIII	CC-H4	B23-SKT-801	वेद : विशिष्ट–अध्ययनम् 2	4	4	30	70	100	3
	CC-H5	B23-SKT-802	साहित्यम् : विशिष्ट–अध्ययनम् 2	4	4	30	70	100	3

	CC-H6	B23-SKT-803	भारतीयदर्शनम् : विशिष्ट–अध्ययनम् 2	4	4	30	70	100	3
	DSE-H2	B23-SKT-804	तन्त्रागमः	4	4	30	70	100	3
		OR							
		B23-SKT-805	वास्तुशास्त्रम्	4	4	30	70	100	3
	PC-H2	B23-SKT-806	शोधप्रविधिः	4	4	30	70	100	3

Scheme of Courses in **Sanskrit** for **UG Honours with Research Programme**

Semester	Core courses Sanskrit	Paper	Nomenclature	credits	Contact hours	Internal Assessment Marks	External Marks	Total	Duration of Exam (Hrs.)
VII	CC-H1	B23-SKT-701	वेद : विशिष्ट–अध्ययनम् 1	4	4	30	70	100	3
	CC-H2	B23-SKT-702	साहित्यम् : विशिष्ट–अध्ययनम् 1	4	4	30	70	100	3
	CC-H3	B23-SKT-703	भारतीयदर्शनम् : विशिष्ट–अध्ययनम् 1	4	4	30	70	100	3
	DSE-H1	B23-SKT-704	व्याकरणम् एवं भाषाविज्ञानम्	4	4	30	70	100	3
		OR							
		B23-SKT-705	धर्मशास्त्रम्	4	4	30	70	100	3
	PC-H1	B23-SKT-706	व्याकरणप्रक्रिया	4	4	30	70	100	3
VIII	CC-H4	B23-SKT-801	वेद : विशिष्ट–अध्ययनम् 2	4	4	30	70	100	3
	CC-H5	B23-SKT-802	साहित्यम् : विशिष्ट–अध्ययनम् 2	4	4	30	70	100	3
	Project/ Dissertation B-23-SKT-807		**Research**		**12**			**300**	

(Value Added Courses)									
I	VAC-307	B23-VAC-307	पंचकोश : सर्वांगीण व्यक्तित्व विकास	2	2	15	35	50	2
II	VAC-312	B23-VAC-312	प्रारंभिक संस्कृत भाषा ज्ञान	2	2	15	35	50	2
III	VAC-313	B23-VAC-313	संस्कृत साहित्य में नाट्य एवं रंगमंच	2	2	15	35	50	2
IV	VAC-315	B23-VAC-315	भारतीय ज्ञान परम्परा एवं पद्धति	2	2	15	35	50	2

(Ability Enhancement Course)									
Semester I	AEC-1	B23-AEC-131	संस्कृत भाषा एवं सम्प्रेषण-1	2	2	15	35	50	2
Semester II	AEC-2	B23-AEC-132	संस्कृत भाषा एवं सम्प्रेषण-2	2	2	15	35	50	2
Semester III	AEC-3	B23-AEC-133	संस्कृत भाषा एवं सम्प्रेषण-3	2	2	15	35	50	2
Semester IV	AEC-4	B23-AEC-134	संस्कृत भाषा एवं सम्प्रेषण-4	2	2	15	35	50	2

Kurukshetra University Kurukshetra
Scheme of Courses in Sanskrit for U.G Programme Subject Sanskrit
as per NEP 2020 (Multiple Entry-Exit, Internships and Choice Based Credit System)

Session: 2023-24	
Part A - Introduction	
Subject	Sanskrit
Semester	1st
Name of the Course	Bachelor of Arts
Course Code	B23-SKT-101, नीतिसाहित्यं व्याकरणं च
Course Type: (CC/MCC/MDC/CC-M/DSEC/VOC/DSE/PC/AEC/VAC)	CC-1/ MCC-1
Level of the course (As per Annexure-I	100-199
Pre-requisite for the course (if any)	Senior Secondary (10+2) or Visharad or Equivalent in any Stream
Course Learning Outcomes(CLO):	After completing this course, the learner will be able to: CLO-101-1 संस्कृत भाषा में ज्ञान की सरल मनोवैज्ञानिक विधियों के द्वारा छात्रों को बोध कराने के लिए अनेक ग्रंथ कहानी के रूप में लिखे गए जैसे पंचतंत्र, हितोपदेश आदि । इस घटक में हितोपदेश के मित्रलाभ प्रकरण से छात्रों को संस्कृत भाषा में प्रवेश करवाया जाता है। CLO-101-2 नीतिशतक भारतीय नीतिशास्त्र तथा सुभाषित के रूप में जाना जाता है। भर्तृहरि द्वारा रचित नीति-शतक के प्रथम 50 श्लोकों के माध्यम से छात्रों को न्याय एवं नीति से समाज बोध की शिक्षा देने का प्रयास किया गया है । CLO-101-3 संस्कृत भाषा में प्रवेश के लिए छात्रों को व्याकरण के प्रथम सोपान धातुरूप तथा शब्दरूपों का ज्ञान होना आवश्यक है। इस घटक में छात्रों को सरल धातु-रूपों से परिचय करवाया जाता है ताकि वे संस्कृत भाषा समझने में तत्पर हो सके ।

	CLO-101-4 भाषा में संधियों का प्रयोग परम आवश्यक है। इस घटक में छात्रों को संस्कृत भाषा की संधियों का बोध करवाया जाता है ताकि वे भाषा को आसानी से समझ सके क्योंकि संधि में पदों को अलग-अलग करके अर्थ को आसानी से जाना जा सकता है।		
Credits 4	Theory + Tutorial	Practical	Total
	3+1	----------	4
Contact Hours	60	----------	60
Max. Marks: 100 **Internal Assessment Marks: 30** **End Term Exam Marks: 70**		**Time: 3 Hrs.**	

Part B- Contents of the Course

Instructions for Paper- Setter

प्रश्नपत्र-निर्माण के लिये निर्देश:-

1. प्रश्नपत्र में कुल पाँच (5) प्रश्न दिये जाएँ। प्रश्नपत्र के लिये कुल 70 अङ्क निर्धारित हैं। सभी प्रश्न समानाङ्क होंगे अर्थात् प्रत्येक प्रश्न चौदह (14) अङ्कों का होगा। प्रश्न-पत्र हल करने का समय तीन (3) घण्टे होगा।
2. **प्रथम प्रश्न** पाठ्यक्रम के चारों घटकों में निर्धारित विषयों के आधार पर बनाया जाए। यह प्रश्न अनिवार्य होगा। इसके अन्तर्गत लघु उत्तर वाले विकल्परहित चार (4) प्रश्न पूछे जाएँ। प्रत्येक लघूत्तरात्मक प्रश्न साढे तीन (3.5) अङ्कों का होगा।
3. द्वितीय, तृतीय, चतुर्थ तथा पञ्चम प्रश्न का निर्माण पाठ्यक्रम के क्रमश: प्रथम, द्वितीय, तृतीय तथा चतुर्थ घटक में निर्धारित विषय के आधार पर किया जाए। पाठ्यक्रम के प्रत्येक घटक से दो वैकल्पिक प्रश्न देकर परीक्षार्थी से प्रत्येक घटक से एक एक प्रश्न का उत्तर लिखने को कहा जाए।

Unit	Topics	Contact Hours
I	हितोपदेश 14 अंक **मित्रलाभ** (मित्रलाभ-प्रस्ताव: से लेकर कथा 2 अर्थात् वृद्धव्याघ्रपथिक के 55वें श्लोक "भक्ष्यभक्षकयो:प्रीति:....." तक। (क) दो पाठ्यांशों की व्याख्या। (2×5=10 अंक) (ख) सार। (4 अंक)	15
II	नीतिशतक* : श्लोक-संख्या 1 से 50 तक। 14 अंक (क) दो श्लोकों का सरलार्थ। (2×5 =10 अंक) (ख) एक सूक्ति की व्याख्या। (4 अंक)	15

III	संस्कृत व्याकरण : 14 अंक (क) शब्द रूप : राम, कवि, भानु, पितृ, लता, अस्मद्,विद्वस्,राजन् तद् (तीनों लिङ्गों में), एक (तीनों लिङ्गों में)। (7 अंक) (ख) धातु रूप : भू, हस्, नम्, गम्, अस्, हन्, कृ, नी, याच्, दृश्,वच् (केवल लट्, लोट्, लङ्, विधिलिङ्, लृट् लकारों में) (7 अंक)	15
IV	(क) सन्धि : अच्सन्धि, हल्सन्धि एवं विसर्गसन्धि। 7 अंक (ख) कण्ठस्थ दो श्लोकों का शुद्ध लेखन। (प्रश्नपत्र में पूछे गए श्लोकों से भिन्न) 7 अंक	15
Suggested Evaluation Methods		
Internal Assessment: 30 Marks ➢ **Theory** • Class Participation: 5 Marks • Seminar/presentation/assignment/quiz/class test etc.: 5+5=10 Marks • Mid-Term Exam: 15 Marks		**End Term Examination:** 70 Marks
Part C-Learning Resources **Recommended Books/e-resources/LMS:** 1 भर्तृहरिकृतनीतिशतकम् टीकाकार डॉ गंगासागरराय, चौखम्बा, वाराणसी 2003 2 हितोपदेश नारायण पण्डित, चौखम्बा संस्कृत सीरीज, वाराणसी 3 रचनानुवाद कौमुदी कपिलदेव द्विवेदी, चौखम्बा प्रकाशन वाराणसी		

Session: 2023-24	
Part A - Introduction	
Subject	Sanskrit
Semester	1st
Name of the Course	Bachelor of Arts
Course Code	B23-SKT-102, रघुवंशं बुद्धचरितं च
Course Type: (CC/MCC/MDC/CC-M/DSEC/VOC/DSE/PC/AEC/VAC)	MCC-2
Level of the course (As per Annexure-I	100-199
Pre-requisite for the course (if any)	Senior Secondary (10+2) or Visharad or Equivalent in any Stream
Course Learning Outcomes(CLO):	After completing this course, the learner will be able to: CLO-102-I रघुवंशम् एक महाकाव्य है जिसमें प्रतिष्ठित एवं ऐतिहासिक महापुरुष 'राम' का वर्णन किया गया है । रघुवंशम् के अध्ययन से भारतीय संस्कृति एवं इतिहास की जानकारी छात्रों को प्राप्त होती है। CLO-102-II रघुवंशम् के लेखक महाकवि कालिदास है । कालिदास के जीवन, काल तथा रचनाओं का परिचय देना इस घटक का उद्देश्य है। CLO-102-III बुद्धचरित एक महाकाव्य है। इस महाकाव्य के माध्यम से बुद्ध का जीवन चरित तथा तत्कालीन संस्कृति, समाज तथा इतिहास का बोध इसके अध्ययन से होता है CLO-102-IV कवि से सम्बन्धित प्रतिभा तथा ऐतिहासिक बोध के साथ-साथ काव्य प्रतिभा तथा काव्य-गुण एवं दोषों का अध्ययन इससे होता है।

Credits 4	Theory + Tutorial	Practical	Total
	3+1	----------	4
Contact Hours	60	----------	60

Max. Marks: 100
Internal Assessment Marks: 30
End Term Exam Marks: 70

Time: 3 Hrs.

Part B- Contents of the Course

Instructions for Paper- Setter

प्रश्नपत्र-निर्माण के लिये निर्देशः-

1. प्रश्नपत्र में कुल पाँच (5) प्रश्न दिये जाएँ। प्रश्नपत्र के लिये कुल 70 अङ्क निर्धारित हैं। सभी प्रश्न समानाङ्क होंगे अर्थात् प्रत्येक प्रश्न चौदह (14) अङ्कों का होगा। प्रश्न-पत्र हल करने का समय तीन (3) घण्टे होगा।
2. **प्रथम प्रश्न** पाठ्यक्रम के चारों घटकों में निर्धारित विषयों के आधार पर बनाया जाए। यह प्रश्न अनिवार्य होगा। इसके अन्तर्गत लघु उत्तर वाले विकल्परहित चार (4) प्रश्न पूछे जाएँ। प्रत्येक लघूत्तरात्मक प्रश्न साढे तीन (3.5) अङ्कों का होगा।
3. द्वितीय, तृतीय, चतुर्थ तथा पञ्चम प्रश्न का निर्माण पाठ्यक्रम के क्रमशः प्रथम, द्वितीय, तृतीय तथा चतुर्थ घटक में निर्धारित विषय के आधार पर किया जाए। पाठ्यक्रम के प्रत्येक घटक से दो वैकल्पिक प्रश्न देकर परीक्षार्थी से प्रत्येक घटक से एक एक प्रश्न का उत्तर लिखने को कहा जाए।

Unit	Topics	Contact Hours
I	रघुवंशम्, प्रथमः सर्गः 14 अंक (क) द्वयोः श्लोकयोः व्याख्या। (2x5=10 अंक) (ख) सूक्ति-व्याख्या। (4 अंक)	15
II	रघुवंशसम्बद्धं कविं रघुवंशं वा आश्रित्य एकः आलोचनात्मकः प्रश्नः। 14 अंक	15
III	बुद्धचरितम्,प्रथमःसर्गः 14 अंक (क) द्वयोः श्लोकयोः व्याख्या। (2x5=10 अंक) (ख) सूक्ति-व्याख्या। (4 अंक)	15
IV	बुद्धचरितसम्बद्धं कविं बुद्धचरितं वा आश्रित्य एकः आलोचनात्मकः प्रश्नः। 14 अंक	15

Suggested Evaluation Methods	
Internal Assessment: 30 Marks ➢ **Theory** • Class Participation: 5 Marks • Seminar/presentation/assignment/quiz/class test etc.: 5+5=10 Marks • Mid-Term Exam: 15 Marks	**End Term Examination:** 70 Marks

Part C-Learning Resources

Recommended Books/e-resources/LMS:

1 बृद्धचरितम् ब्याख्याकार महंत रामचन्द्रदास शास्त्री, चौखम्बा विद्याभवन वाराणसी
2 रघुवंश महाकाव्य, व्याख्याकार हरगोविंद शास्त्री, चौखम्बा संस्कृत संस्थान वाराणसी

Session: 2023-24	
Part A - Introduction	
Subject	Sanskrit
Semester	1st
Name of the Course	Bachelor of Arts
Course Code	B23-SKT-103, संस्कृत–सम्भाषणम्
Course Type: (CC/MCC/MDC/CC-M/DSEC/VOC/DSE/PC/AEC/VAC)	MDC-1
Level of the course (As per Annexure-I	0-99
Pre-requisite for the course (if any)	----------
Course Learning Outcomes(CLO):	After completing this course, the learner will be able to: CLO. 103. 1 : हितोपदेश के इस कथांश में जीवन में समृद्धि एवं विषमता के विरोधी समय में आत्मोन्नति का सन्देश प्राप्त होता है। आठ प्रकार के धर्म, समाज में व्यवहार की रीति, दान, उत्तम चरित एवं जीवन के दोषों का स्पष्ट एवं व्यावहारिक वर्णन है। CLO. 103. 2 : श्रीमद्भगवद्गीता के इस अंश में योग का महत्त्व एवं कर्मफल त्यागपूर्वक कर्म की श्रेष्ठता का प्रतिपादन किया गया है। स्थित प्रज्ञ का स्वरूप, क्रोधादि दोषों का त्याग एवं इन्द्रिय संयम के महत्त्व को विस्तार से व्यक्त किया गया है। CLO. 103. 3 : इस घटक के माध्यम से विद्यार्थी राज्य एवं राष्ट्रीय संस्थानों में प्रयुक्त आदर्श वाक्यों का ज्ञान प्राप्त करेंगें ।

	CLO. 103. 4 : इस घटक के माध्यम से विद्यार्थी प्रतिदिन दैनिक व्यवहार में प्रयुक्त होने वाले शब्दों का ज्ञान प्राप्त करेंगें ।		
Credits 3	Theory + Tutorial	Practical	Total
	2+1	----------	3
Contact Hours	45	----------	45
Max. Marks: 75 **Internal Assessment Marks: 25** **End Term Exam Marks:** 50		**Time: 3 Hrs.**	

Part B- Contents of the Course

Instructions for Paper- Setter

प्रश्नपत्र-निर्माण के लिये निर्देशः-

1. प्रश्नपत्र में कुल पाँच (5) प्रश्न दिये जाएँ। प्रश्नपत्र के लिये कुल 50 अङ्क निर्धारित हैं। सभी प्रश्न समानाङ्क होंगे अर्थात् प्रत्येक प्रश्न दस (10) अङ्कों का होगा। प्रश्न-पत्र हल करने का समय तीन (3) घण्टे होगा।
2. **प्रथम प्रश्न** पाठ्यक्रम के चारों घटकों में निर्धारित विषयों के आधार पर बनाया जाए। यह प्रश्न अनिवार्य होगा। इसके अन्तर्गत लघु उत्तर वाले विकल्परहित चार (4) प्रश्न पूछे जाएँ। प्रत्येक लघूत्तरात्मक प्रश्न साढे दो (2.5) अङ्कों का होगा।
3. द्वितीय, तृतीय, चतुर्थ तथा पञ्चम प्रश्न का निर्माण पाठ्यक्रम के क्रमशः प्रथम, द्वितीय, तृतीय तथा चतुर्थ घटक में निर्धारित विषय के आधार पर किया जाए। पाठ्यक्रम के प्रत्येक घटक से दो वैकल्पिक प्रश्न देकर परीक्षार्थी से प्रत्येक घटक से एक एक प्रश्न का उत्तर लिखने को कहा जाए।

Unit	Topics	Contact Hours
I	हितोपदेश (मित्रलाभः) (श्लोक 1-35) 10 अंक 'अथ प्रासादपृष्ठे'.....से लेकर 'आलस्यं दीर्घसूत्रता...तक दो श्लोकों का सरलार्थ (2X5 =10 अंक)	11
II	श्रीमद्भगवद्गीता (अध्याय 2/46-72) 10 अंक दो श्लोकों का सरलार्थ (2X5 =10 अंक)	11
III	संस्कृत आदर्श वाक्य 10 अंक (राज्य एवं राष्ट्रीय संस्थानों के आदर्श वाक्य) (1X10 =10 अंक)	11

IV	अनुवाद वाक्य 10 अंक (शिष्टाचारः , परिचयः, छात्राः , परीक्षा, आरोग्यम् , वातावरणम् , भोजनम् , समयः , सुताः , अतिथिः, संकीर्ण, वाक्यानि, शुभाशयाः) इनसे सम्बन्धित संस्कृत अनुवाद (1X10 =10 अंक)	12

Suggested Evaluation Methods

Internal Assessment: 25 Marks ➢ **Theory** • Class Participation: 5 Marks • Seminar/presentation/assignment/quiz/class test etc.: 7 Marks • Mid-Term Exam: 13 Marks	**End Term Examination:** 50 Marks

Part C-Learning Resources

Recommended Books/e-resources/LMS:

1 हितोपदेश, व्याख्याकार श्री नारायण राम आचार्य काव्यतीर्थ, चौखम्बा संस्कृत प्रतिष्ठान, दिल्ली
2 श्रीमद्भगवदगीता, शांकर भाष्य, गीता प्रेस, गोरखपुर
3 संस्कृतव्यवहार शाहस्री, संस्कृत भारती दिल्ली

Session: 2023-24	
Part A - Introduction	
Subject	Sanskrit
Semester	1st
Name of the Course	Bachelor of Arts
Course Code	B23-SKT-104, प्रयोगात्मक–संस्कृतम्
Course Type: (CC/MCC/MDC/CC-M/DSEC/VOC/DSE/PC/AEC/VAC)	CC-M1
Level of the course (As per Annexure-I	0-99
Pre-requisite for the course (if any)	----------
Course Learning Outcomes(CLO):	After completing this course, the learner will be able to: CLO. 104. 1 : संस्कृत सम्भाषण के माध्यम से छात्रों को व्यवहारिक ज्ञान एवं संस्कृत भाषा के माध्यम से स्म्भाषण प्रक्रिया के द्वारा प्रयोगात्मक संस्कृत की शिक्षा छात्रों को दी जाती है। CLO. 104. 2 : संस्कृत भाषा को सरल एवं सुबोध रूप से जानने के लिए भाषा का अनुवाद महत्त्वपूर्ण है। अनुवाद के माध्यम से छात्र भाषा का लेखन एवं उच्चारण समझ सकते हैं। भाषा शिक्षण के तीन माध्यम है बोलना, सुनना और लिखना। यही बोध छात्रों को दिया जाता है। CLO. 104. 3 : इस घटक के माध्यम से छात्रों को फल और सब्जियों के संस्कृत नामों से परिचित कराया जायेगा ।

	CLO.104. 4: कारक भाषा को जानने एवं प्रयोग की एक महत्त्वपूर्ण प्रक्रिया है। कारकों के माध्यम से क्रिया की जो प्रक्रिया है वो पूर्ण होती है। कारकों का प्रयोग कैसे किया जाता है। यही बोध छात्रों को दिया जाता है।		
Credits 2	Theory + Tutorial	Practical	Total
	2	----------	2
Contact Hours	30	----------	30
Max. Marks: 50 **Internal Assessment Marks: 15** **End Term Exam Marks:** 35		**Time: 2 Hrs.**	

Part B- Contents of the Course

Instructions for Paper- Setter

प्रश्नपत्र-निर्माण के लिये निर्देश:-

1. प्रश्न-पत्र अधिकतम **35** अङ्कों का होगा। **15** अङ्क आन्तरिक मूल्यांकन के लिये निर्धारित हैं।
2. प्रश्न-पत्र में कुल **पाँच** प्रश्न दिये जाएँगे। प्रत्येक प्रश्न **7** अङ्कों का होगा। **प्रथम प्रश्न** पाठ्यक्रम में निर्धारित चारों घटकों पर आधारित तथा अनिवार्य होगा। इसके अन्तर्गत लघु उत्तर वाले विकल्परहित सात (7) प्रश्न पूछे जाएँगे। प्रत्येक लघूत्तरात्मक प्रश्न एक (1) अङ्क का होगा। शेष चार प्रश्नों में पाठ्यक्रम के प्रत्येक घटक से दो वैकल्पिक प्रश्न दिये जाएँगे। परीक्षार्थी को इनमें से प्रत्येक घटक के एक एक प्रश्न का उत्तर लिखना होगा।
3. प्रश्न-पत्र हल करने का समय दो (2) घण्टे होगा।

Unit	Topics	Contact Hours
I	संस्कृत सम्भाषण –7 अंक	7
II	अनुवाद (हिन्दी से संस्कृत) –7 अंक	8
III	(क) फलशाकादिनामानि –7 अंक (ख) श्रीमद्भगवद्गीता के दो श्लोकों का कण्ठस्थीकरण	7
IV	कारकविभक्ति –7 अंक	8

Suggested Evaluation Methods	
Internal Assessment: 15 Marks ➢ **Theory** • Class Participation: 4 Marks • Seminar/presentation/assignment/quiz/class test etc.: 4 Marks • Mid-Term Exam: 7 Marks	**End Term Examination:** 35 Marks

Part C-Learning Resources

Recommended Books/e-resources/LMS:

1 बृहदानुवादचन्द्रिका, चक्रधर हंस नौटियाल, मोतीलाल बनारसीदास, दिल्ली

2 प्रारम्भिकरचनानुवादकौमदी– डा॰ कपिलदेव द्विवेदी, विश्वविद्यालय प्रकाशन, वाराणसी

Session: 2023-24	
Part A - Introduction	
Subject	Sanskrit
Semester	2nd
Name of the Course	Bachelor of Arts
Course Code	B23-SKT-201, श्रीमद्भगवद्गीता, स्वस्थवृत्तं छन्दशास्त्रं च
Course Type: (CC/MCC/MDC/CC-M/DSEC/VOC/DSE/PC/AEC/VAC)	CC-2/ MCC-3
Level of the course (As per Annexure-I	100-199
Pre-requisite for the course (if any)	----------
Course Learning Outcomes(CLO):	After completing this course, the learner will be able to: CLO-201-1 गीता भारतीय संस्कृति तथा ज्ञान का उत्कर्ष है। गीता को कर्म तथा ज्ञान के सम्यक् बोध के रूप में जाना जाता है । गीता के द्वितीय अध्याय को 'सांख्य-योग' के नाम से जाना जाता है। इस अध्याय में जीवन के मर्म को जानकर कर्म करने की प्रेरणा दी गई है। यह सभी मनुष्यों को जानना चाहिए । CLO-201-2 द्वितीय घटक में नीतिशतक के 51-100 श्लोकों को शामिल किया गया है । न्याय एवं नीति बोध जीवन को सरल बना देता है। भर्तृहरि ने मनुष्यों को शिक्षा देने का प्रयास किया है कि हमारा सामाजिक व्यवहार कैसे हो । यह सभी छात्रों को जानना चाहिए । CLO-201-3 संस्कृत धातु रूपों के ज्ञान के अभाव में भाषा को नही समझा जा सकता । धातु प्रत्ययों का बोध इस घटक में दिया गया है। संस्कृत में धातुओं की संख्या दो हजार के आसपास है। अत: इनका बोध भाषा को सरल रूप में समझने में सहायक है।

	CLO-201-4 संस्कृत भाषा में साहित्य को लिखने की तीन विधियां है, पद्य, गद्य तथा दोनों का मिला हुआ स्वरूप । पद्यों में रचना के लिए छन्दों का ज्ञान आवश्यक है । कविता छंद के बिना नहीं हो सकती। अत: छात्रों को आरम्भि छंदो का ज्ञान इस घटक में दिया जाता है । छात्रों की रुचि कविता में हो ऐसा छंदों के ज्ञान से संभव है ।		
Credits 4	Theory + Tutorial	Practical	Total
	3+1	----------	4
Contact Hours	60	----------	60
Max. Marks: 100 **Internal Assessment Marks: 30** **End Term Exam Marks: 70**		**Time: 3 Hrs.**	

Part B- Contents of the Course

Instructions for Paper- Setter

प्रश्नपत्र-निर्माण के लिये निर्देश:-

1. प्रश्नपत्र में कुल पाँच (5) प्रश्न दिये जाएँ। प्रश्नपत्र के लिये कुल 70 अङ्क निर्धारित हैं। सभी प्रश्न समानाङ्क होंगे अर्थात् प्रत्येक प्रश्न चौदह (14) अङ्कों का होगा। प्रश्न-पत्र हल करने का समय तीन (3) घण्टे होगा।
2. **प्रथम प्रश्न** पाठ्यक्रम के चारों घटकों में निर्धारित विषयों के आधार पर बनाया जाए। यह प्रश्न अनिवार्य होगा। इसके अन्तर्गत लघु उत्तर वाले विकल्परहित चार (4) प्रश्न पूछे जाएँ। प्रत्येक लघूत्तरात्मक प्रश्न साढे तीन (3.5) अङ्कों का होगा।
3. द्वितीय, तृतीय, चतुर्थ तथा पञ्चम प्रश्न का निर्माण पाठ्यक्रम के क्रमश: प्रथम, द्वितीय, तृतीय तथा चतुर्थ घटक में निर्धारित विषय के आधार पर किया जाए। पाठ्यक्रम के प्रत्येक घटक से दो वैकल्पिक प्रश्न देकर परीक्षार्थी से प्रत्येक घटक से एक एक प्रश्न का उत्तर लिखने को कहा जाए।

Unit	Topics	Contact Hours
I	श्रीमद्भगवद्गीता, द्वितीय अध्याय 14 अंक (क) दो श्लोकों का सरलार्थ। (2×5=10 अंक) (ख) एक आलोचनात्मक प्रश्न। (4 अंक)	15
II	चरकसंहिता स्वस्थवृत्तम् सूत्रस्थान 5/71–104, 7/26–35 8/17–29 14 अंक (क) दो पंक्तियों की व्याख्या- (2×5=10 अंक) (ख) एक निबन्धात्मक प्रश्न (4 अंक)	15

III	संस्कृत व्याकरण : 14 अंक (क) शब्द रूप : मति, नदी, धेनु, मातृ, फल, युष्मद्, सर्व, एतद्, द्वि, त्रि। ('सर्व' से लेकर 'त्रि' तक तीनों लिङ्गों में)। (07 अंक) (ख)धातु रूप : पठ्, नश्, नृत्, प्रच्छ्, रुच्, हृ, भज्, पच्, लभ् सेव्। (केवल लट्, लोट्, लङ्, विधिलिङ्, लृट् लकारों में) (07 अंक)	15
IV	(क) छन्द: -अनुष्टुप्, आर्या, इन्द्रवज्रा, उपेन्द्रवज्रा, वंशस्थ, शिखरिणी, मन्दाक्रान्ता, वसन्ततिलका, शार्दूलविक्रीडित। 07 अंक (ख) हिन्दी से संस्कृत में अनुवाद। 07अंक	15

Suggested Evaluation Methods

Internal Assessment: 30 Marks ➢ **Theory** • Class Participation: 5 Marks • Seminar/presentation/assignment/quiz/class test etc.: 5+5=10 Marks • Mid-Term Exam: 15 Marks	**End Term Examination:** 70 Marks

Part C-Learning Resources

Recommended Books/e-resources/LMS:

1 श्रीमद्भगवद्गीता , गीताप्रेस गोरखपुर
2 चरक संहिता, व्याख्याकार : आचार्य विद्याधर शुक्ल, चौखम्बा संस्कृत प्रतिष्ठान, दिल्ली
3 रचनानुवादकौमुदी – कपिलदेव द्विवेदी, विश्वविद्यालय प्रकाशन वाराणसी ।

Session: 2023-24	
Part A - Introduction	
Subject	Sanskrit
Semester	2nd
Name of the Course	Bachelor of Arts
Course Code	B23-SKT-202, किरातार्जुनीयं नीतिशतकं च
Course Type: (CC/MCC/MDC/CC-M/DSEC/VOC/DSE/PC/AEC/VAC)	DSEC-1
Level of the course (As per Annexure-I	100-199
Pre-requisite for the course (if any)	----------
Course Learning Outcomes(CLO):	After completing this course, the learner will be able to: CLO-202-I महाकाव्य परम्परा में किरातार्जुनीयम् का उत्कृष्ट स्थान है। महाकवि भारवि द्वारा रचित महाकाव्य में राजनीति, कूटनीति, समाजनीति तथा युद्धनीति का विशिष्ट वर्णन है। यह काव्य अर्थ गौरव के लिए प्रसिद्ध है। आदर्श और व्यवहार के द्वंद्व तथा आदर्श जीवन मूल्यों का समावेश इसमें निहित है। CLO-202-II महाकवि भारवि का परिचय तथा महाकाव्य की शैली, गुण आदि काअध्ययन इसका उद्देश्य है । CLO-202-III भर्तृहरि द्वारा रचित नीतिशतक में लेखक ने न्याय तथा नीति सम्बन्धि श्लोक प्रस्तुत किए हैं जो छात्रों के लिए व्यावहारिक महत्त्व रखते हैं । CLO-202-IV कवि-परिचय एवं भाषा-शैली का आलोचनात्मक अध्ययन छात्रों की प्रतिभा का विकास करता है ।

Credits 4	Theory + Tutorial	Practical	Total
	3+1	----------	4
Contact Hours	60	----------	60
Max. Marks: 100 **Internal Assessment Marks: 30** **End Term Exam Marks: 70**		**Time: 3 Hrs.**	

Part B- Contents of the Course

Instructions for Paper- Setter

प्रश्नपत्र-निर्माण के लिये निर्देशः-

1. प्रश्नपत्र में कुल पाँच (5) प्रश्न दिये जाएँ। प्रश्नपत्र के लिये कुल 70 अङ्क निर्धारित हैं। सभी प्रश्न समानाङ्क होंगे अर्थात् प्रत्येक प्रश्न चौदह (14) अङ्कों का होगा। प्रश्न-पत्र हल करने का समय तीन (3) घण्टे होगा।
2. **प्रथम प्रश्न** पाठ्यक्रम के चारों घटकों में निर्धारित विषयों के आधार पर बनाया जाए। यह प्रश्न अनिवार्य होगा। इसके अन्तर्गत लघु उत्तर वाले विकल्परहित चार (4) प्रश्न पूछे जाएँ। प्रत्येक लघूत्तरात्मक प्रश्न साढे तीन (3.5) अङ्कों का होगा।
3. द्वितीय, तृतीय, चतुर्थ तथा पञ्चम प्रश्न का निर्माण पाठ्यक्रम के क्रमशः प्रथम, द्वितीय, तृतीय तथा चतुर्थ घटक में निर्धारित विषय के आधार पर किया जाए। पाठ्यक्रम के प्रत्येक घटक से दो वैकल्पिक प्रश्न देकर परीक्षार्थी से प्रत्येक घटक से एक एक प्रश्न का उत्तर लिखने को कहा जाए।

Unit	Topics	Contact Hours
I	किरातार्जुनीयम्, प्रथमः सर्गः 14 अंक (क) द्वयोः श्लोकयोः व्याख्या। (2x5=10 अंक) (ख) सूक्ति-व्याख्या। (4 अंक)	15
II	किरातार्जुनीयसम्बद्धं कविं किरातार्जुनीयं वा आश्रित्य एकः आलोचनात्मकःप्रश्नः 14 अंक	15
III	नीतिशतकम् (51 100) 14 अंक (क) द्वयोः श्लोकयोः व्याख्या। (2x5=10 अंक) (ख) सूक्ति-व्याख्या। (4 अंक)	15
IV	नीतिशतकसम्बद्धं कविं नीतिशतकं वा आश्रित्य एकः आलोचनात्मकः प्रश्नः। 14 अंक	15

Suggested Evaluation Methods	
Internal Assessment: 30 Marks ➢ **Theory** • Class Participation: 5 Marks • Seminar/presentation/assignment/quiz/class test etc.: 5+5=10 Marks • Mid-Term Exam: 15 Marks	**End Term Examination:** 70 Marks

Part C-Learning Resources

Recommended Books/e-resources/LMS:

1 किरातार्जुनीयम् – भारवि विरचितम्, व्याख्याकार – बाबूराम पाण्डेय, चौखम्बा सुरभारती प्रकाशन वाराणसी

2 किरातार्जुनीयम् – व्याख्याकार डा० शैली अग्रवाल, 17–A , प्रभुनगर के पास , आगरा (U.P)

3 नीतिशतकम् – भर्तृहरि विरचितम्, चौखम्बा सुरभारती , वाराणसी

Session: 2023-24	
Part A - Introduction	
Subject	Sanskrit
Semester	2nd
Name of the Course	Bachelor of Arts
Course Code	B23-SKT-203, योगासनम् एवं ध्यानम्
Course Type: (CC/MCC/MDC/CC-M/DSEC/VOC/DSE/PC/AEC/VAC)	MDC-2
Level of the course (As per Annexure-I	0-99
Pre-requisite for the course (if any)	----------
Course Learning Outcomes(CLO):	After completing this course, the learner will be able to: CLO. 204. I : वर्तमान जीवन में योगासन के महत्त्व को देखते हुए इस घटक में सर्वजन के लिये योगासन की उपयोगिता बताई गई है। स्वस्थ जीवन के लिये योगासन महत्त्वपूर्ण है। CLO. 204. 2 : योग के आठ अंगों के अन्तर्गत प्राणायाम एवं धारणा को बोध इस घटक के अन्तर्गत कराया जायेगा । CLO. 204. 3 : इस घटक के अन्तर्गत शरीर के विभिन्न स्थानों पर निर्दिष्ट चक्रों का परिचय एवं ध्यान की विधि तथा स्वरूप से छात्रों को अवगत कराया जायेगा । CLO. 204. 4 : मानव के व्यक्तित्व विकास में पंचकोशों का विशेष महत्त्व है । इस घटक के अन्तर्गत पंचकोशों के स्वरूप एवं उनके विकास की प्रक्रिया से अवगत कराया जायेगा ।

Credits 3	Theory + Tutorial	Practical	Total
	2+1	----------	3
Contact Hours	45	----------	45
Max. Marks: 75 **Internal Assessment Marks: 25** **End Term Exam Marks:** 50		**Time: 3 Hrs.**	

Part B- Contents of the Course

Instructions for Paper- Setter

प्रश्नपत्र-निर्माण के लिये निर्देशः-

1. प्रश्नपत्र में कुल पाँच (5) प्रश्न दिये जाएँ। प्रश्नपत्र के लिये कुल 50 अङ्क निर्धारित हैं। सभी प्रश्न समानाङ्क होंगे अर्थात् प्रत्येक प्रश्न दस (10) अङ्कों का होगा। प्रश्न-पत्र हल करने का समय तीन (3) घण्टे होगा।
2. **प्रथम प्रश्न** पाठ्यक्रम के चारों घटकों में निर्धारित विषयों के आधार पर बनाया जाए। यह प्रश्न अनिवार्य होगा। इसके अन्तर्गत लघु उत्तर वाले विकल्परहित चार (4) प्रश्न पूछे जाएँ। प्रत्येक लघूत्तरात्मक प्रश्न साढे दो (2.5) अङ्कों का होगा।
3. द्वितीय, तृतीय, चतुर्थ तथा पञ्चम प्रश्न का निर्माण पाठ्यक्रम के क्रमशः प्रथम, द्वितीय, तृतीय तथा चतुर्थ घटक में निर्धारित विषय के आधार पर किया जाए। पाठ्यक्रम के प्रत्येक घटक से दो वैकल्पिक प्रश्न देकर परीक्षार्थी से प्रत्येक घटक से एक एक प्रश्न का उत्तर लिखने को कहा जाए।

Unit	Topics	Contact Hours
I	योगाासन : पद्मासन, ताड़ासन, धनुरासन, गोमुखासन, कूर्मासन, मत्स्येन्द्रासन, मयूरासन, शवासन योगासनों का महत्त्व 7 अंक	11
II	प्राणायाम एवं धाारणा 7 अंक	11
III	चक्र एवं ध्यान 7 अंक	11
IV	पंचकोश 7 अंक	12

Suggested Evaluation Methods

Internal Assessment: 25 Marks ➢ **Theory** • Class Participation: 5 Marks • Seminar/presentation/assignment/quiz/class test etc.: 7 Marks • Mid-Term Exam: 13 Marks	**End Term Examination:** 50 Marks

Part C-Learning Resources

Recommended Books/e-resources/LMS:

1 हठयोगप्रदीपिका, व्याख्याकार अजय कुमार उत्तम, भारतीय विद्या संस्थान, वाराणसी
2 जाबालदर्शनोपनिषद, संपादक श्रीराम शर्मा, युगनिर्माण योजना प्रैस, मथुरा
3 तैत्तिरीयोपनिषद, (द्वितीय वल्ली) शांकरभाष्य गीताप्रेस, गोरखपुर
4 योगासन और योगसाधना, डा० सत्यपाल, चौखम्भा संस्कृत संस्थान, वाराणसी

Session: 2023-24	
Part A - Introduction	
Subject	Sanskrit
Semester	2nd
Name of the Course	Bachelor of Arts
Course Code	B23-SKT-204, संस्कृत चयनिका
Course Type: (CC/MCC/MDC/CC-M/DSEC/VOC/DSE/PC/AEC/VAC)	CC-M2
Level of the course (As per Annexure-I	0-99
Pre-requisite for the course (if any)	----------
Course Learning Outcomes(CLO):	After completing this course, the learner will be able to: CLO. 203. I : संस्कृत चयनिका के अन्तर्गत विभिन्न ग्रन्थों से पाठ ग्रहण कर छात्रों को उपनिषद्, रामायण, नीति एवं आचार से सम्बन्धित विषयों का बोध करवाया जाता है। CLO. 203. 2 : संस्कृत चयनिका के गद्यभाग के रूप में उपनिषद्, नीतिसाहित्य एवं रामायण के कुछ भागों को संकलित कर छात्रों को विद्यार्थी जीवन से सम्बन्धित अनेक विषयों का ज्ञान करवाया जाता है। CLO. 203. 3 : इस घटक में संस्कृत शब्दरूपों और धातुरूपों का बोध करवाया जाता है। CLO. 203. 4 : इस घटक में स्वर सन्धि और श्लोकों का शुद्ध लेखन सिखाया जाता है।

Credits 2	Theory + Tutorial	Practical	Total
	2	----------	2
Contact Hours	30	----------	30

Max. Marks: 50 **Internal Assessment Marks: 15** **End Term Exam Marks:** 35	**Time: 2 Hrs.**

Part B- Contents of the Course

Instructions for Paper- Setter

प्रश्नपत्र-निर्माण के लिये निर्देशः-

1. प्रश्न-पत्र अधिकतम **35** अङ्कों का होगा। **15** अङ्क आन्तरिक मूल्यांकन के लिये निर्धारित हैं।
2. प्रश्न-पत्र में कुल **पाँच** प्रश्न दिये जाएँगे। प्रत्येक प्रश्न **7** अङ्कों का होगा। **प्रथम प्रश्न** पाठ्यक्रम में निर्धारित चारों घटकों पर आधारित तथा अनिवार्य होगा। इसके अन्तर्गत लघु उत्तर वाले विकल्परहित सात (7) प्रश्न पूछे जाएँगे। प्रत्येक लघूत्तरात्मक प्रश्न एक (1) अङ्क का होगा। शेष चार प्रश्नों में पाठ्यक्रम के प्रत्येक घटक से दो वैकल्पिक प्रश्न दिये जाएँगे। परीक्षार्थी को इनमें से प्रत्येक घटक के एक एक प्रश्न का उत्तर लिखना होगा।
3. प्रश्न-पत्र हल करने का समय दो (2) घण्टे होगा।

Unit	Topics	Contact Hours
I	संस्कृत–चयनिका (कुरुक्षेत्र विश्वविद्यालय प्रकाशन): 7अङ्क पद्यभाग : 1–6 पाठ	7
II	संस्कृत–चयनिका : गद्यभाग : 1–9 पाठ। 7अङ्क	8
III	संस्कृत–व्याकरण : 7अङ्क (क) शब्द–रूप : बालक, कवि, साधु, पितृ, मातृ, फल, विद्वस्, शशिन्। (ख) धातु–रूप : भू, वद्, स्था, लभ्, दा (यच्छ्), प्रच्छ्। (केवल लट्, लोट्, लङ्, विधिलिङ्, लृट् लकारों में)	7
IV	(क) स्वरसन्धि। (ख) श्रीमद्भगवद्गीता से कण्ठस्थ **चार** श्लोकों का शुद्ध लेखन (प्रश्नपत्र में पूछे गए श्लोकों से भिन्न)। 7अङ्क	8

Suggested Evaluation Methods	
Internal Assessment: 15 Marks ➢ **Theory** • Class Participation: 4 Marks • Seminar/presentation/assignment/quiz/class test etc.: 4 Marks • Mid-Term Exam: 7 Marks	**End Term Examination:** 35 Marks

Part C-Learning Resources

Recommended Books/e-resources/LMS:

1 बृहदानुवादचन्द्रिका, चक्रधर हंस नौटियाल, मोतीलाल बनारसीदास, दिल्ली

2 प्रारम्भिकरचनानुवादकौमदी- डा॰ कपिलदेव द्विवेदी, विश्वविद्यालय प्रकाशन, वाराणसी

Session: 2023-24	
Part A - Introduction	
Subject	Sanskrit
Semester	3rd
Name of the Course	Bachelor of Arts
Course Code	B23-SKT-301, ऐतिहासिक–महाकाव्यम् एवं व्याकरणम्
Course Type: (CC/MCC/MDC/CC-M/DSEC/VOC/DSE/PC/AEC/VAC)	CC-4 MCC-4
Level of the course (As per Annexure-I	200-299
Pre-requisite for the course (if any)	----------
Course Learning Outcomes(CLO):	After completing this course, the learner will be able to: CLO. 301. 1 : महाभारत विश्व प्रसिद्ध महाकाव्य है। इसे पञ्चम वेद की संज्ञा दी गई है। महाभारत के वनपर्व में यक्षयुधिष्ठिर संवाद के माध्यम से धर्म-अधर्म, नीति-अनीति इत्यादि का प्रश्नोत्तर के माध्यम से छात्रों को न्याय, नीति सम्बन्धी शिक्षा दी जाती है। CLO. 301. 2 : रामायण लौकिक साहित्य का महत्त्वपूर्ण ग्रन्थ है। रामायण भारतीय परम्पराका जीवन्त ग्रन्थ है। इस घटक में राम के गुण, कार्य और उसके राष्ट्रप्रेम से छात्रों को अवगत करवाया जाता है। व्याकरण के बिना भाषा अधूरी है। संस्कृत व्याकरण का आदि ग्रंथ अष्टाध्यायी है जो वैज्ञानिक आधार रखता है। CLO. 301. 3 : प्रस्तुत घटक में समासों के माध्यम से छात्रों को भाषा का संक्षेपीकरण एवं सरल बोध करवाया जाता है।

	CLO. 301. 4 : व्याकरण के आरम्भ में महेश्वर सूत्र है जो संस्कृत भाषा की वैज्ञानिक वर्णमाला कहलाती है। इसमें सभी वर्णों का समावेश भाषा वैज्ञानिक आाार पर किया गया है। इससे छात्रों को वर्णमाला एवं उच्चारण बोध में महत्त्वपूर्ण सहायता मिलती है। पत्र लेखन के माध्यम से छात्र संस्कृत भाषा में पत्र व्यवहार सीखते हैं।		
Credits 4	Theory + Tutorial	Practical	Total
	3+1	----------	4
Contact Hours	60	----------	60
Max. Marks: 100 **Internal Assessment Marks: 30** **End Term Exam Marks: 70**		**Time: 3 Hrs.**	

Part B- Contents of the Course

Instructions for Paper- Setter

प्रश्नपत्र-निर्माण के लिये निर्देशः-

1. प्रश्नपत्र में कुल पाँच (5) प्रश्न दिये जाएँ। प्रश्नपत्र के लिये कुल 70 अङ्क निर्धारित हैं। सभी प्रश्न समानाङ्क होंगे अर्थात् प्रत्येक प्रश्न चौदह (14) अङ्कों का होगा। प्रश्न-पत्र हल करने का समय तीन (3) घण्टे होगा।
2. **प्रथम प्रश्न** पाठ्यक्रम के चारों घटकों में निर्धारित विषयों के आधार पर बनाया जाए। यह प्रश्न अनिवार्य होगा। इसके अन्तर्गत लघु उत्तर वाले विकल्परहित चार (4) प्रश्न पूछे जाएँ। प्रत्येक लघूत्तरात्मक प्रश्न साढे तीन (3.5) अङ्कों का होगा।
3. द्वितीय, तृतीय, चतुर्थ तथा पञ्चम प्रश्न का निर्माण पाठ्यक्रम के क्रमशः प्रथम, द्वितीय, तृतीय तथा चतुर्थ घटक में निर्धारित विषय के आधार पर किया जाए। पाठ्यक्रम के प्रत्येक घटक से दो वैकल्पिक प्रश्न देकर परीक्षार्थी से प्रत्येक घटक से एक एक प्रश्न का उत्तर लिखने को कहा जाए।

Unit	Topics	Contact Hours
I	महाभारत: यक्षयुधिष्ठिर संवाद -(यथावत्) 14अङ्काः (क) सप्रसंग व्याख्या -(7 अङ्क) (ख) एक आलोचनात्मक प्रश्न- (7 अङ्क)	15
II	रामायण: अयोध्या काण्ड, शततम: सर्ग: (कच्चिद् सर्ग:) 14अङ्काः (क) दो श्लोकों का सरलार्थ - (7अङ्क) (ख) विषयवस्तु सम्बनिधत प्रश्न- (7अङ्क)	15

III	संस्कृत व्याकरण : 14अङ्काः (क) समास- अव्ययीभाव, तत्पुरुष, द्वन्द्व तथा बहुव्रीहि। (7अङ्क) (ख) कृत् प्रत्यय- क्त्वा, तुमुन्, ण्यत्, यत्, क्त, क्तवतु, शतृ, शानच्, तव्य, अनीयर्। (7अङ्क)	15
IV	वरदराज,लघुसिद्धान्तकौमुदी 14अङ्काः (क) प्रत्याहारसूत्र (माहेश्वरसूत्र) 7अङ्क (ख) संख्यावाची संस्कृत शब्द (1 100)7अङ्क	15

Suggested Evaluation Methods

Internal Assessment: 30 Marks ➢ **Theory** • Class Participation: 5 Marks • Seminar/presentation/assignment/quiz/class test etc.: 5+5=10 Marks • Mid-Term Exam: 15 Marks	**End Term Examination:** 70 Marks

Part C-Learning Resources

Recommended Books/e-resources/LMS:

1. रामायण, गीता प्रेस, गोरखपुर
2. महाभारत पुणे संस्करण (भण्डारकर ओरियेन्टल रिसर्च इन्सटीट्यूट), लघुसिद्धांत कौमुदी MLBD, Delhi
3. प्रौढरचनानुवाद कौमुदी, कपिलदेव द्विवेदी

Session: 2023-24	
Part A - Introduction	
Subject	Sanskrit
Semester	3rd
Name of the Course	Bachelor of Arts
Course Code	B23-SKT-302, स्वप्नवासवदत्तम्
Course Type: (CC/MCC/MDC/CC-M/DSEC/VOC/DSE/PC/AEC/VAC)	MCC-5
Level of the course (As per Annexure-I	200-299
Pre-requisite for the course (if any)	----------
Course Learning Outcomes(CLO):	After completing this course, the learner will be able to: **CLO.302.1 :** स्वप्नवासवदतम् भास द्वारा रचित नाटक है। इस रचना के द्वारा भास ने राष्ट्र-प्रेम एवं नारी भावनाओं का विशद वर्णन प्रस्तुत किया है । ऐतिहासिकता के साथ-साथ राजनीति व कूटनीति का ज्ञान इससे प्राप्त होता है। **CLO.302.2 :** कवि परिचय के साथ-साथ इस घटक में नाट्य विधा का बोध प्राप्त होता है। नाट्य गुणदोषों का परिचय छात्रों को इससे प्राप्त होता है । **CLO.302.3 :** स्वप्नवासवदतम् में आये हुए पात्रों के चरित्र-चित्रण से छात्रों की आलोचनात्मक प्रतिभा एवं लेखन शैली का विकास होता है । **CLO.302.4 :** नाट्य विधा को समझने के लिए नाटक में कुछ पारिभाषिक शब्दावली होती है । जिन शब्दों का प्रयोग नाटक में ही किया जाता है । अत: छात्रों को नाट्य शैली में प्रयुक्त शब्दों का बोध करना इसका उद्देश्य है ।

Credits 4	Theory + Tutorial	Practical	Total
	3+1	----------	4
Contact Hours	60	----------	60
Max. Marks: 100 **Internal Assessment Marks: 30** **End Term Exam Marks: 70**		**Time: 3 Hrs.**	

Part B- Contents of the Course

Instructions for Paper- Setter

प्रश्नपत्र-निर्माण के लिये निर्देशः-

4. प्रश्नपत्र में कुल पाँच (5) प्रश्न दिये जाएँ। प्रश्नपत्र के लिये कुल 70 अङ्क निर्धारित हैं। सभी प्रश्न समानाङ्क होंगे अर्थात् प्रत्येक प्रश्न चौदह (14) अङ्कों का होगा। प्रश्न-पत्र हल करने का समय तीन (3) घण्टे होगा।
5. **प्रथम प्रश्न** पाठ्यक्रम के चारों घटकों में निर्धारित विषयों के आधार पर बनाया जाए। यह प्रश्न अनिवार्य होगा। इसके अन्तर्गत लघु उत्तर वाले विकल्परहित चार (4) प्रश्न पूछे जाएँ। प्रत्येक लघूत्तरात्मक प्रश्न साढे तीन (3.5) अङ्कों का होगा।
6. द्वितीय, तृतीय, चतुर्थ तथा पञ्चम प्रश्न का निर्माण पाठ्यक्रम के क्रमशः प्रथम, द्वितीय, तृतीय तथा चतुर्थ घटक में निर्धारित विषय के आधार पर किया जाए। पाठ्यक्रम के प्रत्येक घटक से दो वैकल्पिक प्रश्न देकर परीक्षार्थी से प्रत्येक घटक से एक एक प्रश्न का उत्तर लिखने को कहा जाए।

Unit	Topics	Contact Hours
I	भासः, स्वप्नवासवदत्तम् 14अङ्काः (क) सप्रसंगं व्याख्या/अनुवादः। (10 अङ्काः) (ख) अंकसारः। (4 अङ्काः)	15
II	स्वप्नवासवदत्तसम्बद्धं लेखकं स्वप्नवासवदत्तं वा आश्रित्य एकः आलोचनात्मकः प्रश्नः। 14अङ्काः	15
III	स्वप्नवासवदत्तम् पात्राणां चरित्रचित्रणम्। 14अङ्काः	15
IV	स्वप्नवासवदत्ते प्रयुक्ताः पारिभाषिकशब्दाः 14अङ्काः सूत्रधारः, नान्दीपाठः, विदूषकः, प्रस्तावना, विष्कम्भकम्, आधिकारिकवृत्तम्, प्रासङ्गिकवृत्तम्।	15

Suggested Evaluation Methods	
Internal Assessment: 30 Marks ➢ **Theory** • Class Participation: 5 Marks • Seminar/presentation/assignment/quiz/class test etc.: 5+5=10 Marks • Mid-Term Exam: 15 Marks	**End Term Examination:** 70 Marks
Part C-Learning Resources **Recommended Books/e-resources/LMS:** स्वप्नवासवदत्तम्–भास विरचित्तम्, डा० गंगासागर राय, चौखम्बा संस्कृत संस्थान वाराणसी	

Session: 2023-24	
Part A - Introduction	
Subject	Sanskrit
Semester	3rd
Name of the Course	Bachelor of Arts
Course Code	B23-SKT-303, यज्ञ–प्रक्रियायाः वैज्ञानिकाधारः एवं वर्णोच्चारणम्
Course Type: (CC/MCC/MDC/CC-M/DSEC/VOC/DSE/PC/AEC/VAC)	MDC-3
Level of the course (As per Annexure-I	0-99
Pre-requisite for the course (if any)	----------
Course Learning Outcomes(CLO):	After completing this course, the learner will be able to: CLO. 303. I : 'यज्ञ' शब्द का व्युत्पत्तिजन्य अर्थ बताकर, यज्ञ के लाभ एवं उपयोगिता बताई जाएगी। CLO. 303. 2 : यज्ञ साम्रगी के वैज्ञानिक गुण बताकर प्राकृतिक लाभ बताए जाएगें। यज्ञ को पर्यावरण प्रदूषण से मुक्ति का द्वार बताया गया है । CLO. 303. 3 : ईश्वरस्तुति प्रार्थनोपासना मन्त्रों के द्वारा आदर्श भारतीय जीवन पद्धति का वर्णन किया गया है । वैदिक ज्ञान के सान्निध्य से ही वास्तविक सुख एवं आनन्द की प्राप्ति संभव है । CLO. 303. 4 : वर्णोच्चारण शिक्षा के माध्यम से छात्रों को उच्चारण स्थान एवं प्रयत्न से अवगत कराया जाएगा ।

Credits 3	Theory + Tutorial	Practical	Total
	2+1	----------	3
Contact Hours	45	----------	45
Max. Marks: 75 **Internal Assessment Marks: 25** **End Term Exam Marks:** 50		**Time: 3 Hrs.**	

Part B- Contents of the Course

Instructions for Paper- Setter

प्रश्नपत्र-निर्माण के लिये निर्देशः-

1. प्रश्नपत्र में कुल पाँच (5) प्रश्न दिये जाएँ। प्रश्नपत्र के लिये कुल 50 अङ्क निर्धारित हैं। सभी प्रश्न समानाङ्क होंगे अर्थात् प्रत्येक प्रश्न दस (10) अङ्कों का होगा। प्रश्न-पत्र हल करने का समय तीन (3) घण्टे होगा।
2. **प्रथम प्रश्न** पाठ्यक्रम के चारों घटकों में निर्धारित विषयों के आधार पर बनाया जाए। यह प्रश्न अनिवार्य होगा। इसके अन्तर्गत लघु उत्तर वाले विकल्परहित चार (4) प्रश्न पूछे जाएँ। प्रत्येक लघूत्तरात्मक प्रश्न साढे दो (2.5) अङ्कों का होगा।
3. द्वितीय, तृतीय, चतुर्थ तथा पञ्चम प्रश्न का निर्माण पाठ्यक्रम के क्रमशः प्रथम, द्वितीय, तृतीय तथा चतुर्थ घटक में निर्धारित विषय के आधार पर किया जाए। पाठ्यक्रम के प्रत्येक घटक से दो वैकल्पिक प्रश्न देकर परीक्षार्थी से प्रत्येक घटक से एक एक प्रश्न का उत्तर लिखने को कहा जाए।

Unit	Topics	Contact Hours
I	यज्ञ की व्युत्पत्ति, अर्थ, परिभाषा । यज्ञ के लाभ, यज्ञ-कुण्ड, यज्ञशाला, यज्ञपात्र एवं उपयोगिता । 10अङ्काः	11
II	यज्ञ सामग्री के वैज्ञानिक गुण तथा पर्यावरण प्रभाव। 10अङ्काः	11
III	वैदिक मन्त्रोचारण विधि-ईश्वरस्तुतिप्रार्थनोपासना मन्त्र। पर्यावरण शुद्धि, वायु गुणवत्ता में वृद्धि एवं नैरोग्य । 10अङ्काः	11
IV	वर्णोचारण-शिक्षा-उच्चारण स्थान एवं प्रयत्न का व्यवहारिक ज्ञान। 10अङ्काः	12

Suggested Evaluation Methods	
Internal Assessment: 25 Marks ➢ **Theory** • Class Participation: 5 Marks • Seminar/presentation/assignment/quiz/class test etc.: 7 Marks • Mid-Term Exam: 13 Marks	**End Term Examination:** 50 Marks

Part C-Learning Resources

Recommended Books/e-resources/LMS:

1 यज्ञ विमर्श - एक वैज्ञानिक अध्ययन, डॉ॰ रामप्रकाश, सत्यार्थ प्रकाशन न्यास कुरुक्षेत्र

2 वर्णोच्चारणशिक्षा - श्रीमद्दयानन्द व्याख्या सहिता, वैदिक यन्त्रालय अजमेर

Session: 2023-24	
Part A - Introduction	
Subject	Sanskrit
Semester	4th
Name of the Course	Bachelor of Arts
Course Code	B23-SKT-401, महाकाव्यम्, उपन्यासः एवं शब्दप्रक्रिया
Course Type: (CC/MCC/MDC/CC-M/DSEC/VOC/DSE/PC/AEC/VAC)	MCC-6
Level of the course (As per Annexure-I	200-299
Pre-requisite for the course (if any)	----------
Course Learning Outcomes(CLO):	After completing this course, the learner will be able to: CLO. 401. 1 : संस्कृत साहित्य में महाकाव्य काव्य का महत्त्वपूर्ण भाग है। महाकाव्य में इतिहास प्रसिद्ध व्यक्ति के चरित्र पर प्रकाश डाला जाता है। कालिदास रचित रघुवंश महाकाव्य इतिहास प्रसिद्ध है। इसमें अनेक राजाओं के जीवन चरित पर प्रकाश डाला गया है एवं वर्तमान समय की भौगोलिक राजनीति, सामाजिक, आर्थिक बिन्दुओं पर प्रकाश डाला जाता है जिससे छात्रों में समझ उत्पन्न होती है। CLO. 401. 2 : आधुनिक भारत के इतिहास के साथ-साथ प्राचीन भारत का इतिहास भी अबिकादत्त व्यास के उपन्यास में देखने को मिलता है। वर्तमान भारत की दुर्दशा तथा प्राचीन भारत को समृद्ध परम्परा के माध्यम से छात्रों को देशभक्ति एवं प्राचीन भूतों से सीख लेने को शिक्षा इसमें मिलती है। CLO. 401. 3 : व्याकरण भाषा को जानने एवं समझने की एक वैज्ञानिक व्यवस्था है। व्याकरण के बोध से भाषा को समझने एवं उसके प्रयोग को विधि समझने में छात्रों को सहायता मिलती है।

	CLO. 401. 4 : इस घटक में संज्ञाप्रकरण के माध्यम से व्याकरण में प्रयुक्त होने वाली संज्ञाओं को ज्ञान विद्यार्थियों को करवाया जाता है।		
Credits 4	Theory + Tutorial	Practical	Total
	3+1	----------	4
Contact Hours	60	----------	60
Max. Marks: 100 **Internal Assessment Marks: 30** **End Term Exam Marks: 70**		**Time: 3 Hrs.**	

Part B- Contents of the Course

Instructions for Paper- Setter

प्रश्नपत्र-निर्माण के लिये निर्देश:-

1. प्रश्नपत्र में कुल पाँच (5) प्रश्न दिये जाएँ। प्रश्नपत्र के लिये कुल 70 अङ्क निर्धारित हैं। सभी प्रश्न समानाङ्क होंगे अर्थात् प्रत्येक प्रश्न चौदह (14) अङ्कों का होगा। प्रश्न-पत्र हल करने का समय तीन (3) घण्टे होगा।
2. **प्रथम प्रश्न** पाठ्यक्रम के चारों घटकों में निर्धारित विषयों के आधार पर बनाया जाए। यह प्रश्न अनिवार्य होगा। इसके अन्तर्गत लघु उत्तर वाले विकल्परहित चार (4) प्रश्न पूछे जाएँ। प्रत्येक लघूत्तरात्मक प्रश्न साढे तीन (3.5) अङ्कों का होगा।
3. द्वितीय, तृतीय, चतुर्थ तथा पञ्चम प्रश्न का निर्माण पाठ्यक्रम के क्रमश: प्रथम, द्वितीय, तृतीय तथा चतुर्थ घटक में निर्धारित विषय के आधार पर किया जाए। पाठ्यक्रम के प्रत्येक घटक से दो वैकल्पिक प्रश्न देकर परीक्षार्थी से प्रत्येक घटक से एक एक प्रश्न का उत्तर लिखने को कहा जाए।

Unit	Topics	Contact Hours
I	कालिदास, रघुवंश द्वितीय सर्ग। 14अङ्का: (क) दो श्लोकों की व्याख्या। (2×5=10अङ्क) (ख) एक आलोचनात्मक प्रश्न अथवा पाठ्यांश का सार। (4अङ्क)	15
II	अम्बिकादत्त व्यास, शिवराजविजय द्वितीय नि:श्वास 14अङ्का: (क) व्याख्या। (10अङ्क) (ख) एक आलोचनात्मक प्रश्न अथवा पाठ्यांश का सार। (4अङ्क)	15
III	**घटक-III :** संस्कृत व्याकरण : 14अङ्का: (क) वाच्य- कर्तृवाच्य, कर्मवाच्य तथा भाववाच्य। (5अङ्क) (ख) तद्धित प्रत्यय- मतुप्, इनि, ठन्, त्व, तल् तथा छ। (5अङ्क)	15

	(ग) णिजन्त तथा सन्नन्त धातु के सिद्ध रूप (केवल लट् लकार में)- भू, पठ्, गम्, पा, लिख्, श्रु, कृ, दा, स्था, हन्। (4अङ्क)	
IV	(क) वरदराज, लघुसिद्धान्तकौमुदी संज्ञाप्रकरण (सोदाहरण सूत्रव्याख्या)। 7अङ्क (ख) अनुवाद सरल हिन्दी से संस्कृत में अनुवाद। 7अङ्क	15
Suggested Evaluation Methods		
Internal Assessment: 30 Marks ➢ **Theory** • Class Participation: 5 Marks • Seminar/presentation/assignment/quiz/class test etc.: 5+5=10 Marks • Mid-Term Exam: 15 Marks		**End Term Examination:** 70 Marks

Part C-Learning Resources

Recommended Books/e-resources/LMS:

1 रघुवंश कालिदासकृत, व्याख्याकार हरगोविंद शास्त्री, चौखम्बा संस्कृत संस्थान वाराणसी

2 शिवराजविजय अम्बिरकादत्तव्यास, MLBD, Delhi

3 लघुसिद्धांत कौमुदी MLBD, Delhi

Session: 2023-24	
Part A - Introduction	
Subject	Sanskrit
Semester	4th
Name of the Course	Bachelor of Arts
Course Code	B23-SKT-402, आधुनिक–संस्कृतसाहित्यम्
Course Type: (CC/MCC/MDC/CC-M/DSEC/VOC/DSE/PC/AEC/VAC)	MCC-7
Level of the course (As per Annexure-I	200-299
Pre-requisite for the course (if any)	----------
Course Learning Outcomes(CLO):	After completing this course, the learner will be able to: CLO-402.1 इस घटक के अन्तर्गत प्रयुक्त स्वातन्त्र्यसंभवम् तथा भीमायनम् आधुनिक शैली के महाकाव्य और चरितकाव्य है जो स्वातन्त्र्योत्तर एवं वर्तमान समाजिक विषयों रा आधारित है। इनसे परिचित कराना इस घटक का उद्देश्य है । CLO-402.2 शतपर्विका वर्तमान सामाजिक कुरीति पर चोट करने वाली कथा है । शार्दूलशटकम् श्रमिकों की वर्तमान स्थिति एवं वास्तविकता को दर्शाने वाला नाटक है । दोनों ही आधुनिक शैली की रचनाएँ हैं । इनसे अवगत कराना इस घटक का ध्येय है । CLO-402.3 पारम्परिक काव्यरचना से इतर भी संस्कृत भाषा में अन्य विधाओं में भी काव्यसृजन हो रहा है । इस घटक के माध्यम से विद्यार्थियों को आधुनिक संस्कृत गीतिकाव्य एवं अन्य काव्य विधाओं से अवगत कराया जायेगा। CLO-402.4 इस घटक के माध्यम से विद्यार्थियों को आधुनिक संस्कृत कवियों तथा उनकी रचनाओं से अवगत कराया जायेगा । जैसे – पण्डिता क्षमाराव, सत्यव्रतशास्त्री आदि।

Credits 4	Theory + Tutorial	Practical	Total
	3+1	----------	4
Contact Hours	60	----------	60
Max. Marks: 100 **Internal Assessment Marks: 30** **End Term Exam Marks: 70**		**Time: 3 Hrs.**	

Part B- Contents of the Course

Instructions for Paper- Setter

प्रश्नपत्र-निर्माण के लिये निर्देशः-

1. प्रश्नपत्र में कुल पाँच (5) प्रश्न दिये जाएँ। प्रश्नपत्र के लिये कुल 70 अङ्क निर्धारित हैं। सभी प्रश्न समानाङ्क होंगे अर्थात् प्रत्येक प्रश्न चौदह (14) अङ्कों का होगा। प्रश्न-पत्र हल करने का समय तीन (3) घण्टे होगा।
2. **प्रथम प्रश्न** पाठ्यक्रम के चारों घटकों में निर्धारित विषयों के आधार पर बनाया जाए। यह प्रश्न अनिवार्य होगा। इसके अन्तर्गत लघु उत्तर वाले विकल्परहित चार (4) प्रश्न पूछे जाएँ। प्रत्येक लघूत्तरात्मक प्रश्न साढे तीन (3.5) अङ्कों का होगा।
3. द्वितीय, तृतीय, चतुर्थ तथा पञ्चम प्रश्न का निर्माण पाठ्यक्रम के क्रमशः प्रथम, द्वितीय, तृतीय तथा चतुर्थ घटक में निर्धारित विषय के आधार पर किया जाए। पाठ्यक्रम के प्रत्येक घटक से दो वैकल्पिक प्रश्न देकर परीक्षार्थी से प्रत्येक घटक से एक एक प्रश्न का उत्तर लिखने को कहा जाए।

Unit	Topics	Contact Hours
I	महाकाव्य एवं चरितकाव्य । 14अङ्काः (क) स्वतन्त्र्यसम्भवम् (रेवाप्रसाद द्विवेदी) द्वितीय सर्ग श्लोक(24-45) (7अङ्क) (ख)भीमायनम् (प्रभाशंकर जोशी) सर्ग 10, 20-29, सर्ग 11, 13-20 एवं 40-46 (7अङ्क)	15
II	गद्य एवं रुपक । 14अङ्काः (क) शतपर्विका (अभिराजराजेन्द्र मिश्र) । (7अङ्क) (ख)शार्दूलशटकम् (विरेन्द्रकुमार भट्टाचार्य) प्रथम अंक(26 श्लोक) (7अङ्क)	15
III	गीतिकाव्य 14अङ्काः (क) क एते, क्वयातास्ते (बच्चुलाल अवस्थी) (7अङ्क) (ख)ब्रूहिकोऽस्मिन् युगे कालिदासायते (पुष्पा दीक्षित) (4अङ्क)	15

	(ग)हायकु (हर्षदेवमाधव) वेदना, त्वम्, तृणम्, खनिः स्नानगृहे, मृत्युः (3अङ्क)	
IV	सामान्य सर्वेक्षण 14अङ्काः पण्डिता क्षमाराव, रैवाप्रसाद द्विवेदी, जानकीवल्लभ शास्त्री, सत्यव्रत शास्त्री, जयनारायण यात्री राधावल्लभ त्रिपाठी	15
Suggested Evaluation Methods		
Internal Assessment: 30 Marks ➢ **Theory** • Class Participation: 5 Marks • Seminar/presentation/assignment/quiz/class test etc.: 5+5=10 Marks • Mid-Term Exam: 15 Marks		**End Term Examination:** 70 Marks

Part C-Learning Resources

Recommended Books/e-resources/LMS:

1 आधुनिक संस्कृत साहित्य संग्रह- डा॰ राजमंगल यादव, परिमल पब्लीकेशन दिल्ली

2 आधुनिक संस्कृत साहित्य, मैत्रेयी कुमारी, ग्रन्थभारती प्रकाशन दिल्ली

Session: 2023-24	
Part A - Introduction	
Subject	Sanskrit
Semester	4th
Name of the Course	Bachelor of Arts
Course Code	B23-SKT-403, काव्यशास्त्रम्
Course Type: (CC/MCC/MDC/CC-M/DSEC/VOC/DSE/PC/AEC/VAC)	MCC-8
Level of the course (As per Annexure-I	200-299
Pre-requisite for the course (if any)	----------
Course Learning Outcomes(CLO):	After completing this course, the learner will be able to: Co.403.1 : प्रथम घटक में वर्णित रसों की अनुभूति व्यक्ति को कैसे होती है तथा करुण आदि रस के द्वारा अलौकिक आनन्द कैसे प्राप्त हो सकता है। यह बोध करवाना इस घटक का उद्देश्य है । Co.403.2 : इस घटक के माध्यम से संस्कृत काव्यों के नायकों के प्रकारों से छात्रों को अवगत कराया जायेगा । Co.403.3 : इस घटक में संस्कृत नाटक के स्वरुप का वर्णन है। नाटक के लक्षण से अवगत कराना इस घटक का उद्देश्य है। Co.403.4 : इस घटक में गद्य काव्य एवं महाकाव्यों के लक्षण विहित हैं, जिनका ज्ञान कराना इस घटक का उद्देश्य है ।

Credits 4	Theory + Tutorial	Practical	Total
	3+1	----------	4
Contact Hours	60	----------	60
Max. Marks: 100 **Internal Assessment Marks: 30** **End Term Exam Marks: 70**		**Time: 3 Hrs.**	

Part B- Contents of the Course

Instructions for Paper- Setter

प्रश्नपत्र-निर्माण के लिये निर्देशः-

1. प्रश्नपत्र में कुल पाँच (5) प्रश्न दिये जाएँ। प्रश्नपत्र के लिये कुल 70 अङ्क निर्धारित हैं। सभी प्रश्न समानाङ्क होंगे अर्थात् प्रत्येक प्रश्न चौदह (14) अङ्कों का होगा। प्रश्न-पत्र हल करने का समय तीन (3) घण्टे होगा।
2. **प्रथम प्रश्न** पाठ्यक्रम के चारों घटकों में निर्धारित विषयों के आधार पर बनाया जाए। यह प्रश्न अनिवार्य होगा। इसके अन्तर्गत लघु उत्तर वाले विकल्परहित चार (4) प्रश्न पूछे जाएँ। प्रत्येक लघूत्तरात्मक प्रश्न साढे तीन (3.5) अङ्कों का होगा।
3. द्वितीय, तृतीय, चतुर्थ तथा पञ्चम प्रश्न का निर्माण पाठ्यक्रम के क्रमशः प्रथम, द्वितीय, तृतीय तथा चतुर्थ घटक में निर्धारित विषय के आधार पर किया जाए। पाठ्यक्रम के प्रत्येक घटक से दो वैकल्पिक प्रश्न देकर परीक्षार्थी से प्रत्येक घटक से एक एक प्रश्न का उत्तर लिखने को कहा जाए।

Unit	Topics	Contact Hours
I	विश्वनाथः, साहित्यदर्पणम् तृतीयः परिच्छेदः, कारिकाः 1-20 14अङ्काः	15
II	साहित्यदर्पणम् तृतीयः परिच्छेदः, कारिकाः 30-55 14अङ्का	15
III	साहित्यदर्पणम् षष्ठः परिच्छेदः, कारिकाः 24-60 14अङ्का	15
IV	साहित्यदर्पणम् षष्ठः परिच्छेदः, कारिकाः 313-337 14अङ्का	15

Suggested Evaluation Methods	
Internal Assessment: 30 Marks ➢ **Theory** • Class Participation: 5 Marks • Seminar/presentation/assignment/quiz/class test etc.: 5+5=10 Marks • Mid-Term Exam: 15 Marks	**End Term Examination:** 70 Marks

Part C-Learning Resources

Recommended Books/e-resources/LMS:

1 साहित्यदर्पण:, व्याख्याकार, डा० सत्यव्रत सिंह, चौखम्भा विद्याभारती वाराणसी

2 साहित्यदर्पण, व्याख्याकार, पं० शालिग्राम शास्त्री, मोतीलाल बनारसीदास नई दिल्ली

Session: 2023-24	
Part A - Introduction	
Subject	Sanskrit
Semester	4th
Name of the Course	Bachelor of Arts
Course Code	B23-SKT-404, काव्यदीपिका वृत्तरत्नाकरः च
Course Type: (CC/MCC/MDC/CC-M/DSEC/VOC/DSE/PC/AEC/VAC)	DSE-1
Level of the course (As per Annexure-I	400-499
Pre-requisite for the course (if any)	----------
Course Learning Outcomes(CLO):	After completing this course, the learner will be able to: Co.404.1 : काव्य-शास्त्र का अध्ययन छात्रों को काव्य के अध्ययन व लेखन के प्रयोजनों से अवगत कराता है। साथ ही काव्य-रचना के शास्त्रीय तथ्यों का परिचय देता है । Co.404.2 काव्य की परिभाषा तथा काव्य कैसे बनता है। इन सब अंग से अवगत करवाकर काव्यगत शब्दों से बोध अर्थात् अर्थज्ञान किस प्रकार होता है। शब्द शक्तियों के माध्यम से काव्य के मर्म का बोध जब छात्र को हो जाता है तो काव्य के प्रति उसकी रुचि बढ़ती है। Co.404.3 काव्य का मुख्य उद्देश्य रस को प्राप्त करवाना होता है । काव्य में अनेक रस होते हैं । रसों का स्वरूप तथा स्थायी भावों का ज्ञान इस घटक से होता है ।

	Co.404.4 काव्य छन्दोबद्ध होता है अर्थात् काव्य की सर्वोत्तम कोटि वही है जिससे छन्दों का समावेश होता है । यदि काव्य में छंद दोष हो तो उसे उत्तम काव्य नहीं कहा जा सकता । इस घटक में छन्दों का परिचय दिया गया है ।		
Credits 4	Theory + Tutorial	Practical	Total
	3+1	----------	4
Contact Hours	60	----------	60
Max. Marks: 100 **Internal Assessment Marks: 30** **End Term Exam Marks: 70**		**Time: 3 Hrs.**	

Part B- Contents of the Course

Instructions for Paper- Setter

प्रश्नपत्र-निर्माण के लिये निर्देश:-

1. प्रश्नपत्र में कुल पाँच (5) प्रश्न दिये जाएँ। प्रश्नपत्र के लिये कुल 70 अङ्क निर्धारित हैं। सभी प्रश्न समानाङ्क होंगे अर्थात् प्रत्येक प्रश्न चौदह (14) अङ्कों का होगा। प्रश्न-पत्र हल करने का समय तीन (3) घण्टे होगा।
2. **प्रथम प्रश्न** पाठ्यक्रम के चारों घटकों में निर्धारित विषयों के आधार पर बनाया जाए। यह प्रश्न अनिवार्य होगा। इसके अन्तर्गत लघु उत्तर वाले विकल्परहित चार (4) प्रश्न पूछे जाएँ। प्रत्येक लघूत्तरात्मक प्रश्न साढे तीन (3.5) अङ्कों का होगा।
3. द्वितीय, तृतीय, चतुर्थ तथा पञ्चम प्रश्न का निर्माण पाठ्यक्रम के क्रमश: प्रथम, द्वितीय, तृतीय तथा चतुर्थ घटक में निर्धारित विषय के आधार पर किया जाए। पाठ्यक्रम के प्रत्येक घटक से दो वैकल्पिक प्रश्न देकर परीक्षार्थी से प्रत्येक घटक से एक एक प्रश्न का उत्तर लिखने को कहा जाए।

Unit	Topics	Contact Hours
I	काव्यदीपिका प्रथमशिखा। 14अङ्का:	15
II	काव्यदीपिका द्वितीयशिखा। 14अङ्का:	15
III	काव्यदीपिका तृतीयशिखा (श्लोकसंख्या 1 20): 14अङ्का: आलोचनात्मक: प्रश्न:।	15

IV	वृत्तरत्नाकरः अधोलिखितानि छन्दांसि 14अङ्काः आर्या, अनुष्टुप्, इन्द्रवज्रा, उपेन्द्रवज्रा, उपजातिः, वंशस्थम्, द्रुतविलम्बितम्, भुजंगप्रयातम्, वसन्ततिलका, मालिनी, पंचचामरम्, शिखरिणी, मन्दाक्रान्ता, शार्दूलविक्रीडितम्, स्रग्धरा, पुष्पिताग्रा।	15

Suggested Evaluation Methods

Internal Assessment: 30 Marks ➢ **Theory** • Class Participation: 5 Marks • Seminar/presentation/assignment/quiz/class test etc.: 5+5=10 Marks • Mid-Term Exam: 15 Marks	**End Term Examination:** 70 Marks

Part C-Learning Resources

Recommended Books/e-resources/LMS:

1 वृत्तरत्नाकरः, व्याख्याकार आचार्य बलदेव उपाध्याय, चौखम्बा सुरभारती प्रकाशन वाराणसी
2 काव्यदीपिका, श्री परमेश्वरानंद शर्मा साहित्याचार्य, मोतीलाल बनारसी दास, दिल्ली

Session: 2023-24	
Part A - Introduction	
Subject	Sanskrit
Semester	4th
Name of the Course	Bachelor of Arts
Course Code	B23-SKT-405, संस्कृत–साहित्ये राष्ट्रवादः
Course Type: (CC/MCC/MDC/CC-M/DSEC/VOC/DSE/PC/AEC/VAC)	DSE-1
Level of the course (As per Annexure-I	400-499
Pre-requisite for the course (if any)	----------
Course Learning Outcomes(CLO):	After completing this course, the learner will be able to: Co. 405. I : इस घटक में पृथ्वीसूक्त के माध्यम से छात्रों को मातृभूमि की विशेषताओं के बारे में ज्ञान करवाया जाता है ताकि छात्रों में राष्ट्रभावना जागृत होवे। Co. 405. 2 : इस घटक में भारतवर्ष का नाम कैसे पड़ा, इससे सम्बन्धित प्राचीन सन्दर्भों के साथ-साथ वर्तमान भारत के सन्दर्भ में भी जैसे- राष्ट्रीय गान, राष्ट्रीय गीत, राष्ट्रीय ध्वज आदि का ज्ञान प्राप्त करेंगे। Co. 405. 3 : भगतफूल सिंह चरितम् के प्रथम अध्याय से छात्रा उनके जीवन और उनके द्वारा किये गये कार्यों के बारे में जानेंगे। Co. 405. 4 : इस घटक में डॉ॰ रमाकान्त शुक्ल द्वारा रचित कविता से माध्यम से छात्र भारतवर्ष के विषय में जानेंगे।

Credits 4	Theory + Tutorial	Practical	Total
	3+1	----------	4
Contact Hours	60	----------	60
Max. Marks: 100 **Internal Assessment Marks: 30** **End Term Exam Marks: 70**		**Time: 3 Hrs.**	

Part B- Contents of the Course

Instructions for Paper- Setter

प्रश्नपत्र-निर्माण के लिये निर्देशः-

1. प्रश्नपत्र में कुल पाँच (5) प्रश्न दिये जाएँ। प्रश्नपत्र के लिये कुल 70 अङ्क निर्धारित हैं। सभी प्रश्न समानाङ्क होंगे अर्थात् प्रत्येक प्रश्न चौदह (14) अङ्कों का होगा। प्रश्न-पत्र हल करने का समय तीन (3) घण्टे होगा।
2. **प्रथम प्रश्न** पाठ्यक्रम के चारों घटकों में निर्धारित विषयों के आधार पर बनाया जाए। यह प्रश्न अनिवार्य होगा। इसके अन्तर्गत लघु उत्तर वाले विकल्परहित चार (4) प्रश्न पूछे जाएँ। प्रत्येक लघूत्तरात्मक प्रश्न साढे तीन (3.5) अङ्कों का होगा।
3. द्वितीय, तृतीय, चतुर्थ तथा पञ्चम प्रश्न का निर्माण पाठ्यक्रम के क्रमशः प्रथम, द्वितीय, तृतीय तथा चतुर्थ घटक में निर्धारित विषय के आधार पर किया जाए। पाठ्यक्रम के प्रत्येक घटक से दो वैकल्पिक प्रश्न देकर परीक्षार्थी से प्रत्येक घटक से एक एक प्रश्न का उत्तर लिखने को कहा जाए।

Unit	Topics	Contact Hours
I	भारतीय राष्ट्रवाद, अथर्ववेद पृथ्वी सूक्त (1–30 मंत्र) 14 अङ्काः	15
II	भारतवर्ष नामकरण (वैदिक और पौराणिक सन्दर्भ) राष्ट्रीय गान, राष्ट्रीय गीत, राष्ट्रीय ध्वज, राष्ट्रीय चिह्न, शंक संवत्, विक्रम संवत 14 अङ्काः	15
III	भगतफूलसिंह–चरितम् (प्रथम अध्याय) 14 अङ्काः	15
IV	भाति में भारतम्, डा0 रमाकान्त शुक्ल (1–30 शलोक) 14 अङ्काः	15

Suggested Evaluation Methods	
Internal Assessment: 30 Marks ➢ **Theory** • Class Participation: 5 Marks • Seminar/presentation/assignment/quiz/class test etc.: 5+5=10 Marks • Mid-Term Exam: 15 Marks	**End Term Examination:** 70 Marks

Part C-Learning Resources

Recommended Books/e-resources/LMS:

1 भगतफूलसिंहचरितम, पंडित विद्यानिधि शास्त्री, संपादक प्रोफेसर भीम सिंह, विद्यानिधि शोधसंस्थान कुरुक्षेत्र
2 भाति में भारतम्, डा॰ रमाकान्त शुक्ल, देववाणी परिषद् दिल्ली
3 अथर्ववेद डा० व्रजबिहारी चौबे, कात्यायन वैदिक साहित्य प्रकाशन होशियारपुर
4 अथर्ववेद सुबोधभाष्य, दामोदर सातवलेकर, स्वाध्याय मण्डल किल्ला पारडी जिला वलसाड

Session: 2023-24	
Part A - Introduction	
Subject	
Semester	
Name of the Course	Value Added Course
Course Code	B23-VAC-307, पञ्चकोश: सर्वांगीण व्यक्तित्व विकास
Course Type: (CC/MCC/MDC/CC-M/DSEC/VOC/DSE/PC/AEC/VAC)	VAC–1
Level of the course (As per Annexure-I	100–199
Pre-requisite for the course (if any)	
Course Learning Outcomes(CLO):	After completing this course, the learner will be able to: CLO : 307.1 – सर्वाङ्गीण व्यक्तित्व विकास हेतु पंचकोश का ज्ञान आवश्यक है। इस घटक में पंचकोश का सामान्य परिचय कराया जाएगा। CLO : 307.2 – इस घटक में अन्नमय और प्राणमय कोशों के स्वरूप और महत्त्व से अवगत कराया जाएगा। CLO : 307.3 – मनोमय और विज्ञानमय कोश सूक्ष्मशरीर के अङ्ग हैं, जिनके स्वरूप और महत्त्व से अवगत कराना इस घटक का अभिधेय है। CLO : 307.4 – आध्यात्मिक विकास हेतु विज्ञानमय कोश का ज्ञान आवश्यक है, जो प्रस्तुत घटक के माध्यम से कराया जाएगा।

Credits – 2	Theory	Practical	Total
	2	--	2
Contact Hours	30	--	30

Max. Marks: 50 **Internal Assessment Marks: 15** **End Term Exam Marks: 35**	**Time: 3 Hrs.**

Part B- Contents of the Course

Instructions for Paper-Setter

1. प्रश्नपत्र में कुल 5 प्रश्न दिये जाएँ । प्रश्नपत्र के लिए 35 अंक निर्धारित हैं। सभी प्रश्न समान अंकों (7) के होंगे।
2. प्रथम प्रश्न पाठयक्रम के चारों घटकों में निर्धारित विषयों के आधार पर बनाया जाए। यह प्रश्न अनिवार्य होगा। इसके अन्तर्गत 7 वस्तुनिष्ठ प्रश्न होंगे। प्रत्येक प्रश्न एक अंक का होगा।
3. द्वितीय, तृतीय, चतुर्थ तथा पञ्चम प्रश्न का निर्माण क्रमशः चारों घटकों के विषयों के आधार पर पाठ्यक्रम में दिये गये निर्देशानुसार किया जाए। ये प्रश्न वैकल्पिक होंगे ।

Unit	Topics	Contact Hours
I	पञ्चकोश का अर्थ, अवधारणा एवं महत्त्व 7 अंक (उपर्युक्त विषयों में से एक निबन्धात्मक वैकल्पिक प्रश्न)	**7**
II	अन्नमय और प्राणमय कोश का स्वरूप एवं महत्त्व 7 अंक (एक निबन्धात्मक वैकल्पिक प्रश्न)	**8**
III	मनोमय और विज्ञानमय कोश का स्वरूप एवं महत्त्व 7 अंक (एक निबन्धात्मक वैकल्पिक प्रश्न)	**8**
IV	आनन्दमय कोश का स्वरूप एवं महत्त्व 7 अंक (एक निबन्धात्मक वैकल्पिक प्रश्न)	**7**

Suggested Evaluation Methods

Internal Assessment: 15 Marks ➢ **Theory** • Class Participation: 4 • Seminar/presentation/assignment/quiz/class test etc.: 4 • Mid-Term Exam: 7	**End Term Examination:** **35 Marks**

Part C-Learning Resources
Recommended Books/e-resources/LMS: 1. तैत्तिरीयोपनिषद् (द्वितीयवल्ली 2.2, 3, 4, 5) शांकरभाष्य, गीताप्रेस, गोरखपुर

Session: 2023-24	
Part A - Introduction	
Subject	
Semester	
Name of the Course	Value Added Course
Course Code	B23-VAC-313, प्रारम्भिक संस्कृत भाषा ज्ञान
Course Type: (CC/MCC/MDC/CC-M/DSEC/VOC/DSE/PC/AEC/VAC)	VAC–2
Level of the course (As per Annexure-I	100–199
Pre-requisite for the course (if any)	
Course Learning Outcomes(CLO):	After completing this course, the learner will be able to: CLO : 312.1 – संस्कृत भाषा के आधारभूततत्त्व वर्ण, वर्णों का उच्चारण-स्थान, वचन, लिङ्ग एवं पुरुष का ज्ञान इस घटक द्वारा कराया जाएगा । CLO : 312.2 – संस्कृत भाषा के स्वरूपज्ञान हेतु सन्धिज्ञान आवश्यक है, जो इस घटक में कराया जाएगा । CLO : 312.3 – संस्कृत भाषा में संरचना के आधारभूत कारक-विभक्ति का अवबोध कराना इस घटक का उद्देश्य है। CLO : 312.4 – संस्कृत से हिन्दी/अंग्रेजी में अथवा हिन्दी/अंग्रेजी से संस्कृत मं अनुवाद सिखाना इस घटक का अभिधेय है।

Credits – 2	Theory	Practical	Total
	2	--	2
Contact Hours	30	--	30

Max. Marks: 50 **Internal Assessment Marks: 15** **End Term Exam Marks: 35**	**Time: 3 Hrs.**

Part B- Contents of the Course

Instructions for Paper-Setter

1. प्रश्नपत्र में कुल 5 प्रश्न दिये जाएं । प्रश्नपत्र के लिए 35 अंक निर्धारित हैं। सभी प्रश्न समान अंकों (7) के होंगे।
2. प्रथम प्रश्न पाठयक्रम के चारों घटकों में निर्धारित विषयों के आधार पर बनाया जाए। यह प्रश्न अनिवार्य होगा। इसके अन्तर्गत 7 वस्तुनिष्ठ प्रश्न होंगे। प्रत्येक प्रश्न एक अंक का होगा।
3. द्वितीय, तृतीय, चतुर्थ तथा पञ्चम प्रश्न का निर्माण क्रमशः चारों घटकों के विषयों के आधार पर पाठ्यक्रम में दिये गये निर्देशानुसार किया जाए। ये प्रश्न वैकल्पिक होंगे ।

Unit	Topics	Contact Hours
I	प्रत्याहार-सूत्र, वर्णों का उच्चारण-स्थान 7 अंक वचन, लिङ्ग एवं पुरुष (क) प्रत्याहार सूत्र व उच्चारण-स्थान 1x4= 4 अंक (ख) वचन, लिङ्ग एवं पुरुष 1x3= 3 अंक	**7**
II	सन्धिपरिचय (अच् हल् एवं विसर्ग) 7 अंक (यण्, दीर्घ, गुण, वृद्धि, जश्त्व, विसर्जनीयस्य सः) (क) सन्धि 1x4= 4 अंक (ख) सन्धिविच्छेद 1x3= 3 अंक	**7**
III	कारक-विभक्ति का सामान्य परिचय 7 अंक वाक्यों में रेखांकित पदों में कारक-विभक्ति का प्रतिपादन (10 में से 7)	**8**

IV	हिन्दी व संस्कृत में अनुवाद 7 अंक (10 में से 7 वाक्यों का अनुवाद)	**8**

Suggested Evaluation Methods

Internal Assessment: 15 Marks ➢ **Theory** • Class Participation: 4 • Seminar/presentation/assignment/quiz/class test etc.: 4 • Mid-Term Exam: 7	**End Term Examination:** **35 Marks**

Part C-Learning Resources

Recommended Books/e-resources/LMS:

1. प्रारम्भिक रचनानुवादकौमुदी, कपिलदेव द्विवेदी, विश्वविद्यालय प्रकाशन, वाराणसी
2. लघुसिद्धान्तकौमुदी, वरदराजाचार्यकृत, चौखम्बा सुरभारती प्रकाशन, वाराणसी
3. वर्णोच्चारणशिक्षा, स्वामी दयानन्दकृत व्याख्यासहिता, वैदिकयन्त्रालय, अजमेर

Session: 2023-24	
Part A - Introduction	
Subject	
Semester	
Name of the Course	Value Added Course
Course Code	B23-VAC-313, संस्कृत साहित्य में नाट्य एवं रंगमंच
Course Type: (CC/MCC/MDC/CC-M/DSEC/VOC/DSE/PC/AEC/VAC)	VAC–3
Level of the course (As per Annexure-I	100–199
Pre-requisite for the course (if any)	
Course Learning Outcomes(CLO):	After completing this course, the learner will be able to: CLO : 313.1 – संस्कृत में नाट्य एवं रंगमंच की प्राचीन परम्परा है। इस घटक द्वारा नाट्य की उत्पत्ति, विकास एवं स्वरूप का अवबोध कराया जाएगा। CLO : 313.2 – वर्तमान सन्दर्भ में संस्कृतनाट्य रंगमंच के स्वरूप का ज्ञान कराना इस घटक का प्रयोजन है। CLO : 313.3 – नाट्यशास्त्र में प्रदत्त अभिनय के स्वरूप का सामान्यतया अवबोध इस घटक द्वारा कराया जाएगा। CLO : 313.4 – नाट्य रसों के स्वरूप एवं रसभेदों का ज्ञान कराना इस घटक का उद्देश्य है।

Credits – 2	Theory	Practical	Total
	2	--	2
Contact Hours	30	--	30

Max. Marks: 50 **Internal Assessment Marks: 15** **End Term Exam Marks: 35**	**Time: 3 Hrs.**

Part B- Contents of the Course

Instructions for Paper-Setter

1. प्रश्नपत्र में कुल 5 प्रश्न दिये जाएं । प्रश्नपत्र के लिए 35 अंक निर्धारित है। सभी प्रश्न समान अंकों (7) के होंगे।
2. प्रथम प्रश्न पाठयक्रम के चारों घटकों में निर्धारित विषयों के आधार पर बनाया जाए। यह प्रश्न अनिवार्य होगा। इसके अन्तर्गत 7 वस्तुनिष्ठ प्रश्न होंगे। प्रत्येक प्रश्न एक अंक का होगा।
3. द्वितीय, तृतीय, चतुर्थ तथा पञ्चम प्रश्न का निर्माण क्रमशः चारों घटकों के विषयों के आधार पर पाठ्यक्रम में दिये गये निर्देशानुसार किया जाए। ये प्रश्न वैकल्पिक होंगे ।

Unit	Topics	Contact Hours
I	भरतमुनि एवं नाट्यशास्त्र का परिचय 7 अंक नाट्य की उत्पत्ति, विकास एवं स्वरूप (एक निबन्धात्मक प्रश्न अथवा दो टिप्पणियाँ)	**7**
II	रंगमञ्च का स्वरूप 7 अंक रंगगृह, मण्डपनिवेश, स्तम्भस्थापना रंगशीर्ष, दारुकर्म, भित्तिकर्म, चित्रकर्म (दो टिप्पणियाँ) 2x3½= 7 अंक	**8**
III	अभिनय का सामान्य परिचय एवं प्रकार हस्ताभिनय, शरीराभिनय, वाचिकाभिनय 7 अंक (एक निबन्धात्मक प्रश्न अथवा दो टिप्पणियाँ)	**7**

IV	रसस्वरूप एवं प्रकार 7 अंक शृंगार, वीर, शान्त, हास्य, करुण, रौद्र (एक निबन्धात्मक प्रश्न अथवा दो टिप्पणियाँ)	**7**
Suggested Evaluation Methods		
Internal Assessment: 15 Marks ➢ **Theory** • Class Participation: 4 • Seminar/presentation/assignment/quiz/class test etc.: 4 • Mid-Term Exam: 7		**End Term Examination:** **35 Marks**
Part C-Learning Resources		
Recommended Books/e-resources/LMS: 1. नाट्यशास्त्रम्, व्या॰ श्री सत्यप्रकाश शर्मा चौखम्बा सुरभारती प्रकाशन 2. नाट्यशास्त्रम् (प्रथम द्वितीय एवं तृतीय भाग), श्री बाबूलाल शुक्ल शास्त्री, चौखम्बा संस्कृत संस्थान		

Session: 2023-24	
Part A - Introduction	
Subject	
Semester	
Name of the Course	Value Added Course
Course Code	B23-VAC-315, भारतीय ज्ञानपरम्परा एवं पद्धति
Course Type: (CC/MCC/MDC/CC-M/DSEC/VOC/DSE/PC/AEC/VAC)	VAC–4
Level of the course (As per Annexure-I	100–199
Pre-requisite for the course (if any)	
Course Learning Outcomes(CLO):	After completing this course, the learner will be able to: CLO : 315.1 – भारतीय ज्ञान परम्परा एवं पद्धति के स्वरूप के अन्तर्गत शिक्षा के उद्देश्य एवं गुरुकुल शिक्षा व्यवस्था का ज्ञान प्रस्तुत घटक में कराया जाएगा। CLO : 315.2 – प्राचीन भारतीय शिक्षा के क्षेत्र के अन्तर्गत 14 विद्याओं और 64 कलाओं का परिचयात्मक ज्ञान कराना इस घटक का प्रयोजन है। CLO : 315.3 – इस घटक के माध्यम से प्राचीन भारतीय शिक्षा-संस्थानों से विद्यार्थियों को परिचित कराया जाएगा। CLO : 315.4 – तैत्तिरीयोपनिषद् की शिक्षावल्ली वैदिक शिक्षा-पद्धति के स्वरूप की परिचायक है। इसका ज्ञान प्रस्तुत घटक द्वारा कराया जाएगा।

Credits – 2	Theory	Practical	Total
	2	--	2
Contact Hours	30	--	30

Max. Marks: 50 **Internal Assessment Marks: 15** **End Term Exam Marks: 35**	**Time: 12 Hrs.**

Part B- Contents of the Course

Instructions for Paper-Setter

1. प्रश्नपत्र में कुल 5 प्रश्न दिये जाएं । प्रश्नपत्र के लिए 35 अंक निर्धारित है। सभी प्रश्न समान अंकों (7) के होंगे।
2. प्रथम प्रश्न पाठयक्रम के चारों घटकों में निर्धारित विषयों के आधार पर बनाया जाए। यह प्रश्न अनिवार्य होगा। इसके अन्तर्गत 7 वस्तुनिष्ठ प्रश्न होंगे। प्रत्येक प्रश्न एक अंक का होगा।
3. द्वितीय, तृतीय, चतुर्थ तथा पञ्चम प्रश्न का निर्माण क्रमशः चारों घटकों के विषयों के आधार पर पाठ्यक्रम में दिये गये निर्देशानुसार किया जाए। ये प्रश्न वैकल्पिक होंगे ।

Unit	Topics	Contact Hours
I	शिक्षा के उद्देश्य, गुरुकुल व्यवस्था 7 अंक आचार्य, गुरु और उपाध्याय दो टिप्पणियाँ अथवा एक निबन्धात्मक प्रश्न	**7**
II	शिक्षा के क्षेत्र 14 विद्याएँ एवं 64 कलाएँ 7 अंक दो टिप्पणियाँ अथवा एक निबन्धात्मक प्रश्न	**8**
III	शिक्षा संस्थान 7 अंक तक्षशिला, काशी, कश्मीर, काँची, नालन्दा विक्रमशिला, धारा, वल्लभी दो टिप्पणी 2x3½= 7 अंक	**7**

IV	तैत्तिरीयोपनिषद् शिक्षावल्ली 11वाँ अनुवाक 7 अंक (क) मन्त्र व्याख्या 1x4= 4 अंक (ख) संक्षिप्त टिप्पणी 1x3= 3अंक	**8**

Suggested Evaluation Methods

Internal Assessment: 15 Marks ➢ **Theory** • Class Participation: 4 • Seminar/presentation/assignment/quiz/class test etc.: 4 • Mid-Term Exam: 7	**End Term Examination:** **35 Marks**

Part C-Learning Resources

Recommended Books/e-resources/LMS:

1. भारतीय संस्कृति, दीपक कुमार, चौखम्बा सुरभारती प्रकाशन, वाराणसी
2. प्राचीन भारत का सामाजिक एवं आर्थिक इतिहास, मोतीलाल बनारसीदास, दिल्ली
3. हिन्दू संस्कार (सामाजिक एवं आर्थिक अध्ययन) चौखम्बा विद्याभवन, वाराणसी
4. मनुस्मृति (1-13 भाग) सम्पादित एवं व्याख्या, उर्मिला रूस्तोगी, जे०पी० पब्लिशिंग हाउस, दिल्ली

Session: 2023-24	
Part A - Introduction	
Subject	Sanskrit
Semester	I
Name of the Course	Ability Enhancement Course
Course Code	B23-AEC-131, संस्कृत भाषा एवं सम्प्रेषण-1
Course Type: (CC/MCC/MDC/CC-M/DSEC/VOC/DSE/PC/AEC/VAC)	AEC–1
Level of the course (As per Annexure-I	
Pre-requisite for the course (if any)	
Course Learning Outcomes(CLO):	After completing this course, the learner will be able to: CLO : 105.1 – इस घटक के द्वारा प्रत्याहार सूत्रों एवं वर्णों के उच्चारण स्थान का ज्ञान कराया जाएगा। CLO : 105.2 – इस घटक के द्वारा संस्कृत भाषा में प्रयुक्त पुल्लिंग, स्त्रीलिंग, नपुंसकलिंग तथा सर्वनाम शब्दरूपों का अवबोध कराया जाएगा । CLO : 105.3 – इस घटक के द्वारा वर्तमान, भूत, भविष्यत् काल में प्रयुक्त होने वाले लट्, लङ् और लृट् लकारों की मुख्य क्रियाओं का ज्ञान कराया जाएगा। CLO : 105.4 – संस्कृत टिप्पणी लेखन द्वारा संस्कृत लेखन कौशल का विकास करना इस घटक का उद्देश्य है।

Credits – 2	Theory	Practical	Total
	2	--	2
Contact Hours	30	--	30

Max. Marks: 50 **Internal Assessment Marks: 15** **End Term Exam Marks: 35**	**Time: 3 Hrs.**

Part B- Contents of the Course

Instructions for Paper-Setter

1. प्रश्नपत्र में कुल 5 प्रश्न दिये जाएं । प्रश्नपत्र के लिए 35 अंक निर्धारित हैं। सभी प्रश्न समान अंकों (7) के होंगे।
2. प्रथम प्रश्न पाठयक्रम के चारों घटकों में निर्धारित विषयों के आधार पर बनाया जाए। यह प्रश्न अनिवार्य होगा। इसके अन्तर्गत 7 वस्तुनिष्ठ प्रश्न होंगे। प्रत्येक प्रश्न एक अंक का होगा।
3. द्वितीय, तृतीय, चतुर्थ तथा पञ्चम प्रश्न का निर्माण क्रमशः चारों घटकों के विषयों के आधार पर पाठ्यक्रम में दिये गये निर्देशानुसार किया जाए। ये प्रश्न वैकल्पिक होंगे ।

Unit	Topics	Contact Hours
I	प्रत्याहार सूत्र एवं वर्णों का उच्चारण स्थान 7 अंक (क) निर्देशानुसार किन्हीं 4 में से दो प्रत्याहारों का निर्माण 3 अंक (ख) पाँच में से किन्हीं तीन वर्णों का उच्चारण स्थान 3 अंक	**7**
II	शब्द रूप 7 अंक राम, बालक, लता, मति, गुरु, ज्ञान, अस्मद्, युष्मद्, तत्, किम्, इदम् (किन्हीं दो रूपों का लेखन) 2x3½=7	**8**
III	क्रियारूप एवं वाक्यपूर्ति 7 अंक भू, पठ्, लिख्, चल्, गम्, हस्, वद्, पा, अस् दृश्, पच् (केवल लट्, लृट् एवं लङ् लकार) उपर्युक्त धातुरूपों के आधार पर 10 में से 7 वाक्यपूर्ति 1x7=7 अंक	**8**

IV	पञ्च वाक्यात्मक संक्षिप्त टिप्पणी 7 अंक विद्या, सत्यम्, परोपकारः, आदर्शगुरुः 3½X2=7 छात्राणां कर्त्तव्यम् ।	**7**

Suggested Evaluation Methods

Internal Assessment: 15 Marks ➢ **Theory** • Class Participation: 4 • Seminar/presentation/assignment/quiz/class test etc.: 4 • Mid-Term Exam: 7	**End Term Examination:** **35 Marks**

Part C-Learning Resources

Recommended Books/e-resources/LMS:

2. लघुसिद्धान्तकौमुदी वरदराजाचार्यकृत, व्याख्याकार भीमसेन शास्त्री, भैमी प्रकाशन, दिल्ली

3. द्विवेदी, कपिलदेव : प्रारम्भिक रचनानुवादकौमुदी, विश्वविद्यालय प्रकाशन, वाराणसी, उत्तरप्रदेश

Session: 2023-24			
Part A - Introduction			
Subject	Sanskrit		
Semester	II		
Name of the Course	Ability Enhancement Course		
Course Code	B23-AEC-132, संस्कृत भाषा एवं सम्प्रेषण-2		
Course Type: (CC/MCC/MDC/CC-M/DSEC/VOC/DSE/PC/AEC/VAC)	AEC–2		
Level of the course (As per Annexure-I			
Pre-requisite for the course (if any)			
Course Learning Outcomes(CLO):	After completing this course, the learner will be able to: CLO : 205.1 – कारक एवं विभक्ति संस्कृत भाषा के आधारभूत तत्त्व हैं, जिनका प्रारम्भिक ज्ञान इस घटक के माध्यम से कराया जाएगा। CLO : 205.2 – इस घटक के द्वारा ईशोपनिषद् के प्रारम्भिक 10 मन्त्रों का अवबोध कराया जाएगा। CLO : 205.3 – संस्कृत मन्त्रों एवं श्लोकों का सरलार्थ करना एवं लेखन करना सिखाना इस घटक का उद्देश्य है। CLO : 205.4 – इस घटक के माध्यम से सरल संस्कृत वाक्यों द्वारा स्वपरिचय देने में छात्रों को समर्थ बनाया जाएगा।		
Credits – 2	Theory	Practical	Total
	2	--	2
Contact Hours	30	--	30

Max. Marks: 50 **Internal Assessment Marks: 15** **End Term Exam Marks: 35**	**Time: 3 Hrs.**

Part B- Contents of the Course

Instructions for Paper-Setter

1. प्रश्नपत्र में कुल 5 प्रश्न दिये जाएं । प्रश्नपत्र के लिए 35 अंक निर्धारित है। सभी प्रश्न समान अंकों (7) के होंगे।
2. प्रथम प्रश्न पाठयक्रम के चारों घटकों में निर्धारित विषयों के आधार पर बनाया जाए। यह प्रश्न अनिवार्य होगा। इसके अन्तर्गत 7 वस्तुनिष्ठ प्रश्न होंगे। प्रत्येक प्रश्न एक अंक का होगा।
3. द्वितीय, तृतीय, चतुर्थ तथा पञ्चम प्रश्न का निर्माण क्रमशः चारों घटकों के विषयों के आधार पर पाठ्यक्रम में दिये गये निर्देशानुसार किया जाए। ये प्रश्न वैकल्पिक होंगे ।

Unit	Topics	Contact Hours
I	कारक एवं विभक्ति 7 अंक कर्त्ता, कर्म, करण, सम्प्रदान, अपादान, अधिकरण किन्हीं दो कारकों की सोदाहरण व्याख्या 3½x2=7 अंक	**8**
II	ईशोपनिषद् (1-10 मन्त्र) 7 अंक तीन में से किन्हीं दो मन्त्रों की व्याख्या 3½X2=7 अंक	**8**
III	संस्कृत श्लोक एवं मन्त्र 7 अंक मन्त्र- गीता के श्लोक- गायत्री मन्त्र युक्ताहार... महामृत्युञ्जय मन्त्र उद्धेदात्मना. शान्तिमन्त्र (द्यौः शान्तिः) कर्मण्येवा... संगच्छध्वम्... यत्र योगेश्वर... सर्वे भवन्तु सुखिनः... गीता सुगीता... किन्हीं 2 मन्त्रों का सरलार्थ 2x2½=5 अंक 1 श्लोक का लेखन 1x2=2 अंक	**7**

IV	संस्कृत भाषा में स्वयं का परिचय 7 अंक लेखन (दस वाक्यात्मक)	**14**
Suggested Evaluation Methods		
Internal Assessment: 15 Marks ➢ **Theory** • Class Participation: 4 • Seminar/presentation/assignment/quiz/class test etc.: 4 • Mid-Term Exam: 7		**End Term Examination:** **35 Marks**
Part C-Learning Resources		
Recommended Books/e-resources/LMS: 1. लघुसिद्धान्तकौमुदी वरदराजाचार्यकृत, व्याख्याकार- भीमसेन शास्त्री भैमी प्रकाशन, दिल्ली । 2. ईशोपनिषद्, (शांकरभाष्य), गीताप्रेस गोरखपुर		

Session: 2023-24			
Part A – Introduction			
Subject	Sanskrit		
Semester	III		
Name of the Course	Ability Enhancement Course		
Course Code	B23-AEC-133, संस्कृत भाषा एवं सम्प्रेषण-3		
Course Type: (CC/MCC/MDC/CC-M/DSEC/VOC/DSE/PC/AEC/VAC)	AEC–3		
Level of the course (As per Annexure-I			
Pre-requisite for the course (if any)			
Course Learning Outcomes(CLO):	After completing this course, the learner will be able to: CLO : 305.1 – संस्कृतभाषा में निबद्ध वाक्यों के सम्यक् ज्ञान के लिए सन्धि का ज्ञान आवश्यक है। इस घटक में प्रमुख संधियों का अवबोध कराया जाएगा । CLO : 305.2 – इस घटक के माध्यम से संस्कृत के संख्यावाची शब्दों का ज्ञान विद्यार्थियों को कराया जाएगा। CLO : 305.3 – इस घटक का उद्देश्य है। राज्यीय एवं राष्ट्रीय ध्येयवाक्यों का बोध कराना । CLO : 305.4 – फल एवं सब्जियों के संस्कृत नामों का अवबोध इस घटक का अभिधेय है।		
Credits – 2	Theory	Practical	Total
	2		3
Contact Hours	30		30

Max. Marks: 50 **Internal Assessment Marks: 15** **End Term Exam Marks:** 35	**Time: 3 Hrs.**

Part B- Contents of the Course

Instructions for Paper-Setter

1. 1. प्रश्नपत्र में कुल 5 प्रश्न दिये जाएं । प्रश्नपत्र के लिए 35 अंक निर्धारित है। सभी प्रश्न समान अंकों (7) के होंगे।
2. प्रथम प्रश्न पाठयक्रम के चारों घटकों में निर्धारित विषयों के आधार पर बनाया जाए। यह प्रश्न अनिवार्य होगा। इसके अन्तर्गत 7 वस्तुनिष्ठ प्रश्न होंगे। प्रत्येक प्रश्न एक अंक का होगा।
3. द्वितीय, तृतीय, चतुर्थ तथा पञ्चम प्रश्न का निर्माण क्रमशः चारों घटकों के विषयों के आधार पर पाठ्यक्रम में दिये गये निर्देशानुसार किया जाए। ये प्रश्न वैकल्पिक होंगे ।

Unit	Topics	Contact Hours
I	सन्धि 7 अंक दीर्घ, गुण, वृद्धि, यण्, अयादि (क) सन्धि 4x1=4 अंक (ख) सन्धिविच्छेद 3x1=3 अंक	**8**
II	संख्या एक से सौ तक संस्कृतसंख्यावाची शब्द 7 अंक (क) संख्या शब्दों का संस्कृत रूप 7x1=7 अंक (किन्हीं 10 में से 7 लिखें)	**7**
III	ध्येयवाक्य 7 अंक राज्य एवं राष्ट्रीय संस्थानों के ध्येयवाक्य संस्थानों के संस्कृत ध्येय वाक्य लिखें (10 में से 7)	**8**
IV	फल एवं सब्जियों के संस्कृत नाम 7 अंक फल तथा सब्जियों के संस्कृत नाम लिखें (10 में से 7)	**7**

Suggested Evaluation Methods	
Internal Assessment: 15 Marks ➢ **Theory** • Class Participation: 4 • Seminar/presentation/assignment/quiz/class test etc.: 4 • Mid-Term Exam: 7	**End Term Examination:** **35 Marks**

Part C-Learning Resources

Recommended Books/e-resources/LMS:

1. द्विवेदी कपिलदेव, प्रारम्भिक रचनानुवादकौमुदी, विश्वविद्यालय प्रकाशन, वाराणसी, उत्तरप्रदेश
2. संस्कृतस्य वर्चस्वम्, प्रो. निगम स्वरूप आचार्य, महान प्रिंटर्ज, नाभा गेट संगरूर पंजाब (ध्येयवाक्यहेतु)

Session: 2023-24	
Part A - Introduction	
Subject	Sanskrit
Semester	IV
Name of the Course	Ability Enhancement Course
Course Code	B23-AEC-134, संस्कृत भाषा एवं सम्प्रेषण-4
Course Type: (CC/MCC/MDC/CC-M/DSEC/VOC/DSE/PC/AEC/VAC)	AEC–4
Level of the course (As per Annexure-I	
Pre-requisite for the course (if any)	
Course Learning Outcomes(CLO):	After completing this course, the learner will be able to: CLO : 405.1 – इस घटक के माध्यम से संस्कृत भाषा-दक्षता हेतु तीनों लिङ्गों में सर्वनाम शब्द-प्रयोग तथा द्वितीया विभक्ति का वाक्यप्रयोग सिखाया जाएगा। CLO : 405.2 – इस घटक में संस्कृत के प्रमुख प्रत्यय तथा तृतीया व चतुर्थी विभक्ति का वाक्यप्रयोग का ज्ञान होगा। CLO : 405.3 – इस घटक के द्वारा पञ्चमी, षष्ठी, सप्तमी का वाक्यप्रयोग सिखाया जाएगा। CLO : 405.4 – दैनन्दिन व्यवहार में प्रयुक्त होने वाले वाक्यों द्वारा सम्भाषण करना। इस घटक के द्वारा सिखाया जाएगा।

Credits – 2	Theory	Practical	Total
	2	--	2
Contact Hours	30	--	30

Max. Marks: 50 **Internal Assessment Marks: 15** **End Term Exam Marks: 35**	**Time: 3 Hrs.**

Part B- Contents of the Course

Instructions for Paper-Setter

1. प्रश्नपत्र में कुल 5 प्रश्न दिये जाएं । प्रश्नपत्र के लिए 35 अंक निर्धारित हैं। सभी प्रश्न समान अंकों (7) के होंगे।
2. प्रथम प्रश्न पाठयक्रम के चारों घटकों में निर्धारित विषयों के आधार पर बनाया जाए। यह प्रश्न अनिवार्य होगा। इसके अन्तर्गत 7 वस्तुनिष्ठ प्रश्न होंगे। प्रत्येक प्रश्न एक अंक का होगा।
3. द्वितीय, तृतीय, चतुर्थ तथा पञ्चम प्रश्न का निर्माण क्रमशः चारों घटकों के विषयों के आधार पर पाठ्यक्रम में दिये गये निर्देशानुसार किया जाए। ये प्रश्न वैकल्पिक होंगे ।

Unit	Topics	Contact Hours
I	संस्कृतस्वाध्यायः, प्रथमा दीक्षा, वाक्य व्यवहारः 7 अंक प्रथमस्तबकः 1-4, द्वितीयस्तबकः 1, 3 दोनों स्तबकों के आधार पर वाक्यनिर्माण 1x7=7 (10 में से 7)	**7**
II	संस्कृतस्वाध्यायः, प्रथमा दीक्षा, वाक्य व्यवहारः 7 अंक चतुर्थस्तबकः 1-4, क्त्वा, ल्यप्, तुमुन् तथा तृतीया व चतुर्थी विभक्ति के आधार पर वाक्य निर्माण 1x7=7 (10 में से 7)	**8**

III	संस्कृतस्वाध्यायः, प्रथमा दीक्षा, वाक्य व्यवहारः पञ्चमस्तबकः 1-3 पञ्चमी, षष्ठी व सप्तमी विभक्ति तथा संख्यावाची शब्दों के आधार पर वाक्य प्रयोग 1x7=7 (10 में से 7)	**8**
IV	संस्कृतस्वाध्यायः, प्रथमा दीक्षा, सम्भाषणम् 7 अंक 1-10 अध्याय दैनिक व्यवहार से सम्बन्धित वाक्यों का प्रयोग 1x7=7 (10 में से 7)	**7**
Suggested Evaluation Methods		
Internal Assessment: 15 Marks ➢ **Theory** • Class Participation: 4 • Seminar/presentation/assignment/quiz/class test etc.: 4 • Mid-Term Exam: 7		**End Term Examination:** **35 Marks**
Part C-Learning Resources		
Recommended Books/e-resources/LMS: 1. संस्कृतस्वाध्यायः, प्रथमा दीक्षा, वाक्यव्यवहारः सम्पादकः वेम्पटि कुटुम्बशास्त्री, राष्ट्रीय संस्कृत संस्थानम्, नव देहली 2. संस्कृतस्वाध्यायः, प्रथमा दीक्षा, सम्भाषणम्, सम्पादकः वेम्पटि कुम्बशास्त्री, राष्ट्रीय संस्कृतसंस्थानम्, नव देहली		

Kurukshetra University
Kurukshetra

Scheme of Examination and Syllabus for
Under-Graduate Programme (Interdisciplinary)

Subject: Shastri

Under Multiple Entry-Exit, Internship and
CBCS-LOCF in accordance to NEP-2020 w.e.f
2023-24 (in phased manner)

Kurukshetra University Kurukshetra

Scheme of Examination for UG Programme (Interdisciplinary): Scheme D

Programme: Bachelor of Shastri

Under multiple entry exit internship and CBCS-LOCF

As per NEP 2020, to be implemented w.e.f the Session 2023-24

Semester	COURSES	Paper	Nomenclature of Paper	Credits (3+1)	Contact hours	Internal Marks	External Marks	Total	Duration of Exam(Hrs.)	Total Credit	Exit Option
I	CC-A1	B23-SHT-101	व्याकरणम् अनुवादश्च	4	4	30	70	100	3	24	
	CC-B1	B23-SHT--102	पद्यं नाटकं च	4	4	30	70	100	3		
	CC-C1	B23-SHT-103	धर्म, संस्कृतिः दर्शनं च	4	4	30	70	100	3		
	CC-M1	____	_____	2	2	15	35	50	2		
	MDC-1	____	_____	3	3	25	50	75	3		
	AEC-1	____	_____	2	2	15	35	50	2		
	SEC-1	____	_____	3	3	25	50	75	3		
	VAC-1	____	_____	2	2	15	35	50	2		
II	CC-A2	B23-SHT-201	व्याकरण–प्रक्रिया	4	4	30	70	100	3	24	
	CC-B2	B23-SHT—202	पद्यं नीतिसाहित्यं च	4	4	30	70	100	3		

	CC-C2	B23-SHT-203	काव्यशास्त्रम्	4	4	30	70	100	3		Under Graduate Certificate in Shastri with 52 credits
	CC-M2	____	_____	2	2	15	35	50	2		
	MDC-2	____	_____	3	3	25	50	75	3		
	AEC-2	____	_____	2	2	15	35	50	2		
	SEC-2	____	_____	3	3	25	50	75	3		
	VAC-2	____	_____	2	2	15	35	50	2		
Internship of 4 credits of 4-6 weeks duration after 2nd Semester											
III	CC-A3	B23-SHT-301	लघुसिद्धान्तकौमुदी प्रक्रिया च	4	4	30	70	100	3	24	
	CC-B3	B23-SHT--302	नाट्याध्ययनम्	4	4	30	70	100	3		
	CC-C3	B23-SHT-303	ज्योतिषं कर्मकाण्डश्च	4	4	30	70	100	3		
	CC-M3	_____	_____	4	4	30	70	100	3		
	MDC-3	____	_____	3	3	25	50	75	3		
	AEC-3	_____	_____	2	2	15	35	50	2		
	SEC-3	_____	_____	3	3	25	50	75	3		
IV	CC-A4	B23-SHT-401	उपनिषद्—गीतानुसारं जीवनदर्शनम्	4	4	30	70	100	3	20	

	CC-B4	B23-SHT-402	वेदेषु वैज्ञानिकतत्त्वम्	4	4	30	70	100	3		Under Graduate Diploma in Shastri with 96 Credits
	CC-C4	B23-SHT-403	पद्यं नाटकं च	4	4	30	70	100	3		
	CC-M4 (V)	___	_____	4	4	30	70	100	3		
	AEC-4	____	_____	2	2	15	35	50	2		
	VAC-3	____	_____	2	2	15	35	50	2		
Internship of 4 credits of 4-6 weeks duration after 4th semester											
V	CC-A5	B23-SHT-501	लघुसिद्धांतकौमुदी महाभाष्यं च	4	4	30	70	100	3	20	
	CC-B5	B23-SHT-502	आधुनिकसंस्कृतसाहित्यम्	4	4	30	70	100	3		
	CC-C5	B23-SHT-503	काव्यप्रकाशः छन्दश्च	4	4	30	70	100	3		
	CC-M5 (V)	_____	_____	4	4	30	70	100	3		
	Internship 4 credits										
VI	CC-A6	B23-SHT-601	दर्शनशास्त्रम्	4	4	30	70	100	3	20	
	CC-B6	B23-SHT-602	गद्यं, पद्यं रूपकं च	4	4	30	70	100	3		
	CC-C6	B23-SHT-603	संहिता व्याकरणं दर्शनं च	4	4	30	70	100	3		

	CC-M6	____	_____	4	4	30	70	100	3		Bachelor in Shastri with 132 credits
	CC-M7 (V)	____	_____	4	4	30	70	100	3		

Scheme of Courses in **Shastri** (**UG Honours)** Programme

Semester	Core courses Sanskrit	Paper	Nomenclature	credits	Contact hours	Internal Assessment Marks	External Marks	Total	Duration of Exam	Total Credits	Exit Option
VII	CC-H1	B23-SHT-701	आरण्यकम् उपनिषद् च	4	4	30	70	100	3	24	
	CC-H2	B23-SHT-702	नाट्यशास्त्रम्	4	4	30	70	100	3		
	CC-H3	B23-SHT-703	व्याकरणदर्शनम्	4	4	30	70	100	3		
	DSE-H1	B23-SHT-704	धर्मशास्त्रम् OR	4	4	30	70	100	3		
		B23-SHT-705	भारतीयकुण्डली -विज्ञानम	4	4	30	70	100	3		
	PC-H1	B23-SHT-706	व्याकरणप्रक्रिया	4	4	30	70	100	3		

VIII	CC-H4	B23-SHT-801	ब्राह्मणः उपनिषद् च	4	4	30	70	100	3	24	Bachelor Honours in Shastri with 184 credits
	CC-H5	B23-SHT-802	भारतीय–आस्तिकदर्शनम्	4	4	30	70	100	3		
	CC-H6	B23-SHT-803	नैषधीयचरितम्	4	4	30	70	100	3		
	DSE-H2	B23-SHT-804	तन्त्रागमः OR	4		30	70	100	3		
		B23-SHT-805	कर्मकाण्डः पौरोहित्यं च -2	4	4	30	70	100	3		
	PC-H2	B23-SHT-806	शोधप्रविधिः	4	4	30	70	100	3		

OR

Scheme of Courses in **Shastri** (**UG Honours with Research Programme)**

Semester	Core courses Sanskrit	Paper	Nomenclature	credits	Contact hours	Internal Assessment Marks	External Marks	Total	Duration of Exam	Total Credits	Exit Option
VII	CC-H1	B23-SHT-701	आरण्यकम् उपनिषद् च	4	4	30	70	100	3	24	
	CC-H2	B23-SHT-702	नाट्यशास्त्रम्	4	4	30	70	100	3		
	CC-H3	B23-SHT-703	व्याकरणदर्शनम्	4	4	30	70	100	3		

	DSE-H1	B23-SHT-704	धर्मशास्त्रम् OR	4	4	30	70	100	3		
		B23-SHT-705	भारतीयकुण्डली विज्ञानम	4	4	30	70	100	3		
	PC-H1	B23-SHT-706	व्याकरणप्रक्रिया	4	4	30	70	100	3		
VIII	CC-H4	B23-SHT-801	ब्राह्मणः उपनिषद् च	4	4	30	70	100	3	24	Bachelor Honours with Research in Shastri with 184 Credits
	CC-H5	B23-SHT-802	भारतीय–आस्तिकदर्शनम्	4	4	30	70	100	3		
	Project/ Dissertation B-23-SHT-807		**Research**	**12**				**300**			

Note:- If a student admitted to UG Programme, then that student will select {Minor/Vocational (MI), Multidisciplinary Courses (MDC), Ability Enhancement Courses (AEC), Skill Enhancement Courses (SEC), Value Added Courses (VAC)} out of the pools of subjects in that discipline offered by the Department/Institute/College.

Kurukshetra University Kurukshetra

Scheme of Examination for UG Programme (Interdisciplinary): Scheme D

Course: Bachelor of Shastri

under multiple entry exit internship and CBCS-LOCF

As per NEP 2020, to be implemented w.e.f the Session 2023-24

(in the Phased Manner)

Session: 2023-24	
Part A – Introduction	
Subject	Sanskrit
Semester	I
Name of the Course	Bachelor of Shastri
Course Code	B023-SHT-101 व्याकरणम् अनुवादश्च
Course Type: (CC/MCC/MDC/CC-M/DSEC/VOC/DSE/PC/AEC/VAC)	CC-A1
Level of the course (As per Annexure-I	100-199
Pre-requisite for the course (if any)	Senior Secondary (10+2) or visharad or Equivalent in any stream
Course Learning Outcomes(CLO):	After completing this course, the learner will be able to: CLO : 101.1 – अस्मिन् घटके संज्ञाप्रकरणमाध्यमेन प्रयुक्तानां संज्ञानां ज्ञानं छात्रेभ्यः प्रदीयते। CLO : 102.2 – अस्मिन् घटके छात्राः सन्धिविषये अवगताः भविष्यन्ति। येन ते सन्धिस्थ-पदानां ज्ञाने समर्थाः भविष्यन्ति। CLO : 101.3 – संस्कृतभाषाज्ञानाय कारकप्रकरणस्य ज्ञानमावश्यकं वर्तते। तत् अनेन घटकेन प्रदास्यते। CLO : 101.4 – घटकेऽस्मिन् दैनन्दिनव्यवहारे प्रयुक्तानां वाक्यानां ज्ञानं छात्रेभ्यः प्रदास्यते।

Credits	Theory	Practical	Total
	3+1	--	4
Contact Hours	60	--	60
Max. Marks: 100 **Internal Assessment Marks: 30** **End Term Exam Marks: 70**		**Time: 3 Hrs.**	

Part B- Contents of the Course

Instructions for Paper-Setter

1. प्रश्नपत्रे पञ्चप्रश्नाः भविष्यन्ति। प्रश्नपत्राय 70 अङ्काः निर्धारिताः सन्ति। प्रत्येकं प्रश्नः चतुर्दशाङ्कानां भविष्यति।
2. प्रथमः प्रश्नः अनिवार्यः वर्तते। प्रश्नोऽयं पाठ्यक्रमस्य चतुर्घटकेषु आधारितः भविष्यति। अस्मिन् लघूत्तरीयाः 7 प्रश्नाः विकल्परहिताः प्रदास्यन्ते। प्रत्येकं प्रश्नः अङ्कद्वयोः भविष्यति।
3. द्वितीयतृतीयचतुर्थपञ्चम-प्रश्नानां निर्माणं यथाक्रमं चतुर्घटकेषु आधारितः भविष्यति। प्रत्येकस्मात् घटकात् द्वौ वैकल्पिकप्रश्नौ प्रदास्येते। ये प्रश्न वैकल्पिक होंगे ।

Unit	Topics	Contact Hours
I	संज्ञाप्रकरणम्। (लघुसिद्धान्तकौमुदी) 14 अंकाः (क) प्रत्याहारसूत्राणि, उच्चारणस्थानानि 2x4=8 अंकाः (ख) सूत्र-व्याख्या 2x3=6 अंकाः	**14**
II	सन्धि-प्रकरणम् (अच् एवं हल्) (लघुसिद्धान्तकौमुदी) 14 अंकाः (क) सूत्रव्याख्या 2x3=6 अंकाः (ख) सूत्रोल्लेखपूर्वकं कारकविभक्ति-प्रतिपादनम् 2x4=8 अंकाः	**18**
III	कारक-प्रकरणम् (वैयाकरणसिद्धान्तकौमुदी) 14 अंकाः (क) सूत्र व्याख्या 2x3=6 अंकाः (ख) सूत्रोल्लेखपूर्वकं कारकविभक्ति-प्रतिपादनम् 2x4=8 अंकाः	**18**

IV	संस्कृतवाग्व्यवहारः । 14 अंकाः (क) परिचयः, शिष्टाचारः, भोजनम्, समयः, परीक्षा, वातावरणम्, अतिथिः, शुभाशया । 8 अकाः (ख) अपठितगद्यांशस्य संस्कृतानुवादः। 6 अंकाः	**14**

Suggested Evaluation Methods	
Internal Assessment: 30 Marks ➢ **Theory** • Class Participation: 5 • Seminar/presentation/assignment/quiz/class test etc.: 5+5=10 • Mid-Term Exam: 15	**End Term Examination:** **70 Marks**
Part C-Learning Resources	
Recommended Books/e-resources/LMS: 1. लघुसिद्धान्तकौमुदी वरदराजाचार्यकृत, चौखम्भा सुरभारती प्रकाशन, वाराणसी 2. वैयाकरणसिद्धान्तकौमुदी श्रीमद्भट्टोजिदिक्षितविरचिता (कारक-प्रकरणम्) साहित्य भण्डार, सुभाष बाजार, मेरठ 3. संस्कृत व्यवहार-साहस्री, संस्कृत भारती, दिल्ली	

Session: 2023-24	
Part A - Introduction	
Subject	Sanskrit
Semester	I
Name of the Course	Bachelor of Shastri
Course Code	B023-SHT-102, पद्यं नाटकं च
Course Type: (CC/MCC/MDC/CC-M/DSEC/VOC/DSE/PC/AEC/VAC)	CC-B1
Level of the course (As per Annexure-I	100-199
Pre-requisite for the course (if any)	Senior Secondary (10+2) or visharad or Equivalent in any stream
Course Learning Outcomes(CLO):	After completing this course, the learner will be able to: CLO : 101.1 – अभिज्ञानशाकुन्तलम् कालिदासस्य सर्वोत्कृष्टं नाटकं वर्तते। घटकेऽस्मि प्रथमद्वयोः अङ्कयोः ज्ञानं कारयिष्यते। CLO : 102.2 – अभिज्ञानशाकुन्तस्य चतुर्थोऽङ्कः काव्यसौष्ठवदृष्ट्या अतीव रमणीयं महत्त्वपूर्णं च वर्तते। घटकेऽस्मिन् तृतीयचतुर्थयोः अङ्कयोः ज्ञानं प्रदास्यते। CLO : 102.3 – अभिज्ञानशाकुन्तलस्य पञ्चमषष्ठसप्तमाङ्केषु भारतीयसमाजस्य सर्वे पक्षाः चित्रिताः सन्ति। तेषां व्यावहारिकं, समाधानपूर्ण ज्ञानं घटकेऽस्मिन् कारयिष्यते। CLO : 102.4 – महाकविकालिदासः भारतीयपरम्परायाः अमूल्यधरोहरः वर्तते। अस्मिन् घटके कवेः समय-निर्धारणस्य, काव्यशैल्याः नाट्यशैल्याश्च परिचयो कारयिष्यते।

Credits	Theory	Practical	Total
	3+1		4
Contact Hours	60		60
Max. Marks: **Internal Assessment Marks:** **End Term Exam Marks:**	**100** **30** 70	**Time: 3 Hrs.**	

Part B- Contents of the Course

Instructions for Paper-Setter

1. प्रश्नपत्रे पञ्चप्रश्नाः भविष्यन्ति। प्रश्नपत्राय 70 अङ्काः निर्धारिताः सन्ति। प्रत्येकं प्रश्नः चतुर्दशाङ्कानां भविष्यति।
2. प्रथमः प्रश्नः अनिवार्यः वर्तते। प्रश्नोऽयं पाठ्यक्रमस्य चतुर्घटकेषु आधारितः भविष्यति। अस्मिन् लघूत्तरीयाः 7 प्रश्नाः विकल्परहिताः प्रदास्यन्ते। प्रत्येकं प्रश्नः अङ्कद्वयोः भविष्यति।
3. द्वितीयतृतीयचतुर्थपञ्चम-प्रश्नानां निर्माणं यथाक्रमं चतुर्घटकेषु आधारितः भविष्यति। प्रत्येकस्मात् घटकात् द्वौ वैकल्पिकप्रश्नौ प्रदास्येते। ये प्रश्न वैकल्पिक होंगे ।

Unit	Topics		Contact Hours
I	अभिज्ञानशाकुन्तलम् (1-2 अङ्क)	14 अंकाः	**15**
	(क) द्वयोः श्लोकयोः व्याख्या	2x4=8 अंकाः	
	(ख) सूक्तिव्याख्या	1x6=6 अंकाः	
II	अभिज्ञानशाकुन्तलम् (3-4 अङ्क)	14 अंकाः	**15**
	(क) द्वयोः श्लोकयोः व्याख्या	2x4=8 अंकाः	
	(ख) सूक्तिव्याख्या	1x6=6 अंकाः	
III	अभिज्ञानशाकुन्तलम् (5-7 अङ्क)	14 अंकाः	**18**
	(क) द्वयोः श्लोकयोः व्याख्या	2x4=8 अंकाः	
	(ख) सूक्तिव्याख्या	1x6=6 अंकाः	

IV	महाकविकालिदासं तत्कृतिं च अभिज्ञानशाकुन्तलम् आधृत्य आलोचनात्मकौ द्वौ प्रश्नौ। 2x7=14 अंका:	**14**
Suggested Evaluation Methods		
Internal Assessment: 30 Marks ➢ **Theory** • Class Participation: 5 • Seminar/presentation/assignment/quiz/class test etc.: 5+5 • Mid-Term Exam: 15		**End Term Examination:** **70 Marks**
Part C-Learning Resources		
Recommended Books/e-resources/LMS: अभिज्ञानशाकुन्तलम्, कपिलदेव द्विवेदी, नारायणलाल विजयकुमार, कटरा रोड़, इलाहाबाद अभिज्ञानशाकुन्तलम्, सुबोधचन्द्रपन्त, मोतीलाल बनारसीदास, दिल्ली महाकवि कालिदास, रमाशंकर तिवारी, चौखम्बा विद्याभवन वाराणसी		

Session: 2023-24			
Part A – Introduction			
Subject	Sanskit		
Semester	I		
Name of the Course	Bachelor of Shastri		
Course Code	B023-SHT-103, धर्म, संस्कृतिः दर्शनं च		
Course Type: (CC/MCC/MDC/CC-M/DSEC/VOC/DSE/PC/AEC/VAC)	CC-C1		
Level of the course (As per Annexure-I	100-199		
Pre-requisite for the course (if any)	Senior Secondary (10+2) Or Visharad or Equivalent in any stream		
Course Learning Outcomes(CLO):	After completing this course, the learner will be able to: CLO : 103-1 – उपनिषदां सारः श्रीमद्भगवद्गीता भारतीयज्ञानपरम्परायाः उच्चतमः ग्रन्थः वर्तते। अस्मिन् घटके गीतायाः द्वादशाध्यायस्य ज्ञानं कारयिष्यते। CLO : 103.2 – साधनया व्यक्तिः पवित्राचरणेन सम्यक् जीवनशैल्या च जीवनयात्रां सुगमां सरलां विद्धन् मोक्षमार्गं प्राप्नोति। एतत् ज्ञानं योगदर्शनानुसारं घटकेऽस्मिन् विधास्यते। CLO : 103.3 – भारतीयसमाजे संस्काराणां महत्त्वमतीव वर्तते। अनेन घटकेन षोडशसंस्कारणां ज्ञानं छात्रेभ्यः प्रदास्यते। CLO : 103.4 – मनुष्यस्य व्यवहारः कीदृशो भवेत् इति मनुस्मृत्यनुसारं घटकेऽस्मिन् प्रतिपादितं वर्तते।		
Credits	Theory	Practical	Total
	3+1		4
Contact Hours	60		60

Max. Marks: **Internal Assessment Marks:** **End Term Exam Marks:**	**Time: 3 Hrs.**

Part B- Contents of the Course

Instructions for Paper-Setter

1. प्रश्नपत्रे पञ्चप्रश्नाः भविष्यन्ति। प्रश्नपत्राय 70 अङ्काः निर्धारिताः सन्ति। प्रत्येकं प्रश्नः चतुर्दशाङ्कानां भविष्यति।
2. प्रथमः प्रश्नः अनिवार्यः वर्तते। प्रश्नोऽयं पाठ्यक्रमस्य चतुर्घटकेषु आधारितः भविष्यति। अस्मिन् लघूत्तरीयाः 7 प्रश्नाः विकल्परहिताः प्रदास्यन्ते। प्रत्येकं प्रश्नः अङ्कद्वयोः भविष्यति।
3. द्वितीयतृतीयचतुर्थपञ्चम-प्रश्नानां निर्माणं यथाक्रमं चतुर्घटकेषु आधारितः भविष्यति। प्रत्येकस्मात् घटकात् द्वौ वैकल्पिकप्रश्नौ प्रदास्येते। ये प्रश्न वैकल्पिक होंगे ।

Unit	Topics	Contact Hours
I	श्रीमद्भगवद्गीता-द्वादशोऽध्यायः 14 अंकाः (क) द्वयोः श्लोकयोः व्याख्या 2x4=8 अंकाः (ख) आलोचनात्मकः प्रश्नः 1x6=6 अंकाः	**15**
II	पातञ्जलयोगसूत्रम् (साधनपाद-29-55) 14 अंकाः (क) द्वयोः सूत्रयोः व्याख्या 2x4= 8 अंका (ख) आलोचनात्मकः प्रश्नः 1x6= 6 अंकाः	**14**
III	षोडशसंस्काराः तेषां महत्त्वं च 14 अंकाः संस्काराणां स्वरूपं, तेषां विधि महत्त्वं च आधृत्य आलोचनात्मकौ द्वौ प्रश्नौ। 2x7=14 अंकाः	**16**
IV	मनुस्मृतिः (अष्टामाध्यायः 1-50) 14 अंकाः (क) द्वयोः श्लोकयोः व्याख्या 2x4=8 अंकाः (ख) आलोचनात्मकः प्रश्नः 1x6=6 अंकाः	**16**

Suggested Evaluation Methods	
Internal Assessment: 30 Marks ➢ **Theory** • Class Participation: 5 • Seminar/presentation/assignment/quiz/class test etc.: 5+5=10 • Mid-Term Exam: 15	**End Term Examination:** **70 Marks**

Part C-Learning Resources

Recommended Books/e-resources/LMS:

1. श्रीमद्भगवद्गीता, तत्त्वविवेचनी टीका, गीताप्रेस, गोरखपुर,
2. पातञ्जलयोगप्रदीप, मोतीलाल बनारसीदास, नई दिल्ली
3. हिन्दुसंस्कार, राजबली पाण्डेय, चौखम्बा विद्याभवन वाराणसी
4. संस्कारविधि, महर्षि दयानन्द सरस्वती, आर्ष साहित्य प्रचार ट्रस्ट, नया बांस दिल्ली
5. मनुस्मृतिः, कुल्लूकभट्टकृतमन्वर्थमुक्तावली सहिता, शिवराज आचार्यः कौण्डिन्यायनः, चौखम्बा विद्याभवन, वाराणसी

Session: 2023-24			
Part A – Introduction			
Subject	Sanskrit		
Semester	II		
Name of the Course	Bachelor of Shastri		
Course Code	B023-SHT-201 व्याकरण–प्रक्रिया		
Course Type: (CC/MCC/MDC/CC-M/DSEC/VOC/DSE/PC/AEC/VAC)	CC-A2		
Level of the course (As per Annexure-I	100-199		
Pre-requisite for the course (if any)	Senior Secondary (10+2) or Visharad or Equivalent in any stream		
Course Learning Outcomes(CLO):	After completing this course, the learner will be able to: CLO : 201.1 –अस्मिन् घटके विसर्गसन्धेः अव्ययानां च ज्ञानं छात्रेभ्यः प्रदास्यते। CLO : 201.2 – अनेन घटकेन महत्त्वपूर्णस्य समासप्रकरणस्य ज्ञानं कारयिष्यते। यत् भाषासंक्षिप्तीकरणज्ञानस्य कृते आवश्यकं वर्तते। CLO : 201.3 – अनेन घटकेन अजन्तप्रकरणे समागतानां महत्त्वपूर्णशब्दानां सिद्धिज्ञानं कारयिष्यते। CLO : 201.4 – घटकेऽस्मिन् छात्राः हलन्तशब्दरूपाणां ज्ञानं प्राप्तुं समर्थाः भविष्यन्ति।		
Credits	Theory	Practical	Total
	3+1	—	4
Contact Hours	60		60

Max. Marks: **Internal Assessment Marks:** **End Term Exam Marks:**	**100** **30** 70	**Time: 3 Hrs.**

Part B- Contents of the Course

Instructions for Paper-Setter

1. प्रश्नपत्रे पञ्चप्रश्नाः भविष्यन्ति। प्रश्नपत्राय 70 अङ्काः निर्धारिताः सन्ति। प्रत्येकं प्रश्नः चतुर्दशाङ्कानां भविष्यति।
2. प्रथमः प्रश्नः अनिवार्यः वर्तते। प्रश्नोऽयं पाठ्यक्रमस्य चतुर्घटकेषु आधारितः भविष्यति। अस्मिन् लघूत्तरीयाः 7 प्रश्नाः विकल्परहिताः प्रदास्यन्ते। प्रत्येकं प्रश्नः अङ्कद्वयोः भविष्यति।
3. द्वितीयतृतीयचतुर्थपञ्चम-प्रश्नानां निर्माणं यथाक्रमं चतुर्घटकेषु आधारितः भविष्यति। प्रत्येकस्मात् घटकात् द्वौ वैकल्पिकप्रश्नौ प्रदास्येते। ये प्रश्न वैकल्पिक होंगे ।

Unit	Topics	Contact Hours
I	विसर्गसन्धिः अव्ययप्रकरणं च (लघुसिद्धान्तकौमुदी) 14 अंकाः (क) विसर्गसन्धिः-रूपसिद्धिः 2x4=8 अंकाः (ख) अव्ययप्रकरण-सूत्रव्याख्या 2x3=6 अंकाः	**15**
II	समासप्रकरणम् (लघुसिद्धान्तकौमुदी) 14 अंकाः (क) रूपसिद्धिः 2x4= 8 अंका (ख) सूत्रव्याख्या 2x3= 6 अंकाः	**17**
III	अजन्तप्रकरणम् (लघुसिद्धान्तकौमुदी) 14 अंकाः राम, सर्व, हरि, सखा, रमा, मति, ज्ञान (क) रूपसिद्धिः 2x4=8 अंकाः (ख) सूत्रव्याख्या 2x3=6 अंकाः	**14**
IV	हलन्तप्रकरणम् (लघुसिद्धान्तकौमुदी) 14 अंकाः इदम्, किम्, राजन्, पथिन्, अस्मद्, युष्मद् (क) रूपसिद्धिः 2x4=8 अंकाः (ख) सूत्रव्याख्या 2x3=6 अंकाः	**14**

Suggested Evaluation Methods	
Internal Assessment: 30 Marks ➢ **Theory** • Class Participation: 5 • Seminar/presentation/assignment/quiz/class test etc.: 5+5 • Mid-Term Exam: 15	**End Term Examination:** **70 Marks**

Part C-Learning Resources

Recommended Books/e-resources/LMS:

1. लघुसिद्धान्तकौमुदी, (वरदराजाचार्यकृत) व्या॰ श्री गोविन्दाचार्य, चौखम्बा सुरभारती, वाराणसी

Session: 2023-24	
Part A – Introduction	
Subject	Sanskrit
Semester	II
Name of the Course	Bachelor of Shastri
Course Code	B 23-SHT-202 पद्यं नीतिसाहित्यं च
Course Type: (CC/MCC/MDC/CC-M/DSEC/VOC/DSE/PC/AEC/VAC)	CC-B2
Level of the course (As per Annexure-I	100-199
Pre-requisite for the course (if any)	Senior Secondary (10+2) or Visharad Equivalent in any stream
Course Learning Outcomes(CLO):	After completing this course, the learner will be able to: CLO : 202.1–महाकविभारविविरचितं 'किरातार्जुनीयम्' राजनीतिज्ञानविषयकम् अर्थगाम्भीर्यपूर्णं महत्त्वपूर्णं महाकाव्यं वर्तते। अनेन घटकेन एतत्प्रथमसर्गज्ञानं छात्रेभ्यः कारयिष्यते। CLO : 202.2 – किरातार्जुनीये महाकाव्ये वर्णितपात्राणां वैशिष्ट्यं तेषां जीवनचरितं च बोधयिष्यते। CLO : 202.3 – भर्तृहरिविरचितं नीतिशतकं नीतिविषयकं ज्ञानं धत्ते। अनेन घटकेन अस्य 50 नीतिश्लोकानां ज्ञानं कारयिष्यते। CLO : 203.4 – भर्तृहरिकृतिं नीतिशतकमाधृत्य विविधपक्षज्ञानं छात्रेभ्यः कारयिष्यते।।

Credits	Theory	Practical	Total
	3+1		4
Contact Hours	60		60
Max. Marks: 100 **Internal Assessment Marks:** 30 **End Term Exam Marks:** 70		**Time: 3 Hrs.**	

Part B- Contents of the Course

Instructions for Paper-Setter

1. प्रश्नपत्रे पञ्चप्रश्नाः भविष्यन्ति। प्रश्नपत्राय 70 अङ्काः निर्धारिताः सन्ति। प्रत्येकं प्रश्नः चतुर्दशाङ्कानां भविष्यति।
2. प्रथमः प्रश्नः अनिवार्यः वर्तते। प्रश्नोऽयं पाठ्यक्रमस्य चतुर्घटकेषु आधारितः भविष्यति। अस्मिन् लघूत्तरीयाः 7 प्रश्नाः विकल्परहिताः प्रदास्यन्ते। प्रत्येकं प्रश्नः अङ्कद्वयोः भविष्यति।
3. द्वितीयतृतीयचतुर्थपञ्चम-प्रश्नानां निर्माणं यथाक्रमं चतुर्घटकेषु आधारितः भविष्यति। प्रत्येकस्मात् घटकात् द्वौ वैकल्पिकप्रश्नौ प्रदास्येते। ये प्रश्न वैकल्पिक होंगे ।

Unit	Topics	Contact Hours
I	किरातार्जुनीयम् (प्रथमः सर्गः) 14 अंकाः (क) श्लोकव्याख्या 2x4= 8 अंकाः (ख) सूक्तिव्याख्या 2x3= 6 अंकाः	**14**
II	किरातर्जुनीयम् तत्कविं च भारविम् आधृत्य एकः निबन्धात्मकः प्रश्नः। 14 अंकाः	**12**
III	नीतिशतकम् (1-50 श्लोकः) 14 अंकाः (क) द्वयोः श्लोकयोः व्याख्या 2x4= 8 अंकाः (ख) सूक्ति-व्याख्या 2x3= 6 अंकाः	**16**
IV	नीतिशतकं तत्कविं च भर्तृहरिमाधृत्य एकः आलोचनात्मकः प्रश्नः। 14 अंकाः	**12**

Suggested Evaluation Methods	
Internal Assessment: 30 marks ➢ **Theory** • Class Participation: 5 • Seminar/presentation/assignment/quiz/class test etc.: 5+5=10 • Mid-Term Exam: 15	**End Term Examination:** **70 Marks**

Part C-Learning Resources

Recommended Books/e-resources/LMS:

1. किरातार्जुनीयम्–भारविविरचितम्, व्या॰ बाबूराम पाण्डेय, चौखम्बा सुरभारती प्रकाशन
2. नीतिशतकम्, भर्तृहरिविरचितम्, चौखम्बा सुरभारती वाराणसी
3. नीतिशतकम्, व्या॰ डा॰ सुरेश चन्द्र चौबे, प्रताप नगर, जयपुर हाऊस, आगरा, उत्तर प्रदेश

Session: 2023-24	
Part A - Introduction	
Subject	Sanskrit
Semester	II
Name of the Course	Bachelor of Shastri
Course Code	B023-SHT-203, काव्यशास्त्रम्
Course Type: (CC/MCC/MDC/CC-M/DSEC/VOC/DSE/PC/AEC/VAC)	CC-C2
Level of the course (As per Annexure-I	100-199
Pre-requisite for the course (if any)	Senior Secondary (10+2) or Visharad or Equivalent in any stream
Course Learning Outcomes(CLO):	After completing this course, the learner will be able to: CLO : 203.1 – आचार्यविश्वनाथविरचितः साहित्यदर्पणः काव्यशास्त्रस्य महत्त्वपूर्णः ग्रन्थः वर्तते। अनेन घटकेन काव्यस्वरूपस्य तल्लक्षणस्य बोधः कारयिष्यते। CLO : 203.2 – अनेन घटकेन रसस्वरूपस्य ज्ञानं तत्निष्पत्तेश्च प्रक्रियाबोधः कारयिष्यते। CLO : 203.3 – संस्कृतसाहित्ये काव्यं द्विविधं दृश्यं श्रव्यञ्चेति। अनेन घटकेन काव्यद्वयस्य स्वरूपज्ञानं विधास्यते। CLO : 203.4 – अनेन घटकेन काव्यशरीरशोभकानाम् अलङ्काराणां ज्ञानं कारयिष्यते।

Credits	Theory	Practical	Total
	3+1	—	4
Contact Hours	60		60
Max. Marks: 100 **Internal Assessment Marks:** 30 **End Term Exam Marks:** 70		**Time: 3 Hrs.**	

Part B- Contents of the Course

Instructions for Paper-Setter

1. प्रश्नपत्रे पञ्चप्रश्नाः भविष्यन्ति। प्रश्नपत्राय 70 अङ्काः निर्धारिताः सन्ति। प्रत्येकं प्रश्नः चतुर्दशाङ्कानां भविष्यति।
2. प्रथमः प्रश्नः अनिवार्यः वर्तते। प्रश्नोऽयं पाठ्यक्रमस्य चतुर्घटकेषु आधारितः भविष्यति। अस्मिन् लघूत्तरीयाः 7 प्रश्नाः विकल्परहिताः प्रदास्यन्ते। प्रत्येकं प्रश्नः अङ्कद्वयोः भविष्यति।
3. द्वितीयतृतीयचतुर्थपञ्चम-प्रश्नानां निर्माणं यथाक्रमं चतुर्घटकेषु आधारितः भविष्यति। प्रत्येकस्मात् घटकात् द्वौ वैकल्पिकप्रश्नौ प्रदास्येते। ये प्रश्न वैकल्पिक होंगे ।

Unit	Topics		Contact Hours
I	साहित्यदर्पणः (प्रथमः परिच्छेदः)	14 अंकाः	**12**
	(क) द्वयोः कारिकयोः व्याख्या	2x4=8 अंकाः	
	(ख) एकः आलोचनात्मकः प्रश्नः	1x6=6 अंकाः	
II	साहित्यदर्पणः (तृतीयपरिच्छेदः 1-55 का०)	14 अंकाः	**15**
	(क) द्वयोः कारिकयोः व्याख्या	2x4=8 अंकाः	
	(ख) एकः आलोचनात्मकः प्रश्नः	1x6=6 अंकाः	
III	साहित्यदर्पणः (षष्ठपरिच्छेदः 1-60, 313-337)	14 अंकाः	**17**
	(क) संक्षिप्तटिप्पणीद्वयम्	2x4=8 अंकाः	
	(ख) एकः आलोचनात्मकः प्रश्नः	1x6=6 अंकाः	

IV	साहित्यदर्पण: (दशम: परिच्छेद:) 14 अंका: अनुप्रास, उपमा, रुपक, उत्प्रेक्षा, सन्देह, श्लेष, अपह्नुति, निदर्शना, विभावना, विशेषोक्ति, अर्थान्तरन्यास, भ्रान्तिमान्	**16**

Suggested Evaluation Methods

Internal Assessment: 30 Marks ➢ **Theory** • Class Participation: 5 • Seminar/presentation/assignment/quiz/class test etc.: 5+5=10 • Mid-Term Exam: 15	**End Term Examination:** 70

Part C-Learning Resources

Recommended Books/e-resources/LMS:

साहित्यदर्पण:, व्याख्याकार - डॉ॰ सत्यव्रत सिंह, चौखम्बा विद्याभारती वाराणसी

साहित्यदर्पण:, पं॰ शालिग्राम शास्त्री, मोतीलाल बनारसीदास, नई दिल्ली

KURUKSHETRA UNIVERSITY KURUKSHETRA

Scheme of Examination and Syllabus for

Under-Graduate Programme

Subject: ELECTRONICS

Under Multiple Entry-Exit, Internship and CBCS-LOCF in accordance to NEP-2020 w.e.f. 2023-24 (in phased manner)

Scheme of Examination for Under-Graduate Programme
Under Multiple Entry-Exit, Internship and CBCS-LOCF in accordance to NEP-2020
w.e.f. 2023-24 (in phased manner), Subject : Electronics

FIRST YEAR: SEMESTER-1									
Remarks	**Course**	**Paper(s)**	**Nomenclature of Paper**	**Credits**	**Hours/ Week**	**Internal marks**	**External Marks**	**Total Marks**	**Exam Duration**
Scheme A & C	**CC-1 MCC-1 4 credit**	B23-ELE-101	Electronic Devices and Network Analysis	3	3	20	50	70	3 hrs.
			Practical	1	2	10	20	30	3 hrs.
Scheme C only	**MCC-2 4 credit**	B23-ELE-102	Electronic Components, Measuring Instruments and Amplifiers	3	3	20	50	70	3 hrs.
			Practical	1	2	10	20	30	3 hrs.
Scheme A	**CC-M1 2 credit**	B23-ELE-103	Basic Digital Electronics	1	1	10	20	30	3 hrs.
			Practical	1	2	5	15	20	3 hrs.
Scheme A & C	**MDC-1 3 credits**	B23-ELE-104	Electronics in Daily Life	2	2	15	35	50	3 hrs.
			Practical	1	2	5	20	25	3 hrs.
Scheme C only	**CC-M1 4 credit**	From Available CC-M1 of 4 credits as per NEP							
Scheme A & C	**AEC-1 2 credit**	From Available AEC-1 of two credits as per NEP							
	SEC-1 3 credit	From Available SEC-1 of three credits as per NEP							
	VAC-1 2 credit	From Available VAC-1 of two credits as per NEP							

FIRST YEAR: SEMESTER-2									
Remarks	**Course**	**Paper(s)**	**Nomenclature of Paper**	**Credits**	**Hours/ Week**	**Internal marks**	**External Marks**	**Total Marks**	**Exam Duration**
Scheme A & C	**CC-2 MCC-3 4 credit**	B23-ELE-201	Electronic Devices and Basic Digital Electronics	3	3	20	50	70	3 hrs.
			Practical	1	2	10	20	30	3 hrs.
Scheme C only	**DSEC-2 4 credit**	B23-ELE-202	Power Devices & Multivibrators	3	3	20	50	70	3 hrs.
			Practical	1	2	10	20	30	3 hrs.
Scheme A only	**CC-M2 2 credit**	B23-ELE-203	Basic Electronic components & Devices	1	1	10	20	30	3 hrs.
			Practical	1	2	5	15	20	3 hrs.
Scheme A & C	**MDC-2 3 credits**	B23-ELE-204	Understanding of Mobiles and Computer Systems	2	2	15	35	50	3 hrs.
			Practical	1	2	5	20	25	3 hrs.
Scheme C only	**CC-M2 4 credit**	From Available CC-M2 of 4 credits as per NEP							
Scheme A & C	**AEC-2 2 credit**	From Available AEC-2 of two credits as per NEP							
	SEC-2 3 credit	From Available SEC-2 of three credits as per NEP							
	VAC-2 2 credit	From Available VAC-2 of two credits as per NEP							
Internship of 4 credits of 4-6 weeks duration after 2nd Semester									

SECOND YEAR: SEMESTER-3									
Remarks	**Course**	**Paper(s)**	**Nomenclature of Paper**	**Credits**	**Hours/ Week**	**Internal marks**	**External Marks**	**Total Marks**	**Exam Duration**
Scheme A, B & C	**CC-3 MCC-4 4 credit**	B23-ELE-301	Combinational & Sequential Circuits	3	3	20	50	70	3 hrs.
			Practical	1	2	10	20	30	3 hrs.
Scheme B & C	**MCC-5 4 credit**	B23-ELE-302	Digital Electronics	3	3	20	50	70	3 hrs.
			Practical	1	2	10	20	30	3 hrs.
Scheme A, B & C	**MDC-3 3 credits**	B23-ELE-303	Electronics in Smart World	2	2	15	35	50	3 hrs.
			Practical	1	2	5	20	25	3 hrs.
Scheme A & C	**CC-M3 4 credits**	From Available CC-M3 of 4 credits as per NEP							
Scheme B only	**CC-M3 (V) 4 credits**	From Available CC-M3(V) of 4 credits as per NEP							
Scheme A, B & C	**AEC-3 2 credit**	From Available AEC-3 of two credits as per NEP							
	SEC-3 3 credit	From Available SEC-3 of three credits as per NEP							
Scheme C only	**VAC-3 2 credits**	From Available VAC-3 of two credits as per NEP							
Scheme B only	**MCC-3**	**MCC-2 FROM SCHEME C OF FIRST SEMESTER**							
SECOND YEAR: SEMESTER-4									
Remarks	**Course**	**Paper(s)**	**Nomenclature of Paper**	**Credits**	**Hours/ Week**	**Internal marks**	**External Marks**	**Total Marks**	**Exam Duration**
Scheme A, B & C	**CC-4 MCC-6 4 credit**	B23-ELE-401	Operational Amplifier & Sinusoidal Oscillators	3	3	20	50	70	3 hrs.
			Practical	1	2	10	20	30	3 hrs.
Scheme B & C	**MCC-7 4 credit**	B23-ELE-402	IC Fabrication Technology	3	3	20	50	70	3 hrs.
			Practical	1	2	10	20	30	3 hrs.
Scheme B & C	**MCC-8 4 credit**	B23-ELE-403	Electronic Communication	3	3	20	50	70	3 hrs.
			Practical	1	2	10	20	30	3 hrs.
Scheme B & C	**DSE-1 4 credit Select one option**	B23-ELE-404	Optical Fiber Communication	3	3	20	50	70	3 hrs.
			Practical	1	2	10	20	30	3 hrs.
		B23-ELE-405	Wireless & Mobile Communication	3	3	20	50	70	3 hrs.
			Practical	1	2	10	20	30	3 hrs.
Scheme A, B & C	**CC-M4 (V) 4 credits**	From Available CC-M4(V) of 4 credits as per NEP							
	AEC-4 2 credit	From Available AEC-3 of two credits as per NEP							
Scheme C only	**VAC-4 2 credits**	From Available VAC-4 of two credits as per NEP							
Scheme A & B	**VAC-3 2 credits**	From Available VAC-3 of two credits as per NEP							
Internship of 4 credits of 4-6 weeks duration after 4th Semester (if not done after second semester)									

THIRD YEAR: SEMESTER-5									
Remarks	**Course**	**Paper(s)**	**Nomenclature of Paper**	**Credits**	**Hours/ Week**	**Internal marks**	**External Marks**	**Total Marks**	**Exam Duration**
Scheme A, B & C	**CC-5 MCC-9 4 credit**	B23-ELE-501	Transducers and Sensors	3	3	20	50	70	3 hrs.
			Practical	1	2	10	20	30	3 hrs.
Scheme B & C	**MCC-10 4 credit**	B23-ELE-502	Digital Signal Processing	3	3	20	50	70	3 hrs.
			Practical	1	2	10	20	30	3 hrs.
Scheme B & C	**DSE-2 4 credit Select one Option**	B23-ELE-503	Microprocessor Architecture and Programming with 8085	3	3	20	50	70	3 hrs.
			Practical	1	2	10	20	30	3 hrs.
		B23-ELE-504	Optoelectronic Devices	3	3	20	50	70	3 hrs.
			Practical	1	2	10	20	30	3 hrs.
Scheme B & C	**DSE-3 4 credit Select one Option**	B23-ELE-505	Mechatronics	3	3	20	50	70	3 hrs.
			Practical	1	2	10	20	30	3 hrs.
		B23-ELE-506	Embedded Systems	3	3	20	50	70	3 hrs.
			Practical	1	2	10	20	30	3 hrs.
Scheme A & C	**CC-M5 (V) 4 credits**	From Available CC-M5(V) of 4 credits as per NEP							
Scheme A, B & C	**Internship 4 credits**	Internship#4 credit after 4th semester							
THIRD YEAR: SEMESTER-6									
Remarks	**Course**	**Paper(s)**	**Nomenclature of Paper**	**Credits**	**Hours/ Week**	**Internal marks**	**External Marks**	**Total Marks**	**Exam Duration**
Scheme A, B & C	**CC-6 MCC-11 4 credit**	B23-ELE-601	Microcontroller 8051 and its Interfacing	3	3	20	50	70	3 hrs.
			Practical	1	2	10	20	30	3 hrs.
Scheme B & C	**MCC-12 4 credit**	B23-ELE-602	Basic Electrical Engineering & Skills	3	3	20	50	70	3 hrs.
			Practical	1	2	10	20	30	3 hrs.
Scheme B & C	**DSE-4 4 credit Select one Option**	B23-ELE-603	Interfacing Peripheral Devices and Applications of 8085	3	3	20	50	70	3 hrs.
			Practical	1	2	10	20	30	3 hrs.
		B23-ELE-604	Verilog and FPGA based System Design	3	3	20	50	70	3 hrs.
			Practical	1	2	10	20	30	3 hrs.
Scheme B & C	**DSE-5 4 credit Select one Option**	B23-ELE-605	Introduction to C and its programming	3	3	20	50	70	3 hrs.
			Practical	1	2	10	20	30	3 hrs.
		B23-ELE-606	Modern communication systems	3	3	20	50	70	3 hrs.
			Practical	1	2	10	20	30	3 hrs.
Scheme A only	**CC-M6 4 credits**	From Available CC-M6 of 4 credits as per NEP							
Scheme A only	**CC-M7(V) 4 credits**	From Available CC-M7(V) of 4 credits as per NEP							
Scheme B only	**CC-M5(V) 4 credits**	**From Available CC-M5(V) of 4 credits as per NEP**							
Scheme C only	**CC-M6(V) 4 credits**	**From Available CC-M6(V) of 4 credits as per NEP**							
Scheme C only	**SEC-4 2 credit**	From Available SEC-4 of two credits as per NEP							

FOURTH YEAR: SEMESTER-7 (FOR HONOURS/HONOURS WITH RESEARCH IN ELECTRONICS)									
Remarks	**Course**	**Paper(s)**	**Nomenclature of Paper**	**Credits**	**Hours/ Week**	**Internal marks**	**External Marks**	**Total Marks**	**Exam Duration**
for Honours in Electronics/ Honours with Research in Electronics (For Scheme B & C)	**CC-H1 4 credit**	B23-ELE-701	Digital Circuits and System Design	4	4	30	70	100	3 hrs.
	CC-H2 4 credit	B23-ELE-702	MOS Analog Circuits	4	4	30	70	100	3 hrs.
	CC-H3 4 credit	B23-ELE-703	Instrumentation and Control Systems	4	4	30	70	100	3 hrs.
	DSE-H1 4 credit Select one Option	B23-ELE-704	Optical Fiber Communication	4	4	30	70	100	3 hrs.
		B23-ELE-705	CAD Tools for VLSI	4	4	30	70	100	3 hrs.
	PC-H1 4 credit	B23-ELE-706	Practical Based on B23-ELE-701 TO 704/705	4	8	30	70	100	6 hrs.
	CC-HM1 4 credit	From Available Minor of 4 credits as per NEP							
SEMESTER-8 (FOR HONOURS IN ELECTRONICS)									
Remarks	**Course**	**Paper(s)**	**Nomenclature of Paper**	**Credits**	**Hours/ Week**	**Internal marks**	**External Marks**	**Total Marks**	**Exam Duration**
Honours in Electronics (For Scheme B & C)	**CC-H4 4 credit**	B23-ELE-801	Microwave devices and systems	4	4	30	70	100	3 hrs.
	CC-H5 4 credit	B23-ELE-802	MOS Digital Circuits	4	4	30	70	100	3 hrs.
	CC-H6 4 credit	B23-ELE-803	Device Models and Circuit Simulation	4	4	30	70	100	3 hrs.
	DSE-H2 4 credit Select one option	B23-ELE-804	Semiconductor Material & Device Characterization	4	4	30	70	100	3 hrs.
		B23-ELE-805	Digital Communication	4	4	30	70	100	3 hrs.
	PC-H2 4 credit	B23-ELE-806	Practical Based on B23-ELE-801 TO 804/805	4	8	30	70	100	6 hrs.
	CC-HM2 4 credit	From Available Minor of 4 credits as per NEP							
OR SEMESTER-8 (FOR HONOURS WITH RESEARCH IN ELECTRONICS)									
Remarks	**Course**	**Paper(s)**	**Nomenclature of Paper**	**Credits**	**Hours/ Week**	**Internal marks**	**External Marks**	**Total Marks**	**Exam Duration**
Honours with Research in Electronics (For Scheme B & C)	**CC-H4 4 credit**	B23-ELE-801	Microwave devices and systems	4	4	30	70	100	3 hrs.
	CC-H5 4 credit	B23-ELE-802	MOS Digital Circuits	4	4	30	70	100	3 hrs.
	Project/ Dissertation 12 credit	B23-ELE-807	Project/Dissertation	8+4	-	-	300	300	-
	CC-HM2 4 credit	From Available Minor of 4 credits as per NEP							

Session: 2023-24			
Part A - Introduction			
Subject	ELECTRONICS		
Semester	FIRST		
Name of the Course	Electronic Devices and Network Analysis		
Course Code	B23-ELE-101		
Course Type: (CC/MCC/MDC/CC-M/DSEC/VOC/DSE/PC/AEC/VAC)	CC-1 MCC-1		
Level of the course	100-199		
Pre-requisite for the course (if any)	Physics as a Subject at 4.0 Level (Class XII)		
Course Learning Outcomes (CLO):	After completing this course, the learner will be able to: 1. understand the construction, working & applications of various semiconductor diodes 2. Learn about the use of filters in rectifiers and about Bipolar Junction Transistor. 3. understand the concept of various network circuits and its uses 4. understand the conversion of one network to another 5. present the experimental results and conclusions by having Hands-on experience in the Laboratory		
Credits	Theory	Practical	Total
	3	1	4
Contact Hours	45	30	75
Max. Marks: 100 (70 Theory + 30 Practical) Internal Assessment Marks: 20 Theory +10 Practical End Term Exam Marks: 50 Theory + 20 Practical		Exam Time: 3 Hours each for Theory & Practical	

Part B- Contents of the Course

Instructions for Paper- Setter

1. Nine questions will be set in all. All questions will carry equal marks.
2. Question No. 1, which will be short answer type covering the entire syllabus, will be compulsory. The remaining eight questions will be set unit wise selecting two questions from each Unit I to IV. The candidate will be required to attempt question No. 1 and four more questions selecting one question from each unit.

Unit	Topics	Contact Hours
I	**Semiconductors Devices & applications**: - Overview of Semiconductors, Junction diode and its characteristics, Zener diode, Voltage Regulation using Zener Diode, shunt and series clipping circuit, clamping circuit. **Rectifiers:** - HWR, FWR, Bridge FWR, calculation of rectifier parameters.	11
II	**Filter circuits:** L, C, LC (Calculation of ripple factor for capacitor filter only), Voltage multiplier Circuit. **Bipolar Junction Transistor: -** Potential curves in unbiased and biased transistor, Transistor current components, Static Characteristics of CB & CE configuration, active, cut off and saturation regions. Transistor current gains (Alpha, Beta, and Gama), Transistor as an Amplifier	12
III	**Network Theorems: -** Superposition theorem, Thevenin's Theorem, **Norton's** Theorem, Maximum Power Transfer Theorem, Millman's Theorem, examples and problems of each topic. **Two–port Network: -**Open Circuit Impedance(Z) Parameters, Short Circuit Admittance (Y) Parameters, Transmission (ABCD) Parameters, Inverse Transmission (A'B'C'D') Parameters, Hybrid(H) Parameters, Inverse Hybrid(g) Parameters	11
IV	Conversion of Parameters, Dependent sources (CCCS, VCVS, VCCS, CCVS), Inter Connection of Two – Port Networks, T and π Representation, Terminated Two-Port Networks, Lattice Networks, Image Parameters	11
V*	**Note:** A candidate is required to perform minimum 6 experiments out of the list provided during course of study in this semester. 1. To study the V-I characteristics of PN junction diode. 2. To study the Zener diode as voltage regulator. 3. To study HWR and FWR and measurement of ripple factor with and without C filter. 4. To study diode as shunt clipping clement. 5. To study diode as clamping element. 6. Study of Input and output CB characteristics . 7. Study of CE Input and Output characteristics 8. Measurement of voltageand Time period using CRO. 9. Measurement of resistance value using colour codes and multimeter. Also design and verify the potential divider arrangement using resistances. 10. To verify maximum power transfer theorem for DC network.	30
Suggested Evaluation Methods		

Internal Assessment:	End Term Examination:
➢ **Theory 20 Marks** • Class Participation: **5 Marks** • Seminar/presentation/assignment/quiz/class test etc.: **5 Marks** • Mid-Term Exam: **10 Marks** ➢ **Practicum 10 Marks** • Class Participation: • Seminar/Demonstration/Viva-voce/Lab records etc.: **10 Marks** • Mid-Term Exam:	50 Marks 20 Marks

Part C-Learning Resources

Recommended Books/e-resources/LMS:

1. Integrated Electronics by Millman and Halkias.
2. Basic Electronics and Linear Circuits by NN Bhargava, DC Kulshreshtha (TTTI)
3. Electronics Devices and Circuit by Allen Mottershead
4. Circuits and Networks by A. Sudhakar, Shyammohan
5. Network Analysis, Publication Khanna by G.K. Mithal
6. Network Analysis, Publication Pearson India by M.E. Van Valkenburg

Session: 2023-24			
Part A - Introduction			
Subject	ELECTRONICS		
Semester	FIRST		
Name of the Course	Electronic Components, Measuring Instruments and Amplifiers		
Course Code	B23-ELE-102		
Course Type: (CC/MCC/MDC/CC-M/DSEC/VOC/DSE/PC/AEC/VAC)	MCC-2		
Level of the course	100-199		
Pre-requisite for the course (if any)	Physics as a Subject at 4.0 Level (Class XII)		
Course Learning Outcomes (CLO):	After completing this course, the learner will be able to: 1. Learn about Passive components and their use 2. Understand the concept and use of different measuring instruments. 3. Understand the basics of Bipolar Junction Transistors 4. Understand the construction and working of different amplifiers 5. Get the Handson experience Through Lab work		
Credits	Theory	Practical	Total
	3	1	4
Contact Hours	45	30	75
Max. Marks: 100 (70 Theory + 30 Practical) Internal Assessment Marks: 20 Theory +10 Practical End Term Exam Marks: 50 Theory + 20 Practical		Exam Time: 3 Hours each for Theory & Practical	
Part B- Contents of the Course			

Instructions for Paper- Setter

1. Nine questions will be set in all. All questions will carry equal marks.
2. Question No. 1, which will be short answer type covering the entire syllabus, will be compulsory. The remaining eight questions will be set unit wise selecting two questions from each Unit I to IV. The candidate will be required to attempt question No. 1 and four more questions selecting one question from each unit.

Unit	Topics	Contact Hours
I	**Passive Components:** Resistors, Capacitors, Inductors, Transformers, Relays, Fuses (their types & applications). **Introduction to Semiconductors:** Energy Band Diagram, Conductors, Semiconductors, Insulators, Intrinsic and Extrinsic Semiconductors (P&N), currents in semiconductors, Diffusion Junction, Depletion Layer, Barrier Potential.	11
II	**Measuring Instruments:** Regulated power supply, Analogue Multimeter, Digital Multimeter, Cathode Ray Oscilloscope, Function Generator (functional block diagram, basic working principle, measuring quantities). **Zener diode regulator**: circuit diagram and explanation for load and line regulation, disadvantages of Zener diode regulator.	11
III	**Bipolar Junction Transistor:** Basic working principle, Input and Output Characteristics of CB & CE configurations, Biasing, Operating point, Load line, thermal runaway, stability and stability factor, Stabilization of Operating Point, Collector to Base bias, Voltage Divider bias and Emitter bias (+VCC &–VEE bias), circuit diagrams and their working.	12
IV	**Amplifiers:** Classification of amplifiers, Class-A, B, AB and C Amplifiers, Cascading of Amplifiers, RC Coupled amplifiers. Properties of amplifiers (distortion, noise, thermal noise, shot noise, noise figure). Feedback in Amplifiers: Feedback concept, transfer gain with feedback, Effect of Negative Feedback on amplifiers performance. Transistor as a switch (circuit and working), Darlington pair and its applications.	11
V*	**Note:** A candidate is required to perform minimum 6 experiments out of the list provided during course of study in this semester. 1. Identification and study of Electronics Components. 2. Understanding the use of Function generator and draw the different wave shapes by connecting it with CRO. 3. Understand the use of Multimeter by measuring resistance, capacitance, voltage, frequency, transistor type etc. 4. Measurement of voltage. Time period and phase-shift using CRO. 5. Study of fixed bias arrangement for transistor. 6. Study of Voltage divider bias arrangement for transistor. 7. Study of Collector to base bias arrangement for transistor. 8. Study multi stage R-C coupled amplifier & to determine frequency response & gain 9. Find the gain (i) Class A. Amplifier (ii) Class B. Amplifier (iii) Class C Amplifier. 10. Verify the operation of transistor as a switch and draw the waveform.	30
Suggested Evaluation Methods		

Internal Assessment: ➢ **Theory 20 Marks** • Class Participation: **5 Marks** • Seminar/presentation/assignment/quiz/class test etc.: **5 Marks** • Mid-Term Exam: **10 Marks** ➢ **Practicum 10 Marks** • Class Participation: • Seminar/Demonstration/Viva-voce/Lab records etc.: **10 Marks** • Mid-Term Exam:	**End Term Examination:** 50 Marks 20 Marks

Part C-Learning Resources

Recommended Books/e-resources/LMS:

1. Integrated Electronics by Millman and Halkias.
2. Basic Electronics and Linear Circuits by NN Bhargava, DC Kulshreshtha (TTTI)
3. Electronics Devices and Circuit by Allen Mottershead
4. Electronic Devices & Circuits by Sanjeev Gupta , Dhanpat Rai Publications

Session: 2023-24			
Part A - Introduction			
Subject	ELECTRONICS		
Semester	FIRST		
Name of the Course	Basic Digital Electronics		
Course Code	B23-ELE-103		
Course Type: (CC/MCC/MDC/CC-M/DSEC/VOC/DSE/PC/AEC/VAC)	**CC-M1**		
Level of the course	100-199		
Pre-requisite for the course (if any)	Physics as a Subject at 4.0 Level (Class XII)		
Course Learning Outcomes (CLO):	After completing this course, the learner will be able to: 1. To understand the basics of various Number systems and their conversions 2. To understand the basics of Boolean algebra and its theorems 3. To understand the concept and basics of different logic gates 4. To understand the concept and minimization techniques using K-maps 5. To learn and understand the use of various electronic components and equipment's used for analysis of basic digital electronic circuits		
Credits	Theory	Practical	Total
	1	1	2
Contact Hours	15	30	45
Max. Marks: 50 (30 Theory + 20 Practical) **Internal Assessment Marks: 10 Theory + 5 Practical** **End Term Exam Marks: 20 Theory + 15 Practical**		**Exam Time: 3 Hours each for Theory & Practical**	

Part B- Contents of the Course

Instructions for Paper- Setter

1. Nine questions will be set in all. All questions will carry equal marks.
2. Question No. 1, which will be short answer type covering the entire syllabus, will be compulsory. The remaining eight questions will be set unit wise selecting two questions from each Unit I to IV. The candidate will be required to attempt question No. 1 and four more questions selecting one question from each unit.

Unit	Topics	Contact Hours
I	**Number Systems:** Introduction to Decimal, Binary, Octal, Hexadecimal Number Systems and their inter-conversions; BCD codes, Excess-3 codes, Gray codes, code conversions, binary arithmetic (addition, Subtraction, multiplication, division), 1's and 2's compliments and 9's and 10's compliments.	3
II	**Boolean Algebra:** Postulates & theorems of Boolean algebra, Duality Principle, De-Morgan's Theorem.	4
III	**Logic Gates:** Positive and Negative Logic, Basic Logic Gates: AND, OR, NOT (symbol, truth-table, circuit diagram, working); NAND, NOR, EX-OR, EX-NOR (symbol, truth table).	4
IV	**Minimization Techniques:** Reduction of Boolean expressions using Boolean Identities, SOP and POS form of Boolean functions, Karnaugh Map simplifications, implementations of SOP and POS form using NAND and NOR gates.	4
V*	**Note:** A candidate is required to perform minimum 4 experiments out of the list provided during course of study in this semester. 1. Design of basis logic gates using discrete components. 2. Study of different type of digital IC's :(functions, pin diagram, block diagram of various Digital ICs etc.). 3. Data Sheet Analysis of Digital ICs (Quote the data sheet of any two digital ICs in Laboratory File). 4. Realization of Boolean Identities on Digital Trainer Kit. 5. Digital trainer using AOI. 6. Digital trainer using NAND gates. 7. Realization of K-map expression on Digital Trainer Kit.	30

Suggested Evaluation Methods

Internal Assessment: ➢ **Theory 10 Marks** • Class Participation: **4 Marks** • Seminar/presentation/assignment/quiz/class test etc.: • Mid-Term Exam: **6 Marks** ➢ **Practicum 5 Marks** • Class Participation: • Seminar/Demonstration/Viva-voce/Lab records etc.: **5 Marks** • Mid-Term Exam:	**End Term Examination:** **20 Marks** **15 Marks**

Part C-Learning Resources

Recommended Books/e-resources/LMS:

1. Digital Electronics by R.P. Jain
2. Digital Computer Electronics by A. P. Malvino

Session: 2023-24			
Part A - Introduction			
Subject	ELECTRONICS		
Semester	FIRST		
Name of the Course	Electronics in Daily Life		
Course Code	B23-ELE-104		
Course Type: (CC/MCC/MDC/CC-M/DSEC/VOC/DSE/PC/AEC/VAC)	**MDC-1**		
Level of the course	100-199		
Pre-requisite for the course (if any)	Any Arts, Commerce Subject at 4.0 Level (Class XII)		
Course Learning Outcomes (CLO):	After completing this course, the learner will be able to: 1. Understand about various electronic components 2. Learn about the use of AC and DC voltages and transformers etc 3. Understand the concept of assembling and disassembling of various home appliances. 4. Learn the concept and importance of earthing 5. To get practical exposure of various electronics components and appliances		
Credits	Theory	Practical	Total
	2	1	3
Contact Hours	30	30	60
Max. Marks: 75 (50 Theory + 25 Practical) Internal Assessment Marks: 15 Theory + 5 Practical End Term Exam Marks: 35 Theory + 20 Practical		Exam Time: 3 Hours each for Theory & Practical	

Part B- Contents of the Course

Instructions for Paper- Setter

1. Nine questions will be set in all. All questions will carry equal marks.
2. Question No. 1, which will be short answer type covering the entire syllabus, will be compulsory. The remaining eight questions will be set unit wise selecting two questions from each Unit I to IV. The candidate will be required to attempt question No. 1 and four more questions selecting one question from each unit.
3. Medium of examination may be Hindi/English.

Unit	Topics	Contact Hours
I	**Introduction to basic Electronics components and Devices:** Resistor, Color code, Inductor, Capacitor, basic Potentiometer circuit, Multiple range Potentiometer Classification of Instruments, Analog and Digital Mode of operations, Basics of CRO, Multimeter	7
II	AC - DC Voltage, Domestic Electric supply, Transformer, Power consumption, wire, electric tester, clamp meter, Fuse, circuit breaker, Inverter, Electric consumption meter reading, BEE rating, Soldering techniques, LED, Display HD, Full HD and UHD.	8
III	Repair and Maintenance of Home Appliances(Basic idea of Internal Circuit and working): Inverters and UPS, Switch Mode Power Supply, washing Machine , Electric Iron, Microwave Oven, Rice Cooker	9
IV	Measurement of Earth Resistance: Necessity of Earth Electrode, Necessity of measurement of Earth Electrode, Factors effecting Earth Electrodes, Methods of measuring Earth Resistance	6
V*	**Note:** A candidate is required to perform minimum 4 experiments out of the list provided during course of study in this semester. 1. Measurement of alternating voltage using multimeter. 2. Measurement of voltage and Time period and using CRO. 3. Measurement of resistance value using colour codes and multimeter. 4. Design and verify the potential divider arrangement using resistances. 5. Testing of wire, measuring voltage, current and frequency using multimeter 6. Demonstrate soldering of basic electronics components using soldering iron. 7. Understanding the role of transformer.	30
Suggested Evaluation Methods		
Internal Assessment: ➢ **Theory 15 Marks** • Class Participation: **4 Marks** • Seminar/presentation/assignment/quiz/class test etc.: **4 Marks** • Mid-Term Exam: **7 Marks** ➢ **Practicum 5 Marks** • Class Participation: • Seminar/Demonstration/Viva-voce/Lab records etc.: **5 Marks** • Mid-Term Exam:		**End Term Examination:** **35 Marks** **20 Marks**
Part C-Learning Resources		

Recommended Books/e-resources/LMS:

1. A course in Electrical and Electronic Measurements and Instrumentation by A K Sawhney.
2. Electronics Instrumentation and Measurement Techniques by W D Cooper
3. Handbook of Repair and Maintenance of Domestic Electronics Appliances, Shashi Bhushan Sinha, BPB Publications
4. Getting Down to Earth: A practical guide to earth resistance testing, Megger

Session: 2023-24			
Part A - Introduction			
Subject	ELECTRONICS		
Semester	SECOND		
Name of the Course	Electronic Devices and Basic Digital Electronics		
Course Code	B23-ELE-201		
Course Type: (CC/MCC/MDC/CC-M/DSEC/VOC/DSE/PC/AEC/VAC)	CC-2 MCC-3		
Level of the course	100-199		
Pre-requisite for the course (if any)	Electronics as a Subject (CC-1)		
Course Learning Outcomes (CLO):	After completing this course, the learner will be able to: Student will be able 1. To describe the basic Biasing Techniques. 2. To understand the basics of Field effect transistors 3. To learn about the number systems, conversions and K-map's 4. To understand the basics of Logic gates and Families 5. Hands-on practice of the analog and Digital based experiments		
Credits	Theory	Practical	Total
	3	1	4
Contact Hours	45	30	75
Max. Marks: 100 (70 Theory + 30 Practical) Internal Assessment Marks: 20 Theory + 10 Practical End Term Exam Marks: 50 Theory + 20 Practical		Exam Time: 3 Hours each for Theory & Practical	

Part B- Contents of the Course

Instructions for Paper- Setter

1. Nine questions will be set in all. All questions will carry equal marks.
2. Question No. 1, which will be short answer type covering the entire syllabus, will be compulsory. The remaining eight questions will be set unit wise selecting two questions from each Unit I to IV. The candidate will be required to attempt question No. 1 and four more questions selecting one question from each unit.

Unit	Topics	Contact Hours
I	**Transistor Biasing Techniques: -**Why Bias a Transistor, Selection of Operating Point, need for Bias Stabilization, Requirement of a Biasing Circuit, Different Biasing Circuits: Bias Circuit with Emitter Resistor, Voltage Divider Biasing Circuit, Emitter-Bias Circuit, Gain of a multi-stage amplifier.	12
II	**Field Effect Transistor: -** Junctions Field Effect Transistor, Qualitative Description of JFET, Drain and transfer characteristics of JFET, FET small signal low frequency model, CS & CD low frequency model, MOSFET -Depletion and enhancement and their drain & transfer characteristics, CMOS (Basic idea).	12
III	**Number Systems:** - Binary, Octal, Hexadecimal number system and base conversions, Binary Arithmetic operations, 1's and 2's complement representation and their arithmetic, Binary codes-BCD, Gray, Error detecting and correcting codes, BCD addition, Boolean Algebra: Postulates, Duality Principle, De Morgan's Law, Simplification of Boolean Identities, Standard SOP & POS Forms, Simplification using K-map (upto 4 variables), don't care condition, implementation of SOP & POS form using NAND and NOR Gate.	11
IV	**Logic Gates:** Positive and Negative logic level, Logic Gates: AND, OR, NOT, XOR, XNOR, NOR, NAND (Definition, Symbols & Truth table). **Logic families:** Unipolar & Bipolar Logic families, characteristics of Digital IC's (fan in, fan out, propagation delay. Noise Margin), RTL (NOR), DTL (NAND), TTL (NAND), CMOS Logic gate (NAND, NOR).	10
V*	**Note:** A candidate is required to perform minimum 6 experiments out of the list provided during course of study in this semester. 1. Study of fixed bias arrangement for transistors. 2. Study of voltage divider biasing arrangement for transistors. 3. Study of two stage R-C coupled transistor amplifier. 4. Study of JFET characteristics. 5. Study of different type of digital IC's :(functions, pin diagram, block diagram of various Digital ICs etc.). 6. Design of basis logic gates using discrete components. 7. Study of DTL NAND gate. 8. Study of TTL NAND gate. 9. Digital trainer using AND, OR & NOT gates. 10. Digital trainer using NAND gates.	30

Suggested Evaluation Methods	
Internal Assessment: ➢ **Theory 20 Marks** • Class Participation: **5 Marks** • Seminar/presentation/assignment/quiz/class test etc.: **5 Marks** • Mid-Term Exam: **10 Marks** ➢ **Practicum 10 Marks** • Class Participation: • Seminar/Demonstration/Viva-voce/Lab records etc.: **10 Marks** • Mid-Term Exam:	**End Term Examination:** 50 Marks 20 Marks

Part C-Learning Resources

Recommended Books/e-resources/LMS:

1. Basic Electronics and Linear Circuits by NN Bhargava, D C Kulshreshtha
2. Integrated Electronics by Millman and Halkias
3. Electronics Devices and Circuit by Allen Mottershead
4. Digital Electronics by R.P. Jain
5. Digital Computer Electronics by Albert Paul Malvino

Session: 2023-24			
Part A - Introduction			
Subject	ELECTRONICS		
Semester	FIRST		
Name of the Course	Power Devices and Multivibrators		
Course Code	B23-ELE-202		
Course Type: (CC/MCC/MDC/CC-M/DSEC/VOC/DSE/PC/AEC/VAC)	**DSEC-2**		
Level of the course	100-199		
Pre-requisite for the course (if any)	Electronics as a Subject (CC-1)		
Course Learning Outcomes (CLO):	After completing this course, the student will be able to: 1. Understand the working of Power Device SCR 2. Understand the working and applications of DIAC, TRIAC & UJT 3. Understand the use and working of Choppers 4. Understand the working and design of multivibrators. 5. Hands-on practice of the power devices and multivibrators based experiments		
Credits	Theory	Practical	Total
	3	1	4
Contact Hours	45	30	75
Max. Marks: 100 (70 Theory + 30 Practical) Internal Assessment Marks: 20 Theory + 10 Practical End Term Exam Marks: 50 Theory + 20 Practical		Exam Time: 3 Hours each for Theory & Practical	

Part B- Contents of the Course

Instructions for Paper- Setter

1. Nine questions will be set in all. All questions will carry equal marks.
2. Question No. 1, which will be short answer type covering the entire syllabus, will be compulsory. The remaining eight questions will be set unit wise selecting two questions from each Unit I to IV. The candidate will be required to attempt question No. 1 and four more questions selecting one question from each unit.

Unit	Topics	Contact Hours

I	**POWER SEMI CONDUCTOR DEVICES-I**: Introduction to Thyristors, comparison of Transistors and Thyristors, Thyristors Family, Silicon Controlled Rectifiers (SCR's), Two transistor analogy - Static and Dynamic characteristics - Turn on and turn off methods, Rating and specifications of SCR, Series and Parallel connection of SCR, Applications of SCR	12
II	**POWER SEMI CONDUCTOR DEVICES-II:** DIAC: Construction, working and Characteristics, TRIAC: Construction, working and Characteristics, Unijunction Transistor: Construction, working and Characteristics, UJT as relaxation oscillators	10
III	**POWER SEMI CONDUCTOR DEVICES-III:** CHOPPERS: Basic chopper circuit, types of choppers step-down chopper, step-up chopper, operation of D.C. chopper circuits using self-commutation, cathode pulse turn-off chopper, load sensitive cathode pulse turn-off chopper (Jones Chopper), Morgan's chopper	11
IV	**Switching Circuits (Multivibrators):** Construction and working of**:** Astable Multivibrator, Monostable Multivibrator, Bistable Multivibrator, Comparison of different Multivibrators, Applications of Multivibrators, Schmitt Trigger (Emitter Coupled Binary) applications of Schmitt Trigger	12
V*	**Note:** A candidate is required to perform minimum 6 experiments out of the list provided during course of study in this semester. 1. Characteristics of SCR 2. Characteristics of UJT 3. Characteristics of DIAC 4. Characteristics of TRIAC 5. UJT Relaxation Oscillator 6. Study of Astable multivibrator and plot the waveform 7. Study of Monostable Multivibrator and plot the waveform 8. Study of Bistable Multivibrator and plot the waveform 9. To observe and note down the output waveforms of Schmitt trigger using transistors 10. Study of triagular wave form generator using UJT.	30
Suggested Evaluation Methods		
Internal Assessment: ➢ **Theory 20 Marks** • Class Participation: **5 Marks** • Seminar/presentation/assignment/quiz/class test etc.: **5 Marks** • Mid-Term Exam: **10 Marks** ➢ **Practicum 10 Marks** • Class Participation: • Seminar/Demonstration/Viva-voce/Lab records etc.: **10 Marks** • Mid-Term Exam:		**End Term Examination:** 50 Marks 20 Marks
Part C-Learning Resources		

Recommended Books/e-resources/LMS:

1. Power Electronics, M.D.Singh & K.B.Khanchandani,TMH
2. Power Electronics, P.C.Sen,TMH
3. Power Electronics Circuits, Devices and Applications, 3rd Edition, M.H. Rashid, Pearson Education
4. Industrial electronics – G.K. Mithal, Khanna Publications – Delhi – 15thEd.1992.
5. Industrial and power electronics – C. Harish – Raj Umesh Publications – 4th Edn.1992.
6. Industrial and Power Electronics by G.K. Mithal
7. Integrated Electronics by Millman and Halkias, TMH
8. Electronic Devices and Circuits by Sanjeev Gupta, Dhanpat Rai Publicaions

Session: 2023-24			
Part A - Introduction			
Subject	ELECTRONICS		
Semester	SECOND		
Name of the Course	Basic Electronic Components & Devices		
Course Code	B23-ELE-203		
Course Type: (CC/MCC/MDC/CC-M/DSEC/VOC/DSE/PC/AEC/VAC)	CC-M2		
Level of the course	100-199		
Pre-requisite for the course (if any)	Physics as a Subject at 4.0 Level (Class XII)		
Course Learning Outcomes (CLO):	After completing this course, the learner will be able to: 1. Learn about active, Passive components and junction diode's 2. Understand the applications of junction diode and Zener diode 3. Understand the Concept of Bipolar Junction Transistor 4. Understand various R, L and C circuits 5. Practical exposure of the different active and passive components in their uses		
Credits	Theory	Practical	Total
	1	1	2
Contact Hours	15	30	45
Max. Marks: 50 (30 Theory + 20 Practical) **Internal Assessment Marks: 10 Theory + 5 Practical** **End Term Exam Marks: 20Theory + 15 Practical**		**Exam Time: 3 Hours each for Theory & Practical**	
Part B- Contents of the Course			

Instructions for Paper- Setter

1. Nine questions will be set in all. All questions will carry equal marks.
2. Question No. 1, which will be short answer type covering the entire syllabus, will be compulsory. The remaining eight questions will be set unit wise selecting two questions from each Unit I to IV. The candidate will be required to attempt question No. 1 and four more questions selecting one question from each unit.

Unit	Topics	Contact Hours
I	**Passive Components:** Resistors, Capacitors, Inductors, Transformers, Relays, Fuses (their types & applications). **Junction Diodes:** Rectifying diode, Forward and reverse bias characteristics, Varactor Diode, Light Emitting Diode, Photo diode and Photo transistors (qualitative only).	4
II	**Rectifiers:** Half wave, Full wave, Bridge, Clipping and Clamping circuits. **Zener diode:** Zener diode as voltage regulator**.**	3
III	**Bipolar Junction Transistor:** Basic working principle, Input and Output Characteristics of CB & CE configurations. Transistor as an amplifier, Transistor as a switch.	4
IV	**Sinusoidal Circuit Analysis**: for RL, RC and RLC Circuits, Resonance in Series and Parallel RLC Circuits, Frequency Response of Series and Parallel RLC Circuits, Quality (Q) Factor and Bandwidth.	4
V*	**Note:** A candidate is required to perform minimum 4 experiments out of the list provided during course of study in this semester. 1. Measurement of resistance value using colour codes and multimeter. 2. To study the V-I characteristics of PN junction diode. 3. To study the zener diode as voltage regulator. 4. To study HWR and measurement of ripple factor without filter. 5. To study FWR and measurement of ripple factor without filter. 6. To study diode as shunt clipping circuit. 7. To study diode as clamping element. 8. Study of CB characteristics. 9. Study of CE characteristics. 10. Measurement of voltage and Time period using CRO.	30
Suggested Evaluation Methods		
Internal Assessment: ➢ **Theory 10 Marks** • Class Participation: **4 Marks** • Seminar/presentation/assignment/quiz/class test etc.: • Mid-Term Exam: **6 Marks** ➢ **Practicum 5 Marks** • Class Participation: • Seminar/Demonstration/Viva-voce/Lab records etc.: **5 Marks** • Mid-Term Exam:		**End Term Examination:** **20 Marks** **15 Marks**
Part C-Learning Resources		

Recommended Books/e-resources/LMS:

1. Integrated Electronics by Millman and Halkias.
2. Basic Electronics and Linear Circuits by NN Bhargava, DC Kulshreshtha (TTTI)
3. Electronics Devices and Circuit by Allen Mottershead
4. Basic Electronics SOLID STATE by B L Theraja

Session: 2023-24			
Part A - Introduction			
Subject	ELECTRONICS		
Semester	SECOND		
Name of the Course	Understanding of Mobiles and Computer Systems		
Course Code	B23-ELE-204		
Course Type: (CC/MCC/MDC/CC-M/DSEC/VOC/DSE/PC/AEC/VAC)	MDC-2		
Level of the course	100-199		
Pre-requisite for the course (if any)	B.A. & B.Com. Ist Sem.		
Course Learning Outcomes (CLO):	After completing this course, the learner will be able to: 1. Identify the different parts of Computer or Laptop systems. 2. Know about various backup systems and cable connections 3. Learn about different printers available 4. Understand the Setting of Internet Connection with computer/Laptop systems 5. Hands-on with the different parts and peripherals of computer		
Credits	Theory	Practical	Total
	2	1	3
Contact Hours	30	30	60
Max. Marks: 75 (50 Theory + 25 Practical) Internal Assessment Marks: 15 Theory + 5 Practical End Term Exam Marks: 35 Theory + 20 Practical		Exam Time: 3 Hours each for Theory & Practical	

Part B- Contents of the Course

Instructions for Paper- Setter

1.Nine questions will be set in all. All questions will carry equal marks.

2.Question No. 1, which will be short answer type covering the entire syllabus, will be compulsory. The remaining eight questions will be set unit wise selecting two questions from each Unit I to IV. The candidate will be required to attempt question No. 1 and four more questions selecting one question from each unit.

3.Medium of examination may be Hindi/English.

Unit	Topics	Contact Hours

I	Identification of various parts of Computer/ Laptop, Understanding the computer configuration/Laptop configuration and Mobile Configuration	8
II	Power Backup: Inverter, UPS, Dry Battery Various Interfacing Cables, connectors and converters for computer, Laptop and Mobile	8
III	Printer Scanner Configuration Projector: Types of Projectors and their Installation	7
IV	Setting Up of Internet Connection: Wired & Wi-fi Setting Up of a complete ICT solution using Computer/laptop and Mobile and interactive Panel	7
V*	**Note:** A candidate is required to perform minimum 4 experiments out of the list provided during course of study in this semester. 1. Introduction of Computer Peripherals (input devices, output devices etc) 2. Disassembling computer system. 3. Reassembling computer system 4. Familiarization with Motherboard and its Components. 5. Troubleshooting and Repairing of Keyboard and Scanner. 6. Troubleshooting and Repairing of Printer 7. Troubleshooting and Repairing of Speaker and Web camera.	30
Suggested Evaluation Methods		
Internal Assessment: ➢ **Theory 15 Marks** • Class Participation: **4 Marks** • Seminar/presentation/assignment/quiz/class test etc.: **4 Marks** • Mid-Term Exam: **7 Marks** ➢ **Practicum 5 Marks** • Class Participation: • Seminar/Demonstration/Viva-voce/Lab records etc.: **5 Marks** • Mid-Term Exam:		**End Term Examination:** **35 Marks** **20 Marks**
Part C-Learning Resources		

Recommended Books/e-resources/LMS:

1. Computer Fundamentals by Pradeep K. Sinha BPB Publications
2. IBM PC & Clones: Hardware Trouble Shooting and Maintenance by B.Govindarajalu, Tata McGraw Hill
3. PC Upgrade & Repair Bible , Wiley India.
4. PC Systems, Installation and Maintenance, Second Edition by R. P. Beales,
5. PC Upgrade & Repair Black Book by Ron Gilster.
6. Computer Installation and Servicing by D Balasubramanian

Session: 2023-24			
Part A - Introduction			
Subject	ELECTRONICS		
Semester	THIRD		
Name of the Course	Combinational & Sequential Circuits		
Course Code	B23-ELE-301		
Course Type: (CC/MCC/MDC/CC-M/DSEC/VOC/DSE/PC/AEC/VAC)	CC-3 MCC-4		
Level of the course	100-199		
Pre-requisite for the course (if any)	Basic Knowledge of Electronics in B.Sc. Ist Year		
Course Learning Outcomes (CLO):	After completing this course, the learner will be able to: 1. Understand the Design principle of basic combinational circuit 2. Understand the design and working of different advanced combinational circuits 3. Learn the basic concepts and working of sequential circuits 4. Learn the working and design principle of asynchronous and synchronous counters 5. Use of Combinational and sequential circuits using digital trainer kits		
Credits	Theory	Practical	Total
	3	1	4
Contact Hours	45	30	75
Max. Marks: 100(70 Theory + 30 Practical) Internal Assessment Marks: 20 Theory + 10 Practical End Term Exam Marks: 50 Theory + 20 Practical		Exam Time: 3 Hours each for Theory & Practical	
Part B- Contents of the Course			

Instructions for Paper- Setter

1. Nine questions will be set in all. All questions will carry equal marks.
2. Question No. 1, which will be short answer type covering the entire syllabus, will be compulsory. The remaining eight questions will be set unit wise selecting two questions from each Unit I to IV. The candidate will be required to attempt question No. 1 and four more questions selecting one question from each unit.

Unit	Topics	Contact Hours
I	**Combinational Circuit-I:** Design principle of combinational circuit: Half adder, full adder, half subtractor, full subtractor, Railway track switching system, common light switching for a group of flats, Parity Generator.	10
II	**Combinational Circuits-II**: Multiplexers, Demultiplexer, Decoder, Encoder, Parity bit generator and checker, Code Converter: BCD to Seven Segment, Binary to Gray, Gray to Binary, Binary to Excess-3, Excess-3 to Binary, Application of combinational circuit: adder circuit using Multiplexers, Boolean expression implementation using Multiplexer, Boolean expression implementation using Demultiplexer	12
III	**Sequential Circuits**: Basic Sequential circuit, Asynchronous and Synchronous circuits, RS FF and JK Flip Flop, Race Around Condition, Master Slave JK flip flop, T and D Flip Flop, Excitation Table, Conversion of Flip Flop, State Diagram.	12
IV	**Counters:** Asynchronous Binary Counters, Asynchronous Mod-N Counter, Synchronous counter: Design principle of Modulo- N Counters, UP-Down counters, Decade Counter, BCD Counter.	10
V*	**Note:** A candidate is required to perform minimum 6 experiments out of the list provided during course of study in this semester. 1. Study of different types of digital IC's: functions, pin diagram, block diagram of 7400, 7402, 7404, 7408, 7432, 7474, 7476, 7490, 74153, 74155 2. Design a half adder using IC 7400. 3. Design a full adder using two half adders. 4. Study of parity generator/checker. 5. To study a 4:1 Multiplexer. 6. To study a 1:4 De- Multiplexer. 7. To study and design a Code Converter. 8. To verify the functionality of J-K, D and T Flip-Flops using 7476 and 7474 ICs. 9. To design a Ripple Binary Counter. 10. To study and design a MOD-N Counter (Synch/Asynch).	30

Suggested Evaluation Methods	
Internal Assessment: ➢ **Theory 20 Marks** • Class Participation: **5 Marks** • Seminar/presentation/assignment/quiz/class test etc.: **5 Marks** • Mid-Term Exam: **10 Marks** ➢ **Practicum 10 Marks** • Class Participation: • Seminar/Demonstration/Viva-voce/Lab records etc.: **10 Marks** • Mid-Term Exam:	**End Term Examination:** 50 Marks 20 Marks

Part C-Learning Resources

Recommended Books/e-resources/LMS:

1. Digital Electronics & Micro computers - R. K. Gaur (4th edition)
2. Modern Digital Electronics - R.P. Jain (4th edition)
3. Digital Principles and Applications by Leach Donald, Malvino AP (6th Edition)
4. Digital fundamentals by R.P. Jain & Floyd.

Session: 2023-24			
Part A - Introduction			
Subject	ELECTRONICS		
Semester	THIRD		
Name of the Course	Digital Electronics		
Course Code	B23-ELE-302		
Course Type: (CC/MCC/MDC/CC-M/DSEC/VOC/DSE/PC/AEC/VAC)	MCC-5		
Level of the course	100-199		
Pre-requisite for the course (if any)	Basic Knowledge of Electronics in B.Sc. Ist Year		
Course Learning Outcomes (CLO):	After completing this course, the learner will be able to: 1. Learn the basic concepts of flip flops and working of sequential circuits 2. Learn the design of asynchronous and synchronous counters 3. Understand the concept of shift registers and its applications 4. Understand the logics and theory of the semiconductor memories 5. Use of Combinational and sequential circuits using digital trainer kits		
Credits	Theory	Practical	Total
	3	1	4
Contact Hours	45	30	75
Max. Marks: 100(70 Theory + 30 Practical) Internal Assessment Marks: 20 Theory + 10 Practical End Term Exam Marks: 50 Theory + 20 Practical		Exam Time: 3 Hours each for Theory & Practical	
Part B- Contents of the Course			

Instructions for Paper- Setter

1. Nine questions will be set in all. All questions will carry equal marks.
2. Question No. 1, which will be short answer type covering the entire syllabus, will be compulsory. The remaining eight questions will be set unit wise selecting two questions from each Unit I to IV. The candidate will be required to attempt question No. 1 and four more questions selecting one question from each unit.

Unit	Topics	Contact Hours
I	**Basic Sequential circuit**: Asynchronous and Synchronous circuits, RS Flip-Flop, JK Flip Flop, Race Around Condition, Master Slave JK flip flop, T and D Flip Flop, Excitation Table, Conversion of Flip Flop.	11
II	**Counters:** Asynchronous Binary Counters, Asynchronous Mod-N Counter, Synchronous counter: Design principle of Modulo-N Counters, UP-Down counters, Decade Counter, skipping state counter.	12
III	**Shift Registers**: SISO, SIPO, PISO, PIPO, Bidirectional Shift register, Universal Shift register Applications of shift register: Ring counter, Johnson Counter, Time delay generation.	11
IV	**Memories:** Memory Organization and Operation, Expanding Memory Size, Classification and Characteristics of Memories, Read Only Memory (ROM Organization, Programming Mechanisms, Read and Write Memory (Static and Dynamic), Bipolar RAM Cell, MOS RAMs, Charge Couple Device Memory (Basic concept of CCD, Operation of CCD)	11
V*	**Note:** A candidate is required to perform minimum 5 experiments out of the list provided during course of study in this semester. 1. Study of JK and T type flip flops using IC 7476. 2. Study of D flip flops using IC 7474. 3. Design a 4-bit Ripple counter 4. Design an asynchronous decade counter 5. Design of Up- Down Counter 6. Design a Ring counter 7. Realization of shift Register using Trainer Kit. 8. Realization of Bidirectional shift Registers using Trainer Kits	30
Suggested Evaluation Methods		

Internal Assessment: ➢ **Theory 20 Marks** • Class Participation: **5 Marks** • Seminar/presentation/assignment/quiz/class test etc.: **5 Marks** • Mid-Term Exam: **10 Marks** ➢ **Practicum 10 Marks** • Class Participation: • Seminar/Demonstration/Viva-voce/Lab records etc.: **10 Marks** • Mid-Term Exam:	**End Term Examination:** 50 Marks 20 Marks

Part C-Learning Resources

Recommended Books/e-resources/LMS:

1. Digital E1ectronics & Micro computers - R. K. Gaur (4th edition)
2. Modern Digital Electronics - R.P. Jain (4th edition)
3. Digital Principles and Applications by Leach Donald, Malvino AP (6th Edition)
4. Digital fundamentals by R.P. Jain & Floyd.

Session: 2023-24

Part A - Introduction

Subject	ELECTRONICS
Semester	THIRD
Name of the Course	Electronics in Smart World
Course Code	B23-ELE-303
Course Type: (CC/MCC/MDC/CC-M/DSEC/VOC/DSE/PC/AEC/VAC)	MDC-3
Level of the course	100-199
Pre-requisite for the course (if any)	1. No Programming language or Experience needed 2. Interest and passion about Automotive Electronics

Course Learning Outcomes (CLO):	After completing this course, the learner will be able to: 1. understand applications of electronics in smart homes. 2. understand applications of electronics in education sector and agriculture sector. 3. understand applications of electronics in smart homes. 4. understand applications of electronics in smart healthcare. 5. get the insight knowledge by experiential learning

Credits	Theory	Practical	Total
	2	1	4
Contact Hours	30	30	60

Max. Marks: 75 (50 Theory + 25 Practical) Internal Assessment Marks: 15 Theory + 5 Practical End Term Exam Marks: 35 Theory + 20 Practical	Exam Time: 3 Hours each for Theory & Practical

Part B- Contents of the Course

Instructions for Paper- Setter

1. Nine questions will be set in all. All questions will carry equal marks.
2. Question No. 1, which will be short answer type covering the entire syllabus, will be compulsory. The remaining eight questions will be set unit wise selecting two questions from each Unit I to IV. The candidate will be required to attempt question No. 1 and four more questions selecting one question from each unit.

Unit	Topics	Contact Hours
I	Evolution of smart homes; Video monitoring, Security and alarms, CCTV;	8
II	Role of Electronics in Education and Agriculture (Drones for survey, Smart-irrigation);	6
III	Electronics in Smart watch, Auto-mobiles, ATM. RF-ID cards: Working and applications	11
IV	Electronics in Healthcare: Digital Thermometers, BP measurement, Digital X-Ray, MRI, USG, ECG (Basic principle only).	11
V*	**Perform at least two activities and make the report on it:** 1. Prepare a project report on proposed features of smart Homes 2. Prepare a PowerPoint presentation on any one electronic instrument used in Health care. 3. Prepare a project report on proposed features of smart City 4. Prepare a report on ATM systems	30

Suggested Evaluation Methods

Internal Assessment: ➢ **Theory 15 Marks** • Class Participation: **4 Marks** • Seminar/presentation/assignment/quiz/class test etc.: **4 Marks** • Mid-Term Exam: **7 Marks** ➢ **Practicum 5 Marks** • Class Participation: • Seminar/Demonstration/Viva-voce/Lab records etc.: **5 Marks** • Mid-Term Exam:	**End Term Examination:** **35 Marks** **20 Marks**

Part C-Learning Resources

Recommended Books/e-resources/LMS:

1. Ribbens, "Understanding Automotive Electronics", 7th Edition, Elsevier, Indian Reprint, 2013.
2. Tom Denton, “Automotive Electric and Electronic Systems”, 3rd Edition, Elsevier, 2004
3. https://kanchiuniv.ac.in/coursematerials/autotronics.pdf
4. Sensors and Actuators, D. Patranabis, 2nd Ed., PHI, 2013.
5. Make sensors: Terokarvinen, Kemo, Karvinen and Villey Valtokari, 1st edition, maker media, 2014.
6. Sensors Handbook- Sabrie Soloman, 2nd Ed. TMH, 2009

Session: 2023-24			
Part A - Introduction			
Subject	ELECTRONICS		
Semester	FOUR		
Name of the Course	Operational Amplifier & Sinusoidal Oscillators		
Course Code	B23-ELE-401		
Course Type: (CC/MCC/MDC/CC-M/DSEC/VOC/DSE/PC/AEC/VAC)	CC-4 MCC-6		
Level of the course	200-299		
Pre-requisite for the course (if any)	Basic Knowledge of Electronics in B.Sc. Ist Year		
Course Learning Outcomes (CLO):	After completing this course, the learner will be able to: 1. Understand the concept and working of operational amplifier. 2. Understand the op-amp parameters and its applications 3. Learn about various amplifiers circuits and negative feedback 4. Understand the concept of positive feedback and working of different oscillators 5. Hands-on with various op-amp circuits and oscillators		
Credits	Theory	Practical	Total
	3	1	4
Contact Hours	45	30	75
Max. Marks: 100 (70 Theory + 30 Practical) Internal Assessment Marks: 20 Theory + 10 Practical End Term Exam Marks: 50 Theory + 20 Practical		Exam Time: 3 Hours each for Theory & Practical	

Part B- Contents of the Course

Instructions for Paper- Setter

1. Nine questions will be set in all. All questions will carry equal marks.
2. Question No. 1, which will be short answer type covering the entire syllabus, will be compulsory. The remaining eight questions will be set unit wise selecting two questions from each Unit I to IV. The candidate will be required to attempt question No. 1 and four more questions selecting one question from each unit.

Unit	Topics	Contact Hours
I	**Operational Amplifier- I:** Ideal operational amplifier, Op-amp internal circuit (Emitter Coupled Differential amplifier, level translator, output stage), Differential Amplifier, Use of Current Mirror as Constant Current Source, CMRR, Voltage follower, Op-amp as Inverting Amplifier, Non-inverting amplifier.	11
II	**Operational Amplifier- II:** Practical Op-Amp: Input Offset Voltages, input bias Current, input offset current, thermal drift, effect of error sources, summing amplifier, subtractor, Integrator, Differentiator circuit, Log and Antilog Amplifier, Divider and Multiplier.	11
III	**Amplifiers & Feedback:** Classification of Amplifiers (voltage, current, Transconductance, Transresistance amplifier), Feedback concept, calculation of transfer gain in degenerative and regenerative feedbacks, Feedback topologies, Effect of negative feedback on gain, Non-linear distortion, Frequency response, Effect of negative voltage shunt feedback on input and output resistance, Effect of negative voltage series feedback on input and output resistance, Effect of negative current shunt feedback on input and output resistance, Effect of negative current series feedback on input and output resistance.	12
IV	**Oscillators:** Principle of oscillations, condition for sustained oscillation (Barkhausen criterion), stability of oscillator, Principle, working and frequency calculation of RF oscillators (Hartley oscillator, Colpitts oscillator, crystal oscillator) and AF Oscillators (Wien Bridge oscillator, R-C Phase-shift oscillator)	11
V*	**Note:** A candidate is required to perform minimum 6 experiments out of the list provided during course of study in this semester. **1.** Operational amplifier as Unity gain buffer amplifier. **2.** Operational amplifier as an Inverting amplifier and Non-inverting amplifier. 3. Operational amplifier as Summing amplifier. 4. Operational amplifier as Difference amplifier. 5. Measurement of offset voltage, bias currents & CMRR of an operational amplifier. 6. Study and design of an integrating circuit using op-amp IC 741. 7. Study and design of a differentiating circuit using op-amp IC	30

	741. 8. To study the design of Hartley oscillator & measure its frequency. 9. To study the design of Colpitt's oscillator & measure its frequency. 10. To study the design of Phase shift oscillator & measure its frequency. 11. To study the design of Wein bridge oscillator & measure its frequency.	

Suggested Evaluation Methods

Internal Assessment: ➢ **Theory 20 Marks** • Class Participation: **5 Marks** • Seminar/presentation/assignment/quiz/class test etc.: **5 Marks** • Mid-Term Exam: **10 Marks** ➢ **Practicum 10 Marks** • Class Participation: • Seminar/Demonstration/Viva-voce/Lab records etc.: **10 Marks** • Mid-Term Exam:	**End Term Examination:** 50 Marks 20 Marks

Part C-Learning Resources

Recommended Books/e-resources/LMS:

1. Basic Electronics Solid state by B.L. Theraja.
2. Opamp and linear circuits by Ramakant A Gayakward.
3. Electronics for Scientist & Engineers by Vishvanathan & Mehta.

Session: 2023-24			
Part A - Introduction			
Subject	ELECTRONICS		
Semester	FOUR		
Name of the Course	I C Fabrication Technology		
Course Code	B23-ELE-402		
Course Type: (CC/MCC/MDC/CC-M/DSEC/VOC/DSE/PC/AEC/VAC)	**MCC-7**		
Level of the course	200-299		
Pre-requisite for the course (if any)	Basic Knowledge of Electronics in B.Sc. Ist Year		
Course Learning Outcomes (CLO):	After completing this course, the learner will be able to: 1. Learn about basic IC Fabrication Processes 2. Understand the concept of Thermal Oxidation, Diffusion and other thin film processes. 3. Learn about various photolithography methods and their applications 4. Learn about various etching methods of different semiconductor substrates. 5. Get the exposure of the field visit to IC Fabrication Laboratory and other hands-on experiences.		
Credits	Theory	Practical	Total
	3	1	4
Contact Hours	45	30	75
Max. Marks: 100 (70 Theory + 30 Practical) Internal Assessment Marks: 20 Theory + 10 Practical End Term Exam Marks: 50 Theory + 20 Practical		Exam Time: 3 Hours each for Theory & Practical	

Part B- Contents of the Course

Instructions for Paper- Setter

1. Nine questions will be set in all. All questions will carry equal marks.
2. Question No. 1, which will be short answer type covering the entire syllabus, will be compulsory. The remaining eight questions will be set unit wise selecting two questions from each Unit I to IV. The candidate will be required to attempt question No. 1 and four more questions selecting one question from each unit.

Unit	Topics	Contact Hours
I	**Microelectronics processing**: Introduction, Clean Room, Basics of Vacuum Science and Technology, Deposition Technique: Thermal evaporation, Sputtering, Chemical Vapor Deposition, PECVD, Metallization, Epitaxy: Introduction, Vapor phase Epitaxy, Liquid phase epitaxy and Molecular beam epitaxy.	11
II	Thermal Oxidation of Silicon, Oxide Formation, Properties of Thermal Oxides of Silicon, Uses of Silicon Oxide, Basic diffusion process, Diffusion Equation, Diffusion Profiles, Diffusion in Silicon, Lateral Diffusion, Introduction to Ion Implatation Process , Ion Stopping, Ion Channeling, Disorder and Annealing	12
III	Photolithography, Negative and Positive Photo resist, Resist Application, Exposure and Development, Photolithographic Process Control. E-Beam Lithography, X-Ray Beam Lithography and Ion Beam Lithography.	11
IV	Wet Chemical Etching, Chemical Etchants for SiO_2, Si_3N_4, Polycrystalline Silicon and other microelectronic materials, Plasma Etching, Plasma Etchants, Photoresist Removal, Lift off process, Etch Process Control	11
V*	**Perform at least two activities and make the report on it:** 1. Visit a nearest IC Processing lab and prepare a project report/ PPT. 2. Prepare a PowerPoint presentation on any one fabrication process. 3. Simulation of any of the IC fabrication process using open Source tool.	30

Suggested Evaluation Methods	
Internal Assessment: ➢ **Theory 20 Marks** • Class Participation: **5 Marks** • Seminar/presentation/assignment/quiz/class test etc.: **5 Marks** • Mid-Term Exam: **10 Marks** ➢ **Practicum 10 Marks** • Class Participation: • Seminar/Demonstration/Viva-voce/Lab records etc.: **10 Marks** • Mid-Term Exam:	**End Term Examination:** 50 Marks 20 Marks

Part C-Learning Resources

Recommended Books/e-resources/LMS:

1. Microelectronic Processing: An Introduction to the Manufacture of Integrated Circuits by W. Scot Ruska (McGraw Hill International Edition).
2. VLSI Technology By S.M.Sze (2nd Edition)
3. VLSI Fabrication Principles: Silicon and Gallium Arsenide by Sorab K. Ghandhi (John Wiley & Sons).

Session: 2023-24			
Part A - Introduction			
Subject	ELECTRONICS		
Semester	FOUR		
Name of the Course	Electronic Communication		
Course Code	B23-ELE-403		
Course Type: (CC/MCC/MDC/CC-M/DSEC/VOC/DSE/PC/AEC/VAC)	**MCC-8**		
Level of the course	200-299		
Pre-requisite for the course (if any)	Basic Knowledge of Electronics in B.Sc. Ist Year		
Course Learning Outcomes (CLO):	After completing this course, the learner will be able to: 1. Develop the concept of basics of communication systems 2. Familiar with modulation & demodulation methods 3. Familiar with AM, FM and pulse modulation. 4. Learn the different Digital Modulation Techniques. 5. Get the hands-on practice of different communication techniques and methods		
Credits	Theory	Practical	Total
	3	1	4
Contact Hours	45	30	75
Max. Marks: 100(70 Theory +30 Practical) Internal Assessment Marks: 20 Theory +10 Practical End Term Exam Marks: 50 Theory +20 Practical		Exam Time: 3 Hours each for Theory & Practical	

Part B- Contents of the Course

Instructions for Paper- Setter

1. Nine questions will be set in all. All questions will carry equal marks.
2. Question No. 1, which will be short answer type covering the entire syllabus, will be compulsory. The remaining eight questions will be set unit wise selecting two questions from each Unit I to IV. The candidate will be required to attempt question No. 1 and four more questions selecting one question from each unit.

Unit	Topics	Contact Hours
I	**Communication Systems:** Elements of Communication Systems, Basic Terminology in communication system, Bandwidth of Signal, Bandwidth of Transmission medium, Propagation of Electromagnetic waves: Ground Wave, Sky wave, Space Wave	11
II	**Modulation & Demodulation** : Principle of modulation , Amplitude Modulation ,Percent Modulation ,upper & lower side frequencies ,upper & lower side bands, mathematical analysis of a modulated carrier wave, power relations in an AM wave, simple idea about different forms of amplitude modulation. A) DSB-SC B) SSB-TC C) SSBSC	12
III	**Frequency Modulation:** Frequency modulation , FM Sidebands, modulation index and number of side bands, mathematical expression for FM wave, Demodulation, diode detector for AM signals.FM detector , Limited and phase shift detectors, comparison between AM & FM.	12
IV	**Pulse Analog Modulation:** Channel capacity, Sampling theorem, PAM, PWM, PPM modulation and detection techniques, Multiplexing: TDM and FDM.	10
V*	**Note:** A candidate is required to perform minimum 6 experiments out of the list provided during course of study in this semester: 1. Study of Amplitude Modulation, plot the waveform and calculation of modulation index (using Kit) 2. Study of Amplitude demodulation and plot the waveform (using Kit) 3. Study of Frequency Modulation. Wave form tracing (using Kit). 4. Study of Pulse Amplitude Modulation using IC 555 (using Kit). 5. Study Pulse width Modulation using IC 555 (using Kit). 6. Study of Pulse Position Modulation using IC 555 (using Kit). 7. Multiplexing Techniques: FDM 8. Multiplexing Techniques: TDM	30
Suggested Evaluation Methods		

Internal Assessment:	End Term Examination:
➢ **Theory 20 Marks** • Class Participation: **5 Marks** • Seminar/presentation/assignment/quiz/class test etc.: **5 Marks** • Mid-Term Exam: **10 Marks** ➢ **Practicum 10 Marks** • Class Participation: • Seminar/Demonstration/Viva-voce/Lab records etc.: **10 Marks** • Mid-Term Exam:	50 Marks 20 Marks

Part C-Learning Resources

Recommended Books/e-resources/LMS:

1. Kennedy, George & Davis, Bernard "Electronic Communication Systems" Tata McGraw-Hill 4thEd.
2. Modem Analog & Digital Communication Systems: B.P. Lathi; Oxford Univ. Press.
3. Communication Systems S. Haykin, John Willy & Sons.
4. Taub, Herbert & Schilling, Donald L. "Communication Systems" Tata McGraw-Hill
5. Electronic Communication Systems: Fundamentals through Advanced (4^{th}ed.) Wayne Tomasi, Prentice Hall
6. Radio Engineering by G K Mithal

Session: 2023-24			
Part A - Introduction			
Subject	ELECTRONICS		
Semester	FOUR		
Name of the Course	Optical Fiber Communication		
Course Code	B23-ELE-404		
Course Type: (CC/MCC/MDC/CC-M/DSEC/VOC/DSE/PC/AEC/VAC)	**DSE-1**		
Level of the course	200-299		
Pre-requisite for the course (if any)	Basic Knowledge of Electronics in B.Sc. Ist Year		
Course Learning Outcomes (CLO):	After completing this course, the learner will be able to: 1. Understand the basics of Optical Fibers 2. Learn the characteristics of optical fibers and sources and detectors of optical fibers 3. Learn about different couplers and connectors use in optical fiber 4. Understand various analog and digital link 5. Practice of various optical fiber communication techniques		
Credits	Theory	Practical	Total
	3	1	4
Contact Hours	45	30	75
Max. Marks: 100(70 Theory +30 Practical) Internal Assessment Marks: 20 Theory +10 Practical End Term Exam Marks: 50 Theory +20 Practical		Exam Time: 3 Hours each for Theory & Practical	
Part B- Contents of the Course			

Instructions for Paper- Setter

1. Nine questions will be set in all. All questions will carry equal marks.

2.Question No. 1, which will be short answer type covering the entire syllabus, will be compulsory. The remaining eight questions will be set unit wise selecting two questions from each Unit I to IV. The candidate will be required to attempt question No. 1 and four more questions selecting one question from each unit.

Unit	Topics	Contact Hours
I	**OVERVIEW OF OPTICAL FIBER COMMUNICATION:** Introduction, Historical development, general system, advantages, disadvantages, and applications of optical fiber communication, optical fiber waveguides, Ray theory, cylindrical fiber, single mode fiber, cutoff wave length, mode filed diameter. Optical Fibers: fiber materials, photonic crystal, fiber optic cables specialty fiber.	12
II	**TRANSMISSION CHARACTERISTICS OF OPTICAL FIBERS**: Introduction, Attenuation, absorption, scattering losses, bending loss, dispersion, Intra modal dispersion, Inter modal dispersion **OPTICAL SOURCES AND DETECTORS:** Introduction, LED's, LASER diodes, Photo detectors, Photo detector noise, Response time, double hetero junction structure, Photo diodes, comparison of photo detectors	12
III	**FIBER COUPLERS AND CONNECTORS**: Introduction, fiber alignment and joint loss, single mode fiber joints, fiber splices, fiber connectors and fiber couplers. OPTICAL RECEIVER: Introduction, Optical Receiver Operation, receiver sensitivity, quantum limit, eye diagrams, coherent detection, burst mode receiver operation, Analog receivers.	11
IV	**ANALOG AND DIGITAL LINKS:** Analog links – Introduction, overview of analog links, CNR, multichannel transmission techniques, RF over fiber, key link parameters, Radio over fiber links, microwave photonics. Digital links – Introduction, point–to–point links, System considerations, link power budget, resistive budget, short wave length band, transmission distance for single mode fibers, Power penalties, nodal noise and chirping	10
V*	**Note:** A candidate is required to perform minimum 6 experiments out of the list provided during course of study in this semester: 1. To establish analog link using Optical Fiber. 2. To establish voice link using optical fiber. 3. To Transmit and receive Pulse Amplitude Modulated (PAM) signal 4. To measure Propagation loss in optical fiber 5. To measure bending loss in optical fiber 6. To measure numerical aperture of optical fiber 7. To study splicing & connectors. 8. Study of I-V Characteristics of Fiber optic LED and Photodetector	30

Suggested Evaluation Methods	
Internal Assessment: ➢ **Theory 20 Marks** • Class Participation: **5 Marks** • Seminar/presentation/assignment/quiz/class test etc.: **5 Marks** • Mid-Term Exam: **10 Marks** ➢ **Practicum 10 Marks** • Class Participation: • Seminar/Demonstration/Viva-voce/Lab records etc.: **10 Marks** • Mid-Term Exam:	**End Term Examination:** 50 Marks 20 Marks

Part C-Learning Resources

Recommended Books/e-resources/LMS:

1. Optical Fiber Communication – Gerd Keiser, 4th Ed., MGH, 2008.
2. Optical Fiber Communications– – John M. Senior, Pearson Education. 3 rd Impression, 2007.
3. Fiber optic communication – Joseph C Palais: 4th Edition, Pearson Education.

Session: 2023-24			
Part A - Introduction			
Subject	ELECTRONICS		
Semester	FOUR		
Name of the Course	Wireless and Mobile Communication		
Course Code	B23-ELE-405		
Course Type: (CC/MCC/MDC/CC-M/DSEC/VOC/DSE/PC/AEC/VAC)	**DSE-1**		
Level of the course	200-299		
Pre-requisite for the course (if any)	Basic Knowledge of Electronics in B.Sc. Ist Year		
Course Learning Outcomes (CLO):	After completing this course, the learner will be able: 1. To understand the evolution of wireless communication system 2. To inculcate the skill of the link budget design of cellular system. 3. To understand the effects of small scale fading and large scale path loss. 4. To learn the modulation and multiple access techniques used for cellular systems. 5. To Practice of wireless and mobile communication technologies on trainer kit		
Credits	Theory	Practical	Total
	3	1	4
Contact Hours	45	30	75
Max. Marks: 100(70 Theory +30 Practical) Internal Assessment Marks: 20 Theory +10 Practical End Term Exam Marks: 50 Theory +20 Practical		Exam Time: 3 Hours each for Theory & Practical	
Part B- Contents of the Course			

Instructions for Paper- Setter

1.Nine questions will be set in all. All questions will carry equal marks.

2.Question No. 1, which will be short answer type covering the entire syllabus, will be compulsory. The remaining eight questions will be set unit wise selecting two questions from each Unit I to IV. The candidate will be required to attempt question No. 1 and four more questions selecting one question from

each unit.

Unit	Topics	Contact Hours
I	**Introduction to Wireless Communication Systems**: Evolution, Mobile Systems around the World, Example of the mobile radio systems, Recent trends, 2G, 3G, 4G and 5G Cellular networks. The Cellular Concept: Frequency reuse, Channel assignment, Hand off process, Types of Interference, Cellular capacity	10
II	**Mobile Radio Propagation:** Path loss, Radio wave propagation, Reflection, Diffraction, Scattering, Link budget Design, Outdoor and indoor propagation models **Principle of multi path propagation:** impulse response model of channels, parameters for mobile multi path channels, concept of fading, Rayleigh and Rician fading, Simulation of fading channels.	12
III	**Modulations techniques for mobile communication:** Pulse shaping, Linear and non-linear Modulation techniques, constant envelop modulation, QPSK, MSK, GMSK. Spread spectrum modulation techniques - Direct sequence and Frequency Hopping Spread Spectrum and their applications **Equalization, Diversity and Channel coding:** Fundamentals of equalization, General adaptive equalizer, Linear and non-linear equalizers, diversity techniques, RAKE receivers, Basic concept of coding.	12
IV	**Multiple access techniques:** Introduction, FDMA, TDMA, CDMA, SDMA, capacity of cellular systems **Introduction to Multicarrier systems:** OFDM and wireless LAN, WiMAX, GSM, WCDMA, 3GPP LTE and other 4G standards.	11
V*	**Note:** A candidate is required to perform minimum 6 experiments out of the list provided during course of study in this semester: Study of wireless Communications using Communication Trainer Kits : 1. Baseband Communication 2. Adaptive Linear Equalizer 3. Code Division Multiple Access (CDMA) - Multipath 4. Code Division Multiple Access (CDMA) – Multiuser 5. Study of TDMA Trainer Kit 6. Study of FDMA Trainer kit 7. Global System for Mobile Communication (GSM) Trainer Kit 8. Study of QPSK Trainer Kit 9. Study of GMSK Trainer Kit	30
Suggested Evaluation Methods		

Internal Assessment: ➢ **Theory 20 Marks** • Class Participation: **5 Marks** • Seminar/presentation/assignment/quiz/class test etc.: **5 Marks** • Mid-Term Exam: **10 Marks** ➢ **Practicum 10 Marks** • Class Participation: • Seminar/Demonstration/Viva-voce/Lab records etc.: **10 Marks** • Mid-Term Exam:	**End Term Examination:** 50 Marks 20 Marks

Part C-Learning Resources

Recommended Books/e-resources/LMS:

1. T.S. Rappaport, "Wireless Communications – Principles and Practice", Prentice Hall of India Pearson Education India, 2002.
2. Andrea Goldsmith, "Wireless Communication", Cambridge University Press, 2005
3. W C Y Lee, "Mobile Communication Engineering", Tata McGraw Hill, India, 2008
4. G. Stuber, Principles of Mobile Communication, Springer, 2001
5. Frenzel, "Communication Electronics", Tata McGraw Hill
6. William C. Y. Lee, "Wireless and Cellular Communications", Third Edition, , TMH

ANNEXURE-I

Levels of Courses

Levels of Courses: Courses shall be coded based on the learning outcomes, level of difficulty, and academic rigor. The coding structure is as follows:

0-99: Pre-requisite courses required to undertake an introductory course which will be a pass or fail course with no credits. It will replace the existing informal way of offering bridge courses that are conducted in some of the colleges/ universities.

100-199: Foundation or introductory courses that are intended for students to gain an understanding and basic knowledge about the subjects and help decide the subject or discipline of interest. These courses may also be prerequisites for courses in the major subject. These courses generally would focus on foundational theories, concepts, perspectives, principles, methods, and procedures of critical thinking in order to provide a broad basis for taking up more advanced courses. These courses seek to equip students with the general education needed for advanced study, expose students to the breadth of different fields of study; provide a foundation for specialized higher-level coursework; acquaint students with the breadth of (inter) disciplinary fields in the arts, humanities, social sciences, and natural sciences, and to the historical and contemporary assumptions and practices of vocational or professional fields; and to lay the foundation for higher level coursework.

200-299: Intermediate-level courses including subject-specific courses intended to meet the credit requirements for minor or major areas of learning. These courses can be part of a major and can be pre-requisite courses for advanced-level major courses.

300-399: Higher-level courses which are required for majoring in a disciplinary/interdisciplinary area of study for the award of a degree.

400-499: Advanced courses which would include lecture courses with practicum, seminar-based course, term papers, research methodology, advanced laboratory experiments/software training, research projects, hands-on-training, internship/apprenticeship projects at the undergraduate level or First year Postgraduate theoretical and practical courses.

500-599: Courses at first-year Master's degree level for a 2-year Master's degree programme

600-699: Courses for second-year of 2-year Master's or 1-year Master's degree programme

700 -799 & above: Courses limited to doctoral students

KURUKSHETRA UNIVERSITY KURUKSHETRA

Scheme of Examination and Syllabus for

Under-Graduate Programme

Subject: Electronic Equipment & Maintenance

Under Multiple Entry-Exit, Internship and CBCS-LOCF in accordance to NEP-2020 w.e.f. 2023-24 (in phased manner)

Scheme of Examination for Under-Graduate Programme
Under Multiple Entry-Exit, Internship and CBCS-LOCF in accordance to NEP-2020
w.e.f. 2023-24 (in phased manner), Subject: Electronic Equipment & Maintenance

FIRST YEAR: SEMESTER-1									
Remarks	**Course**	**Paper(s)**	**Nomenclature of Paper**	**Credits**	**Hours/ Week**	**Internal marks**	**External Marks**	**Total Marks**	**Exam Duration**
Scheme A & C	**CC-1 MCC-1 4 credit**	B23-EEM-101	Principles of Electronics-I	3	3	20	50	70	3 hrs.
			Practical	1	2	10	20	30	3 hrs.
Scheme C only	**MCC-2 4 credit**	B23-EEM-102	Electronic Components, Measuring Instruments and Amplifiers	3	3	20	50	70	3 hrs.
			Practical	1	2	10	20	30	3 hrs.
Scheme A	**CC-M1 2 credit**	B23-EEM-103	Basic Digital Electronics	1	1	10	20	30	3 hrs.
			Practical	1	2	5	15	20	3 hrs.
Scheme A & C	**MDC-1 3 credits**	B23-EEM-104	Electronics in Daily Life	2	2	15	35	50	3 hrs.
			Practical	1	2	5	20	25	3 hrs.
Scheme C only	**CC-M1 4 credit**	From Available CC-M1 of 4 credits as per NEP							
Scheme A & C	**AEC-1 2 credit**	From Available AEC-1 of two credits as per NEP							
	SEC-1 3 credit	From Available SEC-1 of three credits as per NEP							
	VAC-1 2 credit	From Available VAC-1 of two credits as per NEP							

FIRST YEAR: SEMESTER-2									
Remarks	**Course**	**Paper(s)**	**Nomenclature of Paper**	**Credits**	**Hours/ Week**	**Internal marks**	**External Marks**	**Total Marks**	**Exam Duration**
Scheme A & C	**CC-2 MCC-3 4 credit**	B23-EEM-201	Principles of Electronics-II	3	3	20	50	70	3 hrs.
			Practical	1	2	10	20	30	3 hrs.
Scheme C only	**DSEC-2 4 credit**	B23-EEM-202	Transistors & Linear Integrated Circuits	3	3	20	50	70	3 hrs.
			Practical	1	2	10	20	30	3 hrs.
Scheme A only	**CC-M2 2 credit**	B23-EEM-203	Basic Electronic components & Devices	1	1	10	20	30	3 hrs.
			Practical	1	2	5	15	20	3 hrs.
Scheme A & C	**MDC-2 3 credits**	B23-EEM-204	Understanding of Mobiles and Computer Systems	2	2	15	35	50	3 hrs.
			Practical	1	2	5	20	25	3 hrs.
Scheme C only	**CC-M2 4 credit**	From Available CC-M2 of 4 credits as per NEP							
Scheme A & C	**AEC-2 2 credit**	From Available AEC-2 of two credits as per NEP							
	SEC-2 3 credit	From Available SEC-2 of three credits as per NEP							
	VAC-2 2 credit	From Available VAC-2 of two credits as per NEP							
Internship of 4 credits of 4-6 weeks duration after 2nd Semester									

SECOND YEAR: SEMESTER-3									
Remarks	**Course**	**Paper(s)**	**Nomenclature of Paper**	**Credits**	**Hours/ Week**	**Internal marks**	**External Marks**	**Total Marks**	**Exam Duration**
Scheme A, B & C	**CC-3 MCC-4 4 credit**	B23-EEM-301	Microprocessor 8085 - Architecture & Programming	3	3	20	50	70	3 hrs.
			Practical	1	2	10	20	30	3 hrs.
Scheme B & C	**MCC-5 4 credit**	B23-EEM-302	Programming in C	3	3	20	50	70	3 hrs.
			Practical	1	2	10	20	30	3 hrs.
Scheme A, B & C	**MDC-3 3 credits**	B23-EEM-303	Electronics in Smart World	2	2	15	35	50	3 hrs.
			Practical	1	2	5	20	25	3 hrs.
Scheme A & C	**CC-M3 4 credits**	From Available CC-M3 of 4 credits as per NEP							
Scheme B only	**CC-M3 (V) 4 credits**	From Available CC-M3(V) of 4 credits as per NEP							
Scheme A, B & C	**AEC-3 2 credit**	From Available AEC-3 of two credits as per NEP							
	SEC-3 3 credit	From Available SEC-3 of three credits as per NEP							
Scheme C only	**VAC-3 2 credits**	From Available VAC-3 of two credits as per NEP							
Scheme B only	**MCC-3**	**MCC-2 FROM SCHEME C OF FIRST SEMESTER**							
SECOND YEAR: SEMESTER-4									
Remarks	**Course**	**Paper(s)**	**Nomenclature of Paper**	**Credits**	**Hours/ Week**	**Internal marks**	**External Marks**	**Total Marks**	**Exam Duration**
Scheme A, B & C	**CC-4 MCC-6 4 credit**	B23-EEM-401	Advanced Digital Electronics	3	3	20	50	70	3 hrs.
			Practical	1	2	10	20	30	3 hrs.
Scheme B & C	**MCC-7 4 credit**	B23-EEM-402	8051: Programming & Applications	3	3	20	50	70	3 hrs.
			Practical	1	2	10	20	30	3 hrs.
Scheme B & C	**MCC-8 4 credit**	B23-EEM-403	Biomedical Equipment Maintenance	3	3	20	50	70	3 hrs.
			Practical	1	2	10	20	30	3 hrs.
Scheme B & C	**DSE-1 4 credit Select one option**	B23-EEM-404	Electronic Communication-1	3	3	20	50	70	3 hrs.
			Practical	1	2	10	20	30	3 hrs.
		B23-EEM-405	Electronic Instrumentation-1	3	3	20	50	70	3 hrs.
			Practical	1	2	10	20	30	3 hrs.
Scheme A, B & C	**CC-M4 (V) 4 credits**	From Available CC-M4(V) of 4 credits as per NEP							
	AEC-4 2 credit	From Available AEC-3 of two credits as per NEP							
Scheme C only	**VAC-4 2 credits**	From Available VAC-4 of two credits as per NEP							
Scheme A & B	**VAC-3 2 credits**	From Available VAC-3 of two credits as per NEP							
Internship of 4 credits of 4-6 weeks duration after 4th Semester (if not done after second semester)									

THIRD YEAR: SEMESTER-5									
Remarks	**Course**	**Paper(s)**	**Nomenclature of Paper**	**Credits**	**Hours/ Week**	**Internal marks**	**External Marks**	**Total Marks**	**Exam Duration**
Scheme A, B & C	**CC-5 MCC-9 4 credit**	B23-EEM-501	Computer Hardware & Maintenance-I	3	3	20	50	70	3 hrs.
			Practical	1	2	10	20	30	3 hrs.
Scheme B & C	**MCC-10 4 credit**	B23-EEM-502	Microprocessor Interfacing & its applications	3	3	20	50	70	3 hrs.
			Practical	1	2	10	20	30	3 hrs.
Scheme B & C	**DSE-2* 4 credit Select one Option**	B23-EEM-503	Electronic Communication-2	3	3	20	50	70	3 hrs.
			Practical	1	2	10	20	30	3 hrs.
		B23-EEM-504	Electronic Instrumentation-2	3	3	20	50	70	3 hrs.
			Practical	1	2	10	20	30	3 hrs.
Scheme B & C	**DSE-3 4 credit Select one Option**	B23-EEM-505	Mechatronics	3	3	20	50	70	3 hrs.
			Practical	1	2	10	20	30	3 hrs.
		B23-EEM-506	Embedded Systems	3	3	20	50	70	3 hrs.
			Practical	1	2	10	20	30	3 hrs.
Scheme A & C	**CC-M5 (V) 4 credits**	From Available CC-M5(V) of 4 credits as per NEP							
Scheme A, B & C	**Internship 4 credits**	Internship#4 credit after 4th semester							
THIRD YEAR: SEMESTER-6									
Remarks	**Course**	**Paper(s)**	**Nomenclature of Paper**	**Credits**	**Hours/ Week**	**Internal marks**	**External Marks**	**Total Marks**	**Exam Duration**
Scheme A, B & C	**CC-6 MCC-11 4 credit**	B23-EEM-601	Computer Hardware & Maintenance-II	3	3	20	50	70	3 hrs.
			Practical	1	2	10	20	30	3 hrs.
Scheme B & C	**MCC-12 4 credit**	B23-EEM-602	Mobile Communication	3	3	20	50	70	3 hrs.
			Practical	1	2	10	20	30	3 hrs.
Scheme B & C	**DSE-4 4 credit Select one Option**	B23-EEM-603	Artificial Intelligence & Machine Learning	3	3	20	50	70	3 hrs.
			Practical	1	2	10	20	30	3 hrs.
		B23-EEM-604	IOT basics and applications	3	3	20	50	70	3 hrs.
			Practical	1	2	10	20	30	3 hrs.
Scheme B & C	**DSE-5 4 credit Select one Option**	B23-EEM-605	Embedded Systems	3	3	20	50	70	3 hrs.
			Practical	1	2	10	20	30	3 hrs.
		B23-EEM-606	Advanced Microprocessors	3	3	20	50	70	3 hrs.
			Practical	1	2	10	20	30	3 hrs.
Scheme A only	**CC-M6 4 credits**	From Available CC-M6 of 4 credits as per NEP							
Scheme A only	**CC-M7(V) 4 credits**	From Available CC-M7(V) of 4 credits as per NEP							
Scheme B only	**CC-M5(V) 4 credits**	**From Available CC-M5(V) of 4 credits as per NEP**							
Scheme C only	**CC-M6(V) 4 credits**	**From Available CC-M6(V) of 4 credits as per NEP**							
Scheme C only	**SEC-4 2 credit**	From Available SEC-4 of two credits as per NEP							

FOURTH YEAR: SEMESTER-7 (FOR HONOURS/HONOURS WITH RESEARCH IN ELECTRONIC EQUIPMENT & MAINTENANCE)									
Remarks	**Course**	**Paper(s)**	**Nomenclature of Paper**	**Credits**	**Hours/ Week**	**Internal marks**	**External Marks**	**Total Marks**	**Exam Duration**
for Honours in Electronics/Honours with Research in Electronic Equipment & Maintenance (For Scheme B & C)	**CC-H1 4 credit**	B23-EEM-701	Digital Circuits and System Design	4	4	30	70	100	3 hrs.
	CC-H2 4 credit	B23-EEM-702	MOS Analog Circuits	4	4	30	70	100	3 hrs.
	CC-H3 4 credit	B23-EEM-703	Instrumentation and Control Systems	4	4	30	70	100	3 hrs.
	DSE-H1 4 credit Select one Option	B23-EEM-704	Optical Fiber Communication	4	4	30	70	100	3 hrs.
		B23-EEM-705	CAD Tools for VLSI	4	4	30	70	100	3 hrs.
	PC-H1 4 credit	B23-EEM-706	Practical Based on B23-EEM-701 TO 704/705	4	8	30	70	100	6 hrs.
	CC-HM1 4 credit	From Available Minor of 4 credits as per NEP							
SEMESTER-8 (FOR HONOURS IN ELECTRONIC EQUIPMENT & MAINTENANCE)									
Remarks	**Course**	**Paper(s)**	**Nomenclature of Paper**	**Credits**	**Hours/ Week**	**Internal marks**	**External Marks**	**Total Marks**	**Exam Duration**
Honours in Electronic Equipment & Maintenance (For Scheme B & C)	**CC-H4 4 credit**	B23-EEM-801	Microwave devices and systems	4	4	30	70	100	3 hrs.
	CC-H5 4 credit	B23-EEM-802	MOS Digital Circuits	4	4	30	70	100	3 hrs.
	CC-H6 4 credit	B23-EEM-803	Device Models and Circuit Simulation	4	4	30	70	100	3 hrs.
	DSE-H2 4 credit Select one option	B23-EEM-804	Semiconductor Material & Device Characterization	4	4	30	70	100	3 hrs.
		B23-EEM-805	Digital Communication	4	4	30	70	100	3 hrs.
	PC-H2 4 credit	B23-EEM-806	Practical Based on B23-EEM-801 TO 804/805	4	8	30	70	100	6 hrs.
	CC-HM2 4 credit	From Available Minor of 4 credits as per NEP							
OR SEMESTER-8 (FOR HONOURS WITH RESEARCH IN ELECTRONIC EQUIPMENT & MAINTENANCE)									
Remarks	**Course**	**Paper(s)**	**Nomenclature of Paper**	**Credits**	**Hours/ Week**	**Internal marks**	**External Marks**	**Total Marks**	**Exam Duration**
Honours with Research in Electronic Equipment & Maintenance (For Scheme B & C)	**CC-H4 4 credit**	B23-EEM-801	Microwave devices and systems	4	4	30	70	100	3 hrs.
	CC-H5 4 credit	B23-EEM-802	MOS Digital Circuits	4	4	30	70	100	3 hrs.
	Project/Dissertation 12 credit	B23-EEM-807	Project/Dissertation	8+4	-	-	300	300	-
	CC-HM2 4 credit	From Available Minor of 4 credits as per NEP							

Session: 2023-24			
Part A - Introduction			
Subject	ELECTRONIC EQUIPMENT & MAINTENANCE		
Semester	FIRST		
Name of the Course	Principles of Electronics-I		
Course Code	B23-EEM-101		
Course Type: (CC/MCC/MDC/CC-M/DSEC/VOC/DSE/PC/AEC/VAC)	CC-1 MCC-1		
Level of the course	100-199		
Pre-requisite for the course (if any)	Physics as a Subject at 4.0 Level (Class XII)		
Course Learning Outcomes (CLO):	After completing this course, the learner will be able to: 1. To understand the basics of various Number systems and their conversions 2. To understand the basics of Boolean algebra, different logic gates and minimization techniques using K-maps 3. To understand the passive components, construction, working & applications of various semiconductor diodes 4. To learn about the use of filters in rectifiers and about Bipolar Junction Transistor. 5. To present the experimental results and conclusions by having Hands-on experience in the Laboratory		
Credits	**Theory**	**Practical**	**Total**
	3	1	4
Contact Hours	45	30	75
Max. Marks: 100 (70 Theory + 30 Practical) **Internal Assessment Marks: 20 Theory +10 Practical** **End Term Exam Marks: 50 Theory + 20 Practical**		**Exam Time: 3 Hours each for Theory & Practical**	
Part B- Contents of the Course			

Instructions for Paper- Setter

1. Nine questions will be set in all. All questions will carry equal marks.
2. Question No. 1, which will be short answer type covering the entire syllabus, will be compulsory. The remaining eight questions will be set unit wise selecting two questions from each Unit I to IV. The candidate will be required to attempt question No. 1 and four more questions selecting one question from each unit.

Unit	Topics	Contact Hours
I	**Number Systems:** Introduction to Decimal, Binary, Octal, Hexadecimal Number Systems and their inter-conversions; BCD codes, Excess-3 codes, Gray codes, Cyclic codes, code conversions; BCD Arithmetic, parity, binary arithmetic (addition, Subtraction, multiplication, division), 1's and 2's compliments and 9's and 10's compliments.	11
II	**Boolean Algebra:** Postulates & theorems of Boolean algebra, Duality Principal, De-Morgan's Theorem. **Logic Gates:** Positive and Negative Logic, Basic Logic Gates: AND, OR, NOT (symbol, truth-table, circuit diagram, working); NAND, NOR, EX-OR, EX-NOR (symbol, truth table). **Minimization Techniques:** Reduction of Boolean expressions using Boolean Identities, SOP and POS form of Boolean functions, Karnaugh Map simplifications, implementations of SOP and POS form using NAND and NOR gates.	12
III	**Passive Components:** Resistors, Capacitors, Inductors, Transformers, Relays, Fuses (their types & applications). **Junction Diodes:** Rectifying diode, Forward and reverse bias characteristics, Zener Diodes, Varactor Diode, Light Emitting Diode, Photo diode and Photo transistors (qualitative only).	11
IV	**Rectifiers:** Half wave, Full wave, Bridge, Filters (L, C, LC, π), Clipping and Clamping circuits. **Zener diode regulator**: circuit diagram and explanation for load and line regulation, disadvantages of Zener diode regulator. **Bipolar Junction Transistor:** Basic working principle, Input and Output Characteristics of CB & CE configurations, Biasing, Operating point, Load line, Stabilization of Operating Point.	11
V*	**Note:** A candidate is required to perform minimum 6 experiments out of the list provided during course of study in this semester. 1. Practical use of Multimeter (measurement of voltage, current, resistance). 2. Practical use of Oscilloscope (voltage and frequency measurement). 3. Study of Electronic Components Resistors, Capacitors (study the types, colour coding). 4. Familiarization with Breadboard, IC types, pin number, testing, IC Manual. 5. Verification of truth tables for AND, OR, NOT gates. 6. P-N Junction Diode (study V-I Characteristics). 7. Study of PN diode as wave clipping element. 8. Study of Zener Diode as a voltage regulator. 9. Study of Input and output Characteristics of a transistor in Common base configuration. 10. Study of Input and output Characteristics of a transistor in Common emitter configuration.	30

Suggested Evaluation Methods	
Internal Assessment: ➢ **Theory(20 Marks)** • Class Participation(5Marks) • Seminar/presentation/assignment/quiz/class test etc.(5 Marks) • Mid-Term Exam(10 Marks) ➢ **Practicum(10 Marks)** • Class Participation: • Seminar/Demonstration/Viva-voce/Lab records etc.(10 Marks) • Mid-Term Exam:	**End Term Examination:** **50 marks** **20 marks**

Part C-Learning Resources

Recommended Books/e-resources/LMS:

1. Digital Electronics by R.P. Jain
2. Digital Computer Electronics by A. P. Malvino
3. Basic Electronics and Linear Circuits by Bhargava & Kulshreshtha (TTTI)
4. Integrated Electronics by Millman and Halkias

Session: 2023-24			
Part A - Introduction			
Subject	ELECTRONICS		
Semester	FIRST		
Name of the Course	Electronic Components, Measuring Instruments and Amplifiers		
Course Code	B23-EEM-102		
Course Type: (CC/MCC/MDC/CC-M/DSEC/VOC/DSE/PC/AEC/VAC)	MCC-2		
Level of the course	100-199		
Pre-requisite for the course (if any)	Physics as a Subject at 4.0 Level (Class XII)		
Course Learning Outcomes (CLO):	After completing this course, the learner will be able to: 1. Student will be able to understand the various electronic components and basic semiconductors. 2. Student will be able to learn about the use of measuring instruments. 3. Student will be able to understand the biasing of Bipolar Junction Transistors. 4. Student will be able to understand the various amplifiers. 5. Student will be able to present the experimental results and conclusions by having Hands-on experience in the Laboratory		
Credits	Theory	Practical	Total
	3	1	4
Contact Hours	45	30	75
Max. Marks: 100 (70 Theory + 30 Practical) **Internal Assessment Marks: 20 Theory +10 Practical** **End Term Exam Marks: 50 Theory + 20 Practical**		**Exam Time: 3 Hours each for Theory & Practical**	

Part B- Contents of the Course

Instructions for Paper- Setter

1. Nine questions will be set in all. All questions will carry equal marks.
2. Question No. 1, which will be short answer type covering the entire syllabus, will be compulsory. The remaining eight questions will be set unit wise selecting two questions from each Unit I to IV. The candidate will be required to attempt question No. 1 and four more questions selecting one question from each unit.

Unit	Topics	Contact Hours
I	**Passive Components:** Resistors, Capacitors, Inductors, Transformers, Relays, Fuses (their types & applications). **Introduction to Semiconductors:** Energy Band Diagram, Conductors, Semiconductors, Insulators, Intrinsic and Extrinsic Semiconductors (P&N), currents in semiconductors, Diffusion Junction, Depletion Layer, Barrier Potential.	11
II	**Measuring Instruments:** Regulated power supply, Analogue Multimeter, Digital Multimeter, Cathode Ray Oscilloscope, Function Generator (functional block diagram, basic working principle, measuring quantities). **Zener diode regulator**: circuit diagram and explanation for load and line regulation, disadvantages of Zener diode regulator.	11
III	**Bipolar Junction Transistor:** Basic working principle, Input and Output Characteristics of CB & CE configurations, Biasing, Operating point, Load line, thermal runaway, stability and stability factor, Stabilization of Operating Point, Collector to Base bias, Voltage Divider bias and Emitter bias (+VCC &–VEE bias), circuit diagrams and their working.	12
IV	**Amplifiers:** Classification of amplifiers, Class-A, B, AB and C Amplifiers, Cascading of Amplifiers, RC Coupled amplifiers. Properties of amplifiers (distortion, noise, thermal noise, shot noise, noise figure). Feedback in Amplifiers: Feedback concept, transfer gain with feedback, Effect of Negative Feedback on amplifiers performance. Transistor as a switch (circuit and working), Darlington pair and its applications.	11
V*	**Note:** A candidate is required to perform minimum 6 experiments out of the list provided during course of study in this semester. 1. Identification and study of Electronics Components. 2. Understanding the use of Function generator and draw the different wave shapes by connecting it with CRO 3. Understand the use of Multimeter by measuring resistance, capacitance, voltage, frequency, transistor type etc. 4. Measurement of voltage. Time period and phase-shift using CRO. 5. Study of fixed bias arrangement for transistor. 6. Study of Voltage divider bias arrangement for transistor. 7. Study of Collector to base bias arrangement for transistor. 8. Study multi stage R-C coupled amplifier & to determine frequency response & gain 9. Find the gain (i) Class A. Amplifier (ii) Class B. Amplifier (iii) Class C Amplifier 10. Verify the operation of transistor as a switch and draw the waveform.	30
Suggested Evaluation Methods		

Internal Assessment:	End Term Examination:
➢ **Theory(20 Marks)** • Class Participation(5Marks) • Seminar/presentation/assignment/quiz/class test etc.(5 Marks) • Mid-Term Exam(10 Marks) ➢ **Practicum(10 Marks)** • Class Participation: • Seminar/Demonstration/Viva-voce/Lab records etc.(10 Marks) • Mid-Term Exam:	**50 marks** **20 marks**

Part C-Learning Resources

Recommended Books/e-resources/LMS:

1. Basic Electronics and Linear Circuits by Bhargava & Kulshreshtha (TTTI)
2. Integrated Electronics by Millman and Halkias
3. A course in Electrical and Electronic Measurements and Instrumentation by A K Sawhney.

Session: 2023-24			
Part A - Introduction			
Subject	ELECTRONIC EQUIPMENT & MAINTENANCE		
Semester	FIRST		
Name of the Course	Basic Digital Electronics		
Course Code	B23-EEM-103		
Course Type: (CC/MCC/MDC/CC-M/DSEC/VOC/DSE/PC/AEC/VAC)	CC-M1		
Level of the course	100-199		
Pre-requisite for the course (if any)	Physics as a Subject at 4.0 Level (Class XII)		
Course Learning Outcomes (CLO):	After completing this course, the learner will be able to: 1. To understand the basics of various Number systems and their conversions 2. To understand the basics of Boolean algebra and its theorems 3. To understand the concept and basics of different logic gates 4. To understand the concept and minimization techniques using K-maps 5. To learn and understand the use of various electronic components and equipment's used for analysis of basic digital electronic circuits		
Credits	Theory	Practical	Total
	1	1	4
Contact Hours	15	30	45
Max. Marks: 50 (30 Theory + 20 Practical) **Internal Assessment Marks: 10 Theory + 5 Practical** **End Term Exam Marks: 20 Theory + 15 Practical**		**Exam Time: 3 Hours each for Theory & Practical**	
Part B- Contents of the Course			

Instructions for Paper- Setter

1. Nine questions will be set in all. All questions will carry equal marks.
2. Question No. 1, which will be short answer type covering the entire syllabus, will be compulsory. The remaining eight questions will be set unit wise selecting two questions from each Unit I to IV. The candidate will be required to attempt question No. 1 and four

more questions selecting one question from each unit.		
Unit	**Topics**	**Contact Hours**
I	**Number Systems:** Introduction to Decimal, Binary, Octal, Hexadecimal Number Systems and their inter-conversions; BCD codes, Excess-3 codes, Gray codes, code conversions, binary arithmetic (addition, Subtraction, multiplication, division), 1's and 2's compliments and 9's and 10's compliments.	4
II	**Boolean Algebra:** Postulates & theorems of Boolean algebra, Duality Principle, De-Morgan's Theorem.	4
III	**Logic Gates:** Positive and Negative Logic, Basic Logic Gates: AND, OR, NOT (symbol, truth-table, circuit diagram, working); NAND, NOR, EX-OR, EX-NOR (symbol, truth table).	4
IV	**Minimization Techniques:** Reduction of Boolean expressions using Boolean Identities, SOP and POS form of Boolean functions, Karnaugh Map simplifications, implementations of SOP and POS form using NAND and NOR gates.	3
V*	**Note:** A candidate is required to perform minimum 4 experiments out of the list provided during course of study in this semester. 1. Design of basis logic gates using discrete components. 2. Study of different type of digital IC's :(functions, pin diagram, block diagram of various Digital ICs etc.). 3. Data Sheet Analysis of Digital ICs (Quote the data sheet of any two digital ICs in Laboratory File) 4. Realization of Boolean Identities on Digital Trainer Kit 5. Digital trainer using AOI. 6. Digital trainer using NAND gates. 7. Realization of K-map expression on Digital Trainer Kit	30
Suggested Evaluation Methods		
Internal Assessment: ➢ **Theory(10 Marks)** • Class Participation **(4 Marks)** • Seminar/presentation/assignment/quiz/class test etc.: • Mid-Term Exam: **(6 Marks)** ➢ **Practicum (5 Marks)** • Class Participation: • Seminar/Demonstration/Viva-voce/Lab records etc**.(5 Marks)** • Mid-Term Exam:		**End Term Examination:** **20 marks** **15 marks**
Part C-Learning Resources		

Recommended Books/e-resources/LMS:

1. Digital Electronics by R.P. Jain
2. Digital Computer Electronics by A. P. Malvino

Session: 2023-24

Part A - Introduction

Subject	ELECTRONIC EQUIPMENT & MAINTENANCE
Semester	FIRST
Name of the Course	Electronics in Daily Life
Course Code	B23-EEM-104
Course Type: (CC/MCC/MDC/CC-M/DSEC/VOC/DSE/PC/AEC/VAC)	**MDC-1**
Level of the course	100-199
Pre-requisite for the course (if any)	Any Arts, Commerce Subject at 4.0 Level (Class XII)

Course Learning Outcomes (CLO):	After completing this course, the learner will be able to: 1. Understand about various electronic components 2. Learn about the use of AC and DC voltages and transformers etc 3. Understand the concept of assembling and disassembling of various home appliances. 4. Learn the concept and importance of earthing 5. To get practical exposure of various electronics components and appliances

Credits	Theory	Practical	Total
	2	1	3
Contact Hours	30	30	60

Max. Marks: 75 (50 Theory + 25 Practical) **Internal Assessment Marks: 15 Theory + 5 Practical** **End Term Exam Marks: 35 Theory + 20 Practical**	**Exam Time: 3 Hours each for Theory & Practical**

Part B- Contents of the Course

Instructions for Paper- Setter

1. Nine questions will be set in all. All questions will carry equal marks.
2. Question No. 1, which will be short answer type covering the entire syllabus, will be compulsory. The remaining eight questions will be set unit wise selecting two questions from each Unit I to IV. The candidate will be required to attempt question No. 1 and four more questions selecting one question from each unit.
3. Medium of examination may be Hindi/English.

Unit	Topics	Contact Hours
I	**Introduction to basic Electronics components and Devices:** Resistor, Color code, Inductor, Capacitor, basic Potentiometer circuit, Multiple range Potentiometer Classification of Instruments, Analog and Digital Mode of operations, Basics of CRO, Multimeter	7
II	AC - DC Voltage, Domestic Electric supply, Transformer, Power consumption, wire, electric tester, clamp meter, Fuse, circuit breaker, Inverter, Electric consumption meter reading, BEE rating, Soldering techniques, LED, Display HD, Full HD and UHD.	8
III	Assembly and disassembly of internal parts: of geyser, tube light, Emergency light, internal parts of ceiling fan, mixer grinder, Types of water purifiers and geyser, Different parts of water purifiers and geyser. Installation and Repairing of water purifiers and geyser.	8
IV	Measurement of Earth Resistance: Necessity of Earth Electrode, Necessity of measurement of Earth Electrode, Factors effecting Earth Electrodes, Methods of measuring Earth Resistance	7
V*	**Note:** A candidate is required to perform minimum 4 experiments out of the list provided during course of study in this semester. 1. Measurement of alternating voltage using multimeter. 2. Measurement of voltage and Time period and using CRO. 3. Measurement of resistance value using colour codes and multimeter. 4. Design and verify the potential divider arrangement using resistances. 5. Testing of wire, measuring voltage, current and frequency using multimeter 6. Demonstrate soldering of basic electronics components using soldering iron. 7. Understanding the role of transformer.	30
Suggested Evaluation Methods		
Internal Assessment: ➢ **Theory(15 Marks)** • Class Participation: **(4 Marks)** • Seminar/presentation/assignment/quiz/class test etc.: **(4 Marks)** • Mid-Term Exam**: (7 Marks)** ➢ **Practicum (5 Marks)** • Class Participation: • Seminar/Demonstration/Viva-voce/Lab records etc.: **(5 Marks)** • Mid-Term Exam:		**End Term Examination:** **35 marks** **20 marks**

Part C-Learning Resources

Recommended Books/e-resources/LMS:

1. A course in Electrical and Electronic Measurements and Instrumentation by A K Sawhney.

2. Electronics Instrumentation and Measurement Techniques by W D Cooper

Session: 2023-24			
Part A - Introduction			
Subject	ELECTRONIC EQUIPMENT & MAINTENANCE		
Semester	SECOND		
Name of the Course	Principles of Electronics-II		
Course Code	B23-EEM-201		
Course Type: (CC/MCC/MDC/CC-M/DSEC/VOC/DSE/PC/AEC/VAC)	CC-2 MCC-1		
Level of the course	100-199		
Pre-requisite for the course (if any)	Knowledge of Electronics in 1st Sem		
Course Learning Outcomes (CLO):	After completing this course, the learner will be able to: 1. Students will be able to understand field effect transistors. 2. Students will be able to understand different power devices. 3. Students will be able to understand the basic design principle of combinational circuits 4. Students will be able to implement advanced combinational circuits 5. Students will get a hands-on experience while implementing different analog and digital circuits		
Credits	Theory	Practical	Total
	3	1	4
Contact Hours	45	30	75
Max. Marks: 100 (70 Theory + 30 Practical) **Internal Assessment Marks: 20 Theory + 10 Practical** **End Term Exam Marks: 50 Theory + 20 Practical**		**Exam Time: 3 Hours each for Theory & Practical**	
Part B- Contents of the Course			
Instructions for Paper- Setter 1. Nine questions will be set in all. All questions will carry equal marks.			

2. Question No. 1, which will be short answer type covering the entire syllabus, will be compulsory. The remaining eight questions will be set unit wise selecting two questions from each Unit I to IV. The candidate will be required to attempt question No. 1 and four more questions selecting one question from each unit.

Unit	Topics	Contact Hours
I	**Field Effect Transistor: -** Junctions Field Effect Transistor, Qualitative Description of JFET, Drain and transfer characteristics of JFET, FET small signal low frequency model, CS & CD low frequency model, MOSFET -Depletion and enhancement and their drain & transfer characteristics, CMOS (Basic idea).	11
II	**Power Control Devices:** Four Layer Diode (PNPN), Silicon Controlled Rectifier (SCR), Triac, Diac (Principle, Characteristics and Applications). **Unijunction Transistor:** Basic Working Principle, Characteristics, intrinsic stand-off ratio, Applications as a switch and as time base generator.	12
III	**Combinational Circuit-I:** Half adder, full adder, half subtractor, full subtractor, Parity Generator. Multiplexers, Demultiplexer	11
IV	**Combinational Circuit-II:** Decoder, Encoder, Parity bit generator and checker, Code Converter: BCD to Seven Segment, BCD to Excess-3, Gray to Binary , Binary to Gray, Binary to Excess-3	11
V*	**Note:** A candidate is required to perform minimum 6 experiments out of the list provided during course of study in this semester. 1. Study Drain and transfer characteristics of JFET. 2. Study of I-V Characteristics of Silicon Controlled Rectifier (SCR). 3. Study of I-V Characteristics of Unijunction Transistor. 4. Design a time base generator using UJT. 5. Study of Half Adder. 6. Study of Half subtractor. 7. Study of Full Adder. 8. Study of 4:1 multiplexer. 9. Study of 1:4 demultiplexer. 10. Study and design Parity bit generator and checker.	30
Suggested Evaluation Methods		

Internal Assessment: ➢ **Theory(20 Marks)** • Class Participation(5Marks) • Seminar/presentation/assignment/quiz/class test etc.(5 Marks) • Mid-Term Exam(10 Marks) ➢ **Practicum(10 Marks)** • Class Participation: • Seminar/Demonstration/Viva-voce/Lab records etc.(10 Marks) • Mid-Term Exam:	**End Term Examination:** **50 marks** **20 marks**
Part C-Learning Resources	
Recommended Books/e-resources/LMS: 1. Digital Electronics by R.P. Jain 2. Digital Computer Electronics by A. P. Malvino 3. Integrated Electronics by Millman & Halkias 4. Basic Electronics SOLID STATE by B L Theraja	

Session: 2023-24			
Part A - Introduction			
Subject	ELECTRONIC EQUIPMENT & MAINTENANCE		
Semester	SECOND		
Name of the Course	Transistors & Linear Integrated Circuits		
Course Code	B23-EEM-202		
Course Type: (CC/MCC/MDC/CC-M/DSEC/VOC/DSE/PC/AEC/VAC)	DSEC-2		
Level of the course	100-199		
Pre-requisite for the course (if any)	Physics as a Subject at 4.0 Level (Class XII)		
Course Learning Outcomes (CLO):	After completing this course, the learner will be able to: 1. Describe the transistor working at low frequencies and its other applications. 2. Learn about various fabrication techniques and processes 3. Understand the concept of fabricating monolithic devices 4. Develop the concept of operational amplifiers 5. Present the experimental results and conclusions by having Hands-on experience in the Laboratory		
Credits	Theory	Practical	Total
	3	1	4
Contact Hours	45	30	75
Max. Marks: 100 (70 Theory + 30 Practical) **Internal Assessment Marks: 20 Theory + 10 Practical** **End Term Exam Marks: 50 Theory + 20 Practical**		**Exam Time: 3 Hours each for Theory & Practical**	

Part B- Contents of the Course

Instructions for Paper- Setter

1. Nine questions will be set in all. All questions will carry equal marks.
2. Question No. 1, which will be short answer type covering the entire syllabus, will be compulsory. The remaining eight questions will be set unit wise selecting two questions from each Unit I to IV. The candidate will be required to attempt question No. 1 and four more questions selecting one question from each unit.

Unit	Topics	Contact Hours
I	**Transistor at Low Frequencies**: Transistor hybrid model, h parameters, Analysis of transistor amplifier circuit using h-parameters, Emitter follower, Comparison of transistor configurations, Simplified common Emitter hybrid model.	11
II	**Integrated Circuit-I**: Basics of Integrated Circuit Technology, Monolithic fabrication technique, Different Fabrication Processes: Crystal growth, Epitaxial growth, Oxidation, Masking and Etching, Diffusion of Impurities, Metallization, Classification of ICs (SSI, MSI, LSI and VLSI).	12
III	**Integrated Circuit-II:** Transistors for Monolithic Circuits (NPN & PNP), Monolithic Diodes, Integrated Resistors, Integrated Capacitors and Inductors, JFET, MOSFET fabrication (Qualitatively), Monolithic Circuit Layout.	12
IV	**Operational Amplifier:** DC Coupled Amplifier, Double ended differential Amplifier, differential gain. Common-mode gain, CMRR, ideal operational amplifier, Basic Concept of Feedback in Opamp, Inverting & non-inverting configuration, Buffer, Summing and Difference amplifier.	11
V*	**Note:** A candidate is required to perform minimum 6 experiments out of the list provided during course of study in this semester. **1.** Operational amplifier as Unity gain buffer amplifier. **2.** Operational amplifier as an Inverting amplifier and Non-inverting amplifier. 3. Operational amplifier as summing amplifier. 4. Operational amplifier as Difference amplifier. 5. Measurement of offset voltage, bias currents & CMRR of an operational amplifier. 6. Learn about basic IC Fabrication Processes 7. Understand the concept of Thermal Oxidation, Diffusion and other thin film processes. 8. Learn about various photolithography methods and their applications 9. Learn about various etching methods of different semiconductor substrates. 10. Get the exposure of the field visit to IC Fabrication Laboratory and other hands-on experiences.	30
Suggested Evaluation Methods		

Internal Assessment: ➢ **Theory(20 Marks)** • Class Participation(5Marks) • Seminar/presentation/assignment/quiz/class test etc.(5 Marks) • Mid-Term Exam(10 Marks) ➢ **Practicum(10 Marks)** • Class Participation: • Seminar/Demonstration/Viva-voce/Lab records etc.(10 Marks) • Mid-Term Exam:	**End Term Examination:** **50 marks** **20 marks**

Part C-Learning Resources

Recommended Books/e-resources/LMS:

1. Electronics for Scientist & Engineers by Vishvanathan.
2. Op. amp. and Linear Integrated Circuit by Ramakant A. Gayakward
3. Integrated Electronics by Millman & Halkias
4. Linear Integrated Circuits by Roy Choudhury & Shail Jain

Session: 2023-24			
Part A - Introduction			
Subject	ELECTRONIC EQUIPMENT & MAINTENANCE		
Semester	SECOND		
Name of the Course	Basic Electronic components & Devices		
Course Code	B23-EEM-203		
Course Type: (CC/MCC/MDC/CC-M/DSEC/VOC/DSE/PC/AEC/VAC)	CC-M2		
Level of the course	100-199		
Pre-requisite for the course (if any)	Physics as a Subject at 4.0 Level (Class XII)		
Course Learning Outcomes (CLO):	After completing this course, the learner will be able to: 1. Learn about active, Passive components and junction diode's 2. Understand the applications of junction diode and Zener diode 3. Understand the Concept of Bipolar Junction Transistor 4. Understand various R, L and C circuits 5. Practical exposure of the different active and passive components in their uses		
Credits	Theory	Practical	Total
	1	1	2
Contact Hours	15	30	45
Max. Marks: 50 (30 Theory + 20 Practical) **Internal Assessment Marks: 10 Theory + 5 Practical** **End Term Exam Marks: 20Theory + 15 Practical**		**Exam Time: 3 Hours each for Theory & Practical**	

Part B- Contents of the Course

Instructions for Paper- Setter

1. Nine questions will be set in all. All questions will carry equal marks.
2. Question No. 1, which will be short answer type covering the entire syllabus, will be compulsory. The remaining eight questions will be set unit wise selecting two questions from each Unit I to IV. The candidate will be required to attempt question No. 1 and four more questions selecting one question from each unit.

Unit	Topics	Contact Hours

I	**Passive Components:** Resistors, Capacitors, Inductors, Transformers, Relays, Fuses (their types & applications). **Junction Diodes:** Rectifying diode, Forward and reverse bias characteristics, Varactor Diode, Light Emitting Diode, Photo diode and Photo transistors (qualitative only).	4
II	**Rectifiers:** Half wave, Full wave, Bridge, Clipping and Clamping circuits. **Zener diode:** Zener diode as voltage regulator**.**	3
III	**Bipolar Junction Transistor:** Basic working principle, Input and Output Characteristics of CB & CE configurations. Transistor as an amplifier, Transistor as a switch.	4
IV	**Sinusoidal Circuit Analysis**: for RL, RC and RLC Circuits, Resonance in Series and Parallel RLC Circuits, Frequency Response of Series and Parallel RLC Circuits, Quality (Q) Factor and Bandwidth.	4
V*	**Note:** A candidate is required to perform minimum 6 experiments out of the list provided during course of study in this semester. 1. Measurement of resistance value using colour codes and multimeter. 2. To study the V-I characteristics of PN junction diode. 3. To study the zener diode as voltage regulator. 4. To study HWR and measurement of ripple factor without filter. 5. To study FWR and measurement of ripple factor without filter. 6. To study diode as shunt clipping circuit. 7. To study diode as clamping element. 8. Study of CB characteristics. 9. Study of CE characteristics. 10. Measurement of voltage and Time period using CRO.	30
Suggested Evaluation Methods		
Internal Assessment: ➢ **Theory(10 Marks)** • Class Participation **(4 Marks)** • Seminar/presentation/assignment/quiz/class test etc.: • Mid-Term Exam: **(6 Marks)** ➢ **Practicum (5 Marks)** • Class Participation: • Seminar/Demonstration/Viva-voce/Lab records etc**.(5 Marks)** • Mid-Term Exam:		**End Term Examination:** **20 marks** **15 marks**
Part C-Learning Resources		

Recommended Books/e-resources/LMS:

1. Integrated Electronics by Millman and Halkias.
2. Basic Electronics and Linear Circuits by NN Bhargava, DC Kulshreshtha (TTTI)
3. Electronics Devices and Circuit by Allen Mottershead
4. Basic Electronics SOLID STATE by B L Theraja

Session: 2023-24			
Part A - Introduction			
Subject	ELECTRONIC EQUIPMENT & MAINTENANCE		
Semester	SECOND		
Name of the Course	Understanding of Mobiles and Computer Systems		
Course Code	B23-EEM-204		
Course Type: (CC/MCC/MDC/CC-M/DSEC/VOC/DSE/PC/AEC/VAC)	MDC-2		
Level of the course	100-199		
Pre-requisite for the course (if any)	B.A. & B.Com. Ist Sem.		
Course Learning Outcomes (CLO):	After completing this course, the learner will be able to: 1. Identify the different parts of Computer or Laptop systems. 2. Know about various backup systems and cable connections 3. Learn about different printers available 4. Understand the Setting of Internet Connection with computer/Laptop systems 5. Hands-on with the different parts and peripherals of computer		
Credits	Theory	Practical	Total
	2	1	3
Contact Hours	30	30	60
Max. Marks: 75 (50 Theory + 25 Practical) **Internal Assessment Marks: 15 Theory + 5 Practical** **End Term Exam Marks: 35 Theory + 20 Practical**		**Exam Time: 3 Hours each for Theory & Practical**	

Part B- Contents of the Course

Instructions for Paper- Setter

1. Nine questions will be set in all. All questions will carry equal marks.
2. Question No. 1, which will be short answer type covering the entire syllabus, will be compulsory. The remaining eight questions will be set unit wise selecting two questions from each Unit I to IV. The candidate will be required to attempt question No. 1 and four more questions selecting one question from each unit.

Unit	Topics	Contact Hours

I	Identification of various parts of Computer/ Laptop, Understanding the computer configuration/Laptop configuration and Mobile Configuration	8
II	Power Backup: Inverter, UPS, Dry Battery Various Interfacing Cables, connectors and converters for computer, Laptop and Mobile	8
III	Printer Scanner Configuration Projector: Types of Projectors and their Installation	7
IV	Setting Up of Internet Connection: Wired & Wi-fi Setting Up of a complete ICT solution using Computer/laptop and Mobile and interactive Panel	7
V*	**Note:** A candidate is required to perform minimum 4 experiments out of the list provided during course of study in this semester. 1. Introduction of Computer Peripherals (input devices, output devices etc) 2. Disassembling computer system. 3. Reassembling computer system 4. Familiarization with Motherboard and its Components. 5. Troubleshooting and Repairing of Keyboard and Scanner. 6. Troubleshooting and Repairing of Printer 7. Troubleshooting and Repairing of Speaker and Web camera.	30

Suggested Evaluation Methods

Internal Assessment: ➢ **Theory(15 Marks)** • Class Participation: **(4 Marks)** • Seminar/presentation/assignment/quiz/class test etc.: **(4 Marks)** • Mid-Term Exam**: (7 Marks)** ➢ **Practicum (5 Marks)** • Class Participation: • Seminar/Demonstration/Viva-voce/Lab records etc.: **(5 Marks)** • Mid-Term Exam:	**End Term Examination:** **35 marks** **15 marks**

Part C-Learning Resources

Recommended Books/e-resources/LMS:

1. Computer Fundamentals by Pradeep K. Sinha BPB Publications
2. IBM PC & Clones: Hardware Trouble Shooting and Maintenance by B.Govindarajalu, Tata McGraw Hill
3. PC Upgrade & Repair Bible , Wiley India.
4. PC Systems, Installation and Maintenance, Second Edition by R. P. Beales,
5. PC Upgrade & Repair Black Book by Ron Gilster.
6. Computer Installation and Servicing by D Balasubramanian

Session: 2023-24			
Part A - Introduction			
Subject	ELECTRONIC EQUIPMENT & MAINTENANCE		
Semester	THIRD		
Name of the Course	**Microprocessor 8085- Architecture & Programming**		
Course Code	B23-EEM-301		
Course Type: (CC/MCC/MDC/CC-M/DSEC/VOC/DSE/PC/AEC/VAC)	**CC-3** **MCC-4**		
Level of the course	100-199		
Pre-requisite for the course (if any)	Basic Knowledge of Digital Electronics		
Course Learning Outcomes (CLO):	After completing this course, the learner will be able to: 1. learn the basic concepts and working of 8085 2. understand the use of instruction in 8085 3. make the assembly language in 8085 and learn about its interrupts 4. understand the concept of peripheral 8255 5. Hands-on experience by doing experiments on 8085 kit		
Credits	Theory	Practical	Total
	3	1	4
Contact Hours	45	30	75
Max. Marks: 100(70 Theory + 30 Practical) **Internal Assessment Marks: 20 Theory + 10 Practical** **End Term Exam Marks: 50 Theory + 20 Practical**		**Exam Time: 3 Hours each for Theory & Practical**	

Part B- Contents of the Course

Instructions for Paper- Setter

1. Nine questions will be set in all. All questions will carry equal marks.
2. Question No. 1, which will be short answer type covering the entire syllabus, will be compulsory. The remaining eight questions will be set unit wise selecting two questions from each Unit I to IV. The candidate will be required to attempt question No. 1 and four more questions selecting one question from each unit.

Unit	Topics	Contact Hours
I	**8085 Microprocessor:** Evolution of Microprocessor, Microprocessor Architecture and its operations, Pin diagram, Fetching and Executing, Instruction Cycle, Timing Diagram. Fetch execute overlap. Instruction word size, Addressing modes, Counter & Time Delay	11
II	**Assembly Language Programming of 8085:** Instruction set of 8085, Addition, Subtraction, Multiplication, Division, Ascending, Descending, Largest Number, smallest Number	12
III	**Interrupt**: Methods of Input/output operations, Data transfer Schemes, software Interrupts, Hardware interrupts, Interrupt control circuits, Interrupt instructions.	11
IV	**Programmable Peripheral Interface 8255:** operational modes of 8255, control word format for 8255, programming in Mode 0, programming in Mode 1, BSR Mode	11
V*	**Note:** A candidate is required to perform minimum 6 experiments out of the list provided during course of study in this semester. 1. Addition of Two 16 Bit Numbers or microprocessor-Kit. 2. Subtraction of two 16 Bit numbers on microprocessor-Kit. 3. Multibyte Addition/Subtraction of two numbers by repetitive addition/subtraction on 4. Microprocessor-kit. 5. Division of two 8-Bit numbers by repetitive subtraction on microprocessor-Kit. 6. Multiplication of Two 8-Bit Numbers on Microprocessor –Kit. 7. Find the smallest/largest number from a give series of numbers on Microprocessor- 8. Kit. 9. To sort a given series of unsigned numbers in Ascending/ descending order on 10. Microprocessor-kit. 11. Generate a time delay through software on Microprocessor-Kit. 12. Check even parity/add parity of binary number on microprocessor-Kit. 13. Program to generate Square, Sine and triangular waves using Microprocessor-Kit.	30
Suggested Evaluation Methods		

Internal Assessment:	End Term Examination:
➢ **Theory(20 Marks)** • Class Participation(5Marks) • Seminar/presentation/assignment/quiz/class test etc.(5 Marks) • Mid-Term Exam(10 Marks) ➢ **Practicum(10 Marks)** • Class Participation: • Seminar/Demonstration/Viva-voce/Lab records etc.(10 Marks) • Mid-Term Exam:	**50 marks** **20 marks**

Part C-Learning Resources

Recommended Books/e-resources/LMS:

1. Microprocessor Architecture, Programming and Applications with 8085/8080A – Ramesh S. Gaonkar, Wiley Eastern Limited.
2. Fundamentals of Microprocessor and Microcomputers--B.RAM, Dhanpat Rai Pub.

Session: 2023-24			
Part A - Introduction			
Subject	ELECTRONIC EQUIPMENT & MAINTENANCE		
Semester	THIRD		
Name of the Course	**Programming in C**		
Course Code	B23-EEM-302		
Course Type: (CC/MCC/MDC/CC-M/DSEC/VOC/DSE/PC/AEC/VAC)	**MCC-5**		
Level of the course	100-199		
Pre-requisite for the course (if any)	Basic Knowledge of Digital Electronics		
Course Learning Outcomes (CLO):	After completing this course, the learner will be able to: 1. Understand the basics of C language 2. Learn about the data inputs and outputs in C 3. Understand the concept of Functions in C 4. Understand the concept of Array in C 5. Present the experimental results and conclusions by having Hands-on experience in the Laboratory		
Credits	Theory	Practical	Total
	3	1	4
Contact Hours	45	30	75
Max. Marks: 100(70 Theory + 30 Practical) **Internal Assessment Marks: 20 Theory + 10 Practical** **End Term Exam Marks: 50 Theory + 20 Practical**		Time: 3 Hours	

Part B- Contents of the Course

Instructions for Paper- Setter

1. Nine questions will be set in all. All questions will carry equal marks.
2. Question No. 1, which will be short answer type covering the entire syllabus, will be compulsory. The remaining eight questions will be set unit wise selecting two questions from each Unit I to IV. The candidate will be required to attempt question No. 1 and four more questions selecting one question from each unit.

Unit	Topics	Contact Hours

I	**C. Fundamentals:** The character set, identifiers & keywords, data types, constants, variables& arrays declaration, expressions statements, symbolic constants. Operators and expressions: Arithmetic operators, unary operators, relational and logical operators, assignment operators, conditional operators.	12
II	**Data input and output**: Entering input data- The scanned function, Writing output data- The print function. Control statements: While statement, Do-while statement, for statement, If-else statement, switch statement, break statement, continue statement	11
III	**Function:** Defining a Function, accessing a Function, passing arguments to a Function, specify arguments, data types.	11
IV	**Arrays:** Defining an Array, processing an Array, Passing arrays to a function, Multidimensional arrays, arrays and strings. Pointers: Fundamentals, pointer declaration, passing pointers to a function, pointers and one-dimensional array, operations on pointers.	11
V*	**Note:** A candidate is required to perform minimum 6experiments out of the list provided during course of study in this semester. 1. Program to study the behavior of data types i.e. their min & max values & their sizes. 2. Program to convert given distance in km to meters, feet, inches and centimeters. 3. Program to convert given temperature in Fahrenheit to Celsius. 4. Program to calculate the smallest & Largest out of given numbers using conditional operator. 5. Program to print roots of quadratic equation. 6. Program to print sum of digits of a given number. 7. Program to reverse the given number. 8. Program to check whether a given number is palindrome or not. 9. Program to add first seven terms of following series using for loop 1/1! + 2/2! + 3/3! ---------- 10. Program to print factorial of a number. 11. Program to print Fibonacci series till n given number using function. 12. Program to print binary equivalent of given decimal number. 13. Program to sort elements of array in ascending and descending order. 14. Program to search an element in 1-D arrays. 15. Program to implement multi-dimensional arrays- Multiplication of two matrices.	30
Suggested Evaluation Methods		

Internal Assessment: ➢ **Theory (20 Marks)** • Class Participation(5Marks) • Seminar/presentation/assignment/quiz/class test etc. (5 Marks) • Mid-Term Exam (10 Marks) ➢ **Practicum (10 Marks)** • Class Participation: • Seminar/Demonstration/Viva-voce/Lab records etc. (10 Marks) • Mid-Term Exam:	**End Term Examination:** **50 marks** **20 marks**

Part C-Learning Resources

Recommended Books/e-resources/LMS:

1. Schaum's Outline series: Theory and problems of programming with C by Byron S. Gottfried
2. Programming with C, Tata McGraw Hill, by Byron Gottfried.
3. Let Us C, BPB publications, by Yashwant Kanetkar.
4. C The Complete Reference, Tata McGraw Hill, by Herbert Schildt.
5. Programming in ANSI C, Tata McGraw Hill, by E. Balagurusamy.

Session: 2023-24			
Part A - Introduction			
Subject	ELECTRONIC EQUIPMENT & MAINTENANCE		
Semester	THIRD		
Name of the Course	**Electronics in Smart world**		
Course Code	B23-EEM-303		
Course Type: (CC/MCC/MDC/CC-M/DSEC/VOC/DSE/PC/AEC/VAC)	**MDC-3**		
Level of the course	100-199		
Pre-requisite for the course (if any)	1. No Programming language or Experience needed 2. Interest and passion about latest technologies		
Course Learning Outcomes (CLO):	After completing this course, the learner will be able to: 1. Student will be able to understand applications of electronics in smart homes. 2. Student will be able to understand applications of electronics in education sector and agriculture sector. 3. Student will be able to understand applications of electronics in smart homes. 4. Student will be able to understand applications of electronics in smart healthcare. 5. Study and report writing on latest technologies with emphasis on applications of electronics.		
	Theory	Practical	Total
Credits	2	1	3
Contact Hours	30	30	60
Max. Marks: 75 (50 Theory + 25 Practical) **Internal Assessment Marks: 15 Theory + 5 Practical** **End Term Exam Marks: 35 Theory + 20 Practical**		**Exam Time: 3 Hours each for Theory & Practical**	

Part B- Contents of the Course

Instructions for Paper- Setter

1. Nine questions will be set in all. All questions will carry equal marks.
2. Question No. 1, which will be short answer type covering the entire syllabus, will be compulsory. The remaining eight questions will be set unit wise selecting two questions from each Unit I to IV. The candidate will be required to attempt question No. 1 and four more questions selecting one question from each unit.

Unit	Topics	Contact Hours
I	Evolution of smart homes; Video monitoring, Security and alarms, CCTV	8
II	Role of Electronics in Education and Agriculture (Drones for survey, Smart-irrigation)	7
III	Electronics in Smart watch, Auto-mobiles, ATM, RF-ID cards: Working and applications	7
IV	Electronics in Healthcare: Digital Thermometers, BP measurement, Digital X-Ray, MRI, USG, ECG (Basic principle only).	8
V*	Perform at least two activities and make the report on it: 1. Prepare a project report on proposed features of smart Homes 2. Prepare a PowerPoint presentation on any one electronic instrument used in Health care. 3. Prepare a project report on proposed features of smart City 4. Prepare a report on ATM systems	30

Suggested Evaluation Methods

Internal Assessment: ➢ **Theory(15 Marks)** • Class Participation: **(4 Marks)** • Seminar/presentation/assignment/quiz/class test etc.: **(4 Marks)** • Mid-Term Exam**: (7 Marks)** ➢ **Practicum (5 Marks)** • Class Participation: • Seminar/Demonstration/Viva-voce/Lab records etc.: **(5 Marks)** • Mid-Term Exam:	**End Term Examination:** **35 marks** **20 marks**

Part C-Learning Resources

Recommended Books/e-resources/LMS:

1. Boylested, R. L. and Nashelsky, L., Electronic Devices and Circuit Theory, Pearson Education.
2. Stan Gibilisco, Teach Yourself Electricity and Electronics, McGraw-Hill
3. Edward L. Wolf, Quantum Nanoelectronics, Second Edition, Wiley
4. Getting Started in Electronics by Forrest M. Mims
5. Electronics For Dummies by Shamieh Cathleen, Wiley, 2019
6. Consumer Electronics by S P Bali, Pearson, 2008
7. . Handbook of Biomedical Instrumentation, R S Khandpur, Tata Mc Graw Hill, 2014
8. . Emerging Trends in Electronics Vijay G. Yangalwar Nirali Prakahshan Publishers, 2020
9. Paul Horowitz The Art of Electronics Cambridge University Press; 1st edition, 2020.

Session: 2023-24			
Part A - Introduction			
Subject	ELECTRONIC EQUIPMENT & MAINTENANCE		
Semester	FOURTH		
Name of the Course	**Advanced Digital Electronics**		
Course Code	B23-EEM-401		
Course Type: (CC/MCC/MDC/CC-M/DSEC/VOC/DSE/PC/AEC/VAC)	**CC-4** **MCC-6**		
Level of the course	200-299		
Pre-requisite for the course (if any)	Basic Knowledge of Digital Electronics		
Course Learning Outcomes (CLO):	After completing this course, the learner will be able to: 1. Learn the basic concepts of flip flops and working of sequential circuits 2. Learn the design of asynchronous and synchronous counters 3. Understand the concept of shift registers and its applications 4. Understand the logics and theory of the semiconductor memories 5. Implementation of various sequential circuits using digital trainer kits		
Credits	Theory	Practical	Total
	3	1	4
Contact Hours	45	30	75
Max. Marks: 100(70 Theory + 30 Practical) **Internal Assessment Marks: 20 Theory + 10 Practical** **End Term Exam Marks: 50 Theory + 20 Practical**		**Exam Time: 3 Hours each for Theory & Practical**	
Part B- Contents of the Course			

Instructions for Paper- Setter

1. Nine questions will be set in all. All questions will carry equal marks.
2. Question No. 1, which will be short answer type covering the entire syllabus, will be compulsory. The remaining eight questions will be set unit wise selecting two questions from each Unit I to IV. The candidate will be required to attempt question No. 1 and four more questions selecting one question from each unit.

Unit	Topics	Contact Hours
I	**Basic Sequential circuit**: Asynchronous and Synchronous circuits, RS Flip-Flop, JK Flip Flop, Race Around Condition, Master Slave JK flip flop, T and D Flip Flop, Excitation Table, Conversion of Flip Flop.	12
II	**Counters:** Asynchronous Binary Counters, Asynchronous Mod-N Counter, Synchronous counter: Design principle of Modulo-N Counters, UP-Down counters, Decade Counter, skipping state counter.	11
III	**Shift Registers**: SISO, SIPO, PISO, PIPO, Bidirectional Shift register, Universal Shift register Applications of shift register: Ring counter, Johnson Counter, Time delay generation.	11
IV	**A/D and D/A Converters:** D/A Converters (Specifications, Weighted Resister, R-2R Ladder), Sample and Hold Circuit, A/D Converters (Quantization and Encoding, Specifications, Parallel Comparator, Successive Approximation, Dual Slope)	11
V*	**Note:** A candidate is required to perform minimum 6 experiments out of the list provided during course of study in this semester. 1. Study J-K type flip flop. 2. Study D and T type flip flops. 3. Design a 4-bit Ripple counter 4. Design an asynchronous decade counter 5. Design a Ring counter 6. Design a SISO shift register 7. To design Digital to Analog (D/A) Converter by weighted resistors arrangement. 8. To design Digital to Analog (D/A) Converter by binary R-2R ladder arrangement.	30

Suggested Evaluation Methods

Internal Assessment: ➢ **Theory(20 Marks)** • Class Participation(5Marks) • Seminar/presentation/assignment/quiz/class test etc.(5 Marks) • Mid-Term Exam(10 Marks) ➢ **Practicum(10 Marks)** • Class Participation: • Seminar/Demonstration/Viva-voce/Lab records etc.(10 Marks) • Mid-Term Exam: :	**End Term Examination: 50 marks** **20 marks**

Part C-Learning Resources
Recommended Books/e-resources/LMS: **1.** Digital E1ectronics & Micro computers - R. K. Gaur (4th edition) **2.** Modern Digital Electronics - R.P. Jain (4th edition) **3.** Digital Principles and Applications by Leach Donald, Malvino AP (6th Edition) **4.** Digital fundamentals by R.P. Jain & Floyd.

Session: 2023-24			
Part A - Introduction			
Subject	ELECTRONIC EQUIPMENT & MAINTENANCE		
Semester	FOURTH		
Name of the Course	**8051: Programming & Applications**		
Course Code	B23-EEM-402		
Course Type: (CC/MCC/MDC/CC-M/DSEC/VOC/DSE/PC/AEC/VAC)	**MCC-7**		
Level of the course	200-299		
Pre-requisite for the course (if any)	Basic Knowledge of Digital Electronics		
Course Learning Outcomes (CLO):	After completing this course, the learner will be able to: 1. Familiarize with the basic concepts of microcontroller 8051. 2. Understand Addressing modes and Instruction set of 8051 microcontroller. 3. Learn programming techniques with 8051 microcontroller. 4. Learn the fundamental concepts of interfacing and to design basic applications being interfaced with 8051 microcontroller. 5. Present the experimental results and conclusions by having Hands-on experience in the Laboratory		
Credits	Theory	Practical	Total
	3	1	4
Contact Hours	45	30	75
Max. Marks: 100(70 Theory + 30 Practical) **Internal Assessment Marks: 20 Theory + 10 Practical** **End Term Exam Marks: 50 Theory + 20 Practical**		**Exam Time: 3 Hours each for Theory & Practical**	

Part B- Contents of the Course

Instructions for Paper- Setter

1. Nine questions will be set in all. All questions will carry equal marks.
2. Question No. 1, which will be short answer type covering the entire syllabus, will be compulsory. The remaining eight questions will be set unit wise selecting two questions from each Unit I to IV. The candidate will be required to attempt question No. 1 and four more questions selecting one question from each unit.

Unit	Topics	Contact Hours
I	**Microcontroller 8051:** Introduction and block diagram of 8051 microcontroller, architecture of 8051 family (in brief), memory organization, Internal RAM/ROM memory, General purpose data memory, special purpose/function registers, external memory. Counters and timers – 8051 oscillator and clock, program counter, TCON, TMOD, timer counter interrupts, timer modes of operation. Input/output ports and circuits/configurations, serial data input/output – SCON, PCON, serial data transmission modes.	11
II	**8051- Addressing modes and Instruction set** Addressing modes, Data transfer instructions, Push and Pop and data exchange instructions, Logical Instructions, Arithmetic Instructions, simple programs in assembly language.	11
III	**8051 programming in C:** Jump and call instructions – jump and call program range, jumps, calls and subroutines, interrupts and returns, simple example programs in assembly language. 8051 programming using C– Data types and time delays in 8051 C, I/O programming, logic operations, data conversion programs, accessing code ROM space and data serialization. Timer/Counter Programming in 8051–Programming 8051 timers, counter programming, programming timers 0 and 1 in 8051 C.	12
IV	**Interfacing with 8051:** Basic interfacing concepts and interrupts, Programming 8051 interrupts, programming Timer interrupts, programming the external hardware interrupts. Schematic diagrams and basic concepts of Interfacing of 8051 to keyboard, seven segment display, stepper motor, DAC, ADC and traffic light controller circuits.	11
V*	**Note:** A candidate is required to perform minimum 6 experiments out of the list provided during course of study in this semester. 1. Familiarization with 8051 based microcontroller trainer kit. 2. Practice in entering and executing simple programs, like addition/subtraction. 3. Practice in entering and executing simple programs smallest/largest of N 8-bit numbers. 4. Write a program on 8051 microcontroller kit to find that the given numbers is prime or not. 5. Write a program on 8051 microcontroller kit to glow the first four LEDs then next four using Timer application. 6. Use one of the four ports of 8051 for output interfaced to eight LED's. 7. Simulate binary counter (8 bit) on LED's .	30

	8. Design a square wave of varying duty cycles on 8051 based microcontroller trainer kit. 9. Interface stepper motor with 8051 microcontroller and write a program to move the motor through a given angle in clock wise or counter clockwise direction. 10. Study and design traffic light controller circuit using 8051 microcontroller.	

Suggested Evaluation Methods

Internal Assessment: ➢ **Theory(20 Marks)** • Class Participation(5Marks) • Seminar/presentation/assignment/quiz/class test etc.(5 Marks) • Mid-Term Exam(10 Marks) ➢ **Practicum(10 Marks)** • Class Participation: • Seminar/Demonstration/Viva-voce/Lab records etc.(10 Marks) • Mid-Term Exam:	**End Term Examination:** **50 marks** **20 marks**

Part C-Learning Resources

Recommended Books/e-resources/LMS:

1. 8051 Microcontroller & Embedded Systems by M.A.Mazidi, J.G.Mazidi & R.D.McKinlay.
2. The 8051 Microcontroller, architecture, programming and applications by K.J.Ayala.

Session: 2023-24			
Part A - Introduction			
Subject	ELECTRONIC EQUIPMENT & MAINTENANCE		
Semester	FOURTH		
Name of the Course	**Biomedical Equipment Maintenance**		
Course Code	B23-EEM-403		
Course Type: (CC/MCC/MDC/CC-M/DSEC/VOC/DSE/PC/AEC/VAC)	**MCC-8**		
Level of the course	200-299		
Pre-requisite for the course (if any)	Basic Knowledge of Electronics		
Course Learning Outcomes (CLO):	After completing this course, the learner will be able to: 1. Familiarize with working principle and applications of various types of biomedical instruments. 2. Understand signal analysis and various types of electrodes used in various biomedical instruments. 3. Familiarize with role of various types of sensors in biomedical instruments. 4. Understand the utility of monitoring, imaging and therapeutic instruments in biomedical sciences. 5. Present the experimental results and conclusions by having Hands-on experience in the Laboratory		
Credits	Theory	Practical	Total
	3	1	4
Contact Hours	45	30	75
Max. Marks: 100(70 Theory + 30 Practical) **Internal Assessment Marks: 20 Theory + 10 Practical** **End Term Exam Marks: 50 Theory + 20 Practical**		**Exam Time: 3 Hours each for Theory & Practical**	
Part B- Contents of the Course			
Instructions for Paper- Setter 1. Nine questions will be set in all. All questions will carry equal marks. 2. Question No. 1, which will be short answer type covering the entire syllabus, will be compulsory. The remaining eight questions will be set unit wise selecting two questions			

	from each Unit I to IV. The candidate will be required to attempt question No. 1 and four more questions selecting one question from each unit.	
Unit	**Topics**	**Contact Hours**
I	**Basic medical Instrumentation System**, Desirable Characteristics and Performance Requirements, General Constrains in design of Medical Instrumentation. **Origin of Bioelectric signals**, Resting and action potential, Various Bioelectric Potentials and their waveforms (ECG, EEG, EMG); Bio-Potential Electrodes: Equivalent circuit model of Electrode, Various types Recording Electrodes (Surface, Micro, Needle, Array electrodes).	11
II	**Physiological Sensors**: Optical Fibre Sensors, Photometric Sensors, Pulse Sensors, Chemical Sensors, Biosensors, Smart Sensors. **Biomedical Equipment:** (Principle of operation and Application) Electrocardiograph (ECG), Electroencephalograph (EEG), Electromyography (EMG). **Patient Monitoring Systems:** Basic Principle and Mechanism of Cardiac Monitor, Heart Rate, Pulse Rate.	12
III	**Analytical Instruments** (Principle of operation and Application): Blood Gas Analyzers (pH & PCO_2 Measurement, Blood Cell Counter, Colorimeter, Spectrophotometer, Oximeter. **Imaging systems** (Basic principle, Block diagram, Biological Effects, Advantages): X-ray machine, Computed Tomography (CT), Magnetic Resonance Imaging System. **Therapeutic Equipment:** (Principle of operation and Application) Cardiac pacemakers, Hemodialysis machine, Ventilators, Humidifiers, Nebulizers.	11
IV	**Basic principle and operation:** Bedside patient monitor, Blood pressure Measurements, Audiometers and hearing aids, Single Channel Telemetry Systems and telemedicine. **Patient Safety medical equipment:** Electrical Shock Hazards, Leakage current, safety codes for electro medical equipment, Electric safety analyzer, Testing of biomedical equipment.	11
V*	**Note:** A candidate is required to perform minimum 6 experiments out of the list provided during course of study in this semester. 1. Recording of ECG and identification of various peaks in ECG waveform. 2. Measurement of Heart Rate using conventional and modern electronic stethoscope. (an activity can be given for the design of electronic stethoscope using condenser	30

	Microphone) 3. Measurement of blood pressure (systolic and diastolic) using sphygmomanometer 4. Measurement of oxygen (SpO_2) level using oximeter. 5. Understand and make a presentation on CT Scan and MRI setups. 6. Understand and make a presentation on complete ventilator setups. 7. Measurement of respiratory rate and various tidal volumes using spirometer. (an activity can be given for the design of respiratory rate monitor using Strain gauge/thermistor) 8. Measurement of body temperature using conventional mercury `thermometer and modern electronic thermometer. (an activity can be given for the design of electronic thermometer using thermistor/thermocouple).	

Suggested Evaluation Methods

Internal Assessment: ➢ **Theory(20 Marks)** • Class Participation(5Marks) • Seminar/presentation/assignment/quiz/class test etc.(5 Marks) • Mid-Term Exam(10 Marks) ➢ **Practicum(10 Marks)** • Class Participation: • Seminar/Demonstration/Viva-voce/Lab records etc.(10 Marks) • Mid-Term Exam:	**End Term Examination:** **50 marks** **20 marks**

Part C-Learning Resources

Recommended Books/e-resources/LMS:

1. Khandpur R. S. - Handbook of Biomedical Instrumentation, TMH

2. L.Cromwell et al- Biomedical Instrumentation and Measurements PHI

Session: 2023-24			
Part A - Introduction			
Subject	ELECTRONIC EQUIPMENT & MAINTENANCE		
Semester	FOURTH		
Name of the Course	**Electronic Communication-1**		
Course Code	B23-EEM-404		
Course Type: (CC/MCC/MDC/CC-M/DSEC/VOC/DSE/PC/AEC/VAC)	**DSE-1**		
Level of the course	200-299		
Pre-requisite for the course (if any)	Basic Knowledge of Electronics		
Course Learning Outcomes (CLO):	After completing this course, the learner will be able to: 1. 1. Develop the concept of basics of communication systems 2. Familiar with modulation & demodulation methods 3. Familiar with AM, FM and pulse modulation. 4. Learn the different Digital Modulation Techniques. 5. Get the hands-on practice of different communication techniques and methods		
	Theory	Practical	Total
Credits	3	1	4
Contact Hours	45	30	75
Max. Marks: 100(70 Theory + 30 Practical) **Internal Assessment Marks: 20 Theory + 10 Practical** **End Term Exam Marks: 50 Theory + 20 Practical**		**Exam Time: 3 Hours each for Theory & Practical**	
Part B- Contents of the Course			

Instructions for Paper- Setter

1. Nine questions will be set in all. All questions will carry equal marks.
2. Question No. 1, which will be short answer type covering the entire syllabus, will be compulsory. The remaining eight questions will be set unit wise selecting two questions from each Unit I to IV. The candidate will be required to attempt question No. 1 and four more questions selecting one question from each unit.

Unit	Topics	Contact Hours
I	**Communication Systems:** Elements of Communication Systems, Basic Terminology in communication system, Bandwidth of Signal, Bandwidth of Transmission medium, Propagation of Electromagnetic waves: Ground Wave, Sky wave, Space Wave	11
II	**Modulation & Demodulation**: Principle of modulation, Amplitude Modulation, Percent Modulation, upper & lower side frequencies, upper & lower side bands, mathematical analysis of a modulated carrier wave, power relations in an AM wave, simple idea about different forms of amplitude modulation. A) DSB-SC B) SSB-TC C) SSBSC	12
III	**Frequency Modulation:** Frequency modulation, FM Sidebands, modulation index and number of side bands, mathematical expression for FM wave, Demodulation, diode detector for AM signals.FM detector, Limited and phase shift detectors, comparison between AM & FM.	12
IV	**Pulse Analog Modulation:** Channel capacity, Sampling theorem, PAM, PWM, PPM modulation and detection techniques, Multiplexing: TDM and FDM.	10
V*	**Note:** A candidate is required to perform minimum 6 experiments out of the list provided during course of study in this semester: 1. Study of Amplitude Modulation, plot the waveform and calculation of modulation index (using Kit) 2. Study of Amplitude demodulation and plot the waveform (using Kit) 3. Study of Frequency Modulation and wave form tracing (using Kit). 4. Study of Pulse Amplitude Modulation using IC 555 (using Kit). 5. Study Pulse width Modulation using IC 555 (using Kit). 6. Study of Pulse Position Modulation using IC 555 (using Kit). 7. Multiplexing Techniques: FDM 8. Multiplexing Techniques: TDM	30

Suggested Evaluation Methods	
Internal Assessment: ➢ **Theory** • Class Participation: • Seminar/presentation/assignment/quiz/class test etc.: • Mid-Term Exam: ➢ **Practicum** • Class Participation: • Seminar/Demonstration/Viva-voce/Lab records etc.: • Mid-Term Exam:	**End Term Examination:** **50 marks** **20 marks**

Part C-Learning Resources

Recommended Books/e-resources/LMS:

1. Kennedy, George & Davis, Bernard "Electronic Communication Systems" Tata McGraw-Hill 4thEd.
2. Modem Analog & Digital Communication Systems: B.P. Lathi; Oxford Univ. Press.
3. Communication Systems S. Haykin, John Willy & Sons.
4. Taub, Herbert & Schilling, Donald L. "Communication Systems" Tata McGraw-Hill
5. Electronic Communication Systems: Fundamentals through Advanced (4^{th}ed.) Wayne Tomasi, Prentice Hall
6. Radio Engineering by G K Mithal

Session: 2023-24			
Part A - Introduction			
Subject	ELECTRONIC EQUIPMENT & MAINTENANCE		
Semester	FOURTH		
Name of the Course	**Electronic Instrumentation-1**		
Course Code	B23-EEM-405		
Course Type: (CC/MCC/MDC/CC-M/DSEC/VOC/DSE/PC/AEC/VAC)	**DSE-1**		
Level of the course	200-299		
Pre-requisite for the course (if any)	Basic Knowledge of Electronics		
Course Learning Outcomes (CLO):	After completing this course, the learner will be able to: 1. Understand the basic concepts and characteristics of electronic instruments 2. Demonstrate the working principle and utilities of various types of bridges. 3. Familiarize with the fundamentals of various types of transducers and their applications. 4. Learn the concepts of acquiring the data from any of the transducers. 5. Get the hands-on practice of different instrumentation measurement techniques and methods		
Credits	Theory	Practical	Total
	3	1	4
Contact Hours	45	30	75
Max. Marks: 100(70 Theory + 30 Practical) **Internal Assessment Marks: 20 Theory + 10 Practical** **End Term Exam Marks: 50 Theory + 20 Practical**		**Exam Time: 3 Hours each for Theory & Practical**	
Part B- Contents of the Course			
Instructions for Paper- Setter 1. Nine questions will be set in all. All questions will carry equal marks. 2. Question No. 1, which will be short answer type covering the entire syllabus, will be compulsory. The remaining eight questions will be set unit wise selecting two questions			

	from each Unit I to IV. The candidate will be required to attempt question No. 1 and four more questions selecting one question from each unit.	
Unit	**Topics**	**Contact Hours**
I	**DC and AC indicating Instruments:** Accuracy and precision, Types of errors, PMMC galvanometer, Sensitivity, Loading effect, Series Type and Shunt type Ohmmeter, Multimeter. Watthour Meter, Power Factor Meter.	11
II	**DC and AC Bridges & their Applications:** General Conditions for Bridge Balance of Wheatstone Bridge, Kelvin Bridge, Maxwell Bridge, Hay Bridge, Schering Bridge, Wein Bridge, Wagner Ground Connection.	10
III	**Transducers:** Classification, Active, Passive, Mechanical, Electrical, their comparison. Selection of Transducers, Principle and working of following types: Displacement transducers - Resistive (Potentiometric, Strain Gauges – Types, Gauge Factor, Semi-conductor strain gauge) Capacitive (diaphragm), Inductive (LVDT-Principle and characteristics, Temperature (electrical and non-electrical), Piezoelectric (Element and their properties, Piezoelectric coefficients. Equivalent circuit and frequency response of P.E. Transducers)	12
IV	**Photosensitive Transducers:** photo-conductive, photo emissive, photo voltaic, semiconductor, LDR. **Data acquisition systems:** Block diagram, brief description of preamplifier, signal conditioner, instrumentation amplifier, waveform generator, A/D and D/A converter blocks, D/A and A/D Multiplexing, computer-controlled test and measurement system.	12
V*	**Note:** A candidate is required to perform minimum 6 experiments out of the list provided during course of study in this semester: 1. Measurement of displacement using LVDT. 2. Measurement of load using strain gauge-based load cell. 3. Measurement of temperature by RTD. 4. Measurement of temperature by thermocouple 5. Measurement of resistance with Wheatstone bridge 6. Study the characteristics of an LDR 7. Determination of characteristics of a solid-state sensor/ fibre-optic sensor 8. Study any complete data acquisition system and make a presentation on it.	30
Suggested Evaluation Methods		

Internal Assessment:	End Term Examination:
➢ **Theory(20 Marks)** • Class Participation(5Marks) • Seminar/presentation/assignment/quiz/class test etc.(5 Marks) • Mid-Term Exam(10 Marks) ➢ **Practicum(10 Marks)** • Class Participation: • Seminar/Demonstration/Viva-voce/Lab records etc.(10 Marks) • Mid-Term Exam:	**50 marks** **20 marks**

Part C-Learning Resources

Recommended Books/e-resources/LMS:

1. Instrumentation Measurements and Analysis by Nakra & Choudhary; TMH
2. Electrical & Electronic Measurements & Instrumentation by A.K. Sawhney
3. Electronic Instrumentation and Measurements Techniques by W.D. Cooper; PHI

KURUKSHETRA UNIVERSITY KURUKSHETRA

Scheme of Examination and Syllabus for Under-Graduate Programme

Programme: Bachelor of Science (Hons.) in Information Technology

Under Multiple Entry-Exit, Internship and CBCS-LOCF in accordance to NEP-2020 w.e.f. 2023-24 (in phased manner)

34(2012)

Scheme of Examination for Under-Graduate Programme
Under Multiple Entry-Exit, Internship and CBCS-LOCF in accordance to NEP-2020
w.e.f. 2023-24 (in phased manner)

UG Programme with Single Major in Information Technology

FIRST YEAR: SEMESTER-1								
Course	**Paper(s)**	**Nomenclature of Paper**	**Credits**	**Hours/ Week**	**Internal marks**	**External Marks**	**Total Marks**	**Exam Duration**
CC-1 MCC-A1 4 credit	B23-HIT-101	Digital Electronics-I	3	3	20	50	70	3 hrs.
		Practical	1	2	10	20	30	3 hrs.
CC-2 MCC-A2 4 credit	B23-HIT-102	Computer and Programming Fundamentals	3	3	20	50	70	3 hrs.
		Practical	1	2	10	20	30	3 hrs.
CC-M1 4 credit	From Available CC-M1 of 4 credits as per NEP							
MDC-1 3 credits	From Available MDC-1 of three credits as per NEP							
AEC-1 2 credit	From Available AEC-1 of two credits as per NEP							
SEC-1 3 credit	From Available SEC-1 of three credits as per NEP							
VAC-1 2 credit	From Available VAC-1 of two credits as per NEP							
FIRST YEAR: SEMESTER-2								
Course	**Paper(s)**	**Nomenclature of Paper**	**Credits**	**Hours/ Week**	**Internal marks**	**External Marks**	**Total Marks**	**Exam Duration**
CC-3 MCC-A3 4 credit	B23-HIT-201	Digital Electronics-II	3	3	20	50	70	3 hrs.
		Practical	1	2	10	20	30	3 hrs.
DSEC-A1 4 credit (select any one option)	B23-HIT-202	Office Automation Tools	3	3	20	50	70	3 hrs.
		Practical	1	2	10	20	30	3 hrs.
	B23-HIT-203	Basics of Web Development	3	3	20	50	70	3 hrs.
		Practical	1	2	10	20	30	3 hrs.
CC-M2 4 credit	From Available CC-M2 of 4 credits as per NEP							
MDC-2 3 credits	From Available MDC-2 of three credits as per NEP							
AEC-2 2 credit	From Available AEC-2 of two credits as per NEP							
SEC-2 3 credit	From Available SEC-2 of three credits as per NEP							
VAC-2 2 credit	From Available VAC-2 of two credits as per NEP							

SECOND YEAR: SEMESTER-3								
Course	**Paper(s)**	**Nomenclature of Paper**	**Credits**	**Hours/ Week**	**Internal marks**	**External Marks**	**Total Marks**	**Exam Duration**
CC-4 MCC-A4 4 credit	B23-HIT-301	Industrial Electronics	3	3	20	50	70	3 hrs.
		Practical	1	2	10	20	30	3 hrs.
CC-5 MCC-A5 4 credit	B23-HIT-302	Computer Programming with C	3	3	20	50	70	3 hrs.
		Practical	1	2	10	20	30	3 hrs.
CC-M3 4 credit	From Available CC-M3 of 4 credits as per NEP							
MDC-3 3 credit	From Available MDC-3 of three credits as per NEP							
AEC-3 2 credit	From Available AEC-3 of two credits as per NEP							
SEC-3 3 credit	From Available SEC-3 of three credits as per NEP							
VAC-3 2 credit	From Available VAC-3 of two credits as per NEP							
SECOND YEAR: SEMESTER-4								
Course	**Paper(s)**	**Nomenclature of Paper**	**Credits**	**Hours/ Week**	**Internal marks**	**External Marks**	**Total Marks**	**Exam Duration**
CC-6 MCC-A6 4 credit	B23-HIT-401	Transistor & Linear Integrated Circuits	3	3	20	50	70	3 hrs.
		Practical	1	2	10	20	30	3 hrs.
CC-7 MCC-A7 4 credit	B23-HIT-402	Fundamentals of Database Management Systems	3	3	20	50	70	3 hrs.
		Practical	1	2	10	20	30	3 hrs.
CC-8 MCC-A8 4 Credits	B23-HIT-403	Electronic Communication	3	3	20	50	70	3 hrs.
		Practical	1	2	10	20	30	3 hrs.
DSE-A1 4 credits (Select one option)	B23-HIT-404	Object Oriented Programming with C++	3	3	20	50	70	3 hrs.
		Practical	1	2	10	20	30	3 hrs.
	B23-HIT-405	Programming in Java	3	3	20	50	70	3 hrs.
		Practical	1	2	10	20	30	3 hrs.
CC-M4(V) 4 credit	From Available CC-M4(V) of 4 credits as per NEP							
AEC-4 2 credit	From Available AEC-4 of two credits as per NEP							
VAC-4 2 credit	From Available VAC-4 of two credits as per NEP							

THIRD YEAR: SEMESTER-5								
Course	**Paper(s)**	**Nomenclature of Paper**	**Credits**	**Hours/ Week**	**Internal marks**	**External Marks**	**Total Marks**	**Exam Duration**
CC-9 MCC-A9 4 credit	B23-HIT-501	Microprocessor 8085 Architecture & Programming	3	3	20	50	70	3 hrs.
		Practical	1	2	10	20	30	3 hrs.
CC-10 MCC-A10 4 credit	B23-HIT-502	Operating Systems	3	3	20	50	70	3 hrs.
		Practical	1	2	10	20	30	3 hrs.
DSE-A2 4 credits (Select any one option)	B23-HIT-503	Web Development using ASP	3	3	20	50	70	3 hrs.
		Practical	1	2	10	20	30	3 hrs.
	B23-HIT-504	Web Development using PHP	3	3	20	50	70	3 hrs.
		Practical	1	2	10	20	30	3 hrs.
DSE-A3 4 credits (Select any one option)	B23-HIT-505	Data Structure	3	3	20	50	70	3 hrs.
		Practical	1	2	10	20	30	3 hrs.
	B23-HIT-506	Animation Techniques	3	3	20	50	70	3 hrs.
		Practical	1	2	10	20	30	3 hrs.
CC-M5(V) 4 credit	From Available CC-M5(V) of 4 credits as per NEP							
Internship 4 credit	**Internships**							

THIRD YEAR: SEMESTER-6								
Course	**Paper(s)**	**Nomenclature of Paper**	**Credits**	**Hours/ Week**	**Internal marks**	**External Marks**	**Total Marks**	**Exam Duration**
CC-11 MCC-A11 4 credit	B23-HIT-601	8085 Peripheral Devices and 8051 Microcontroller	3	3	20	50	70	3 hrs.
		Practical	1	2	10	20	30	3 hrs.
CC-12 MCC-A12 4 credit	B23-HIT-602	Introduction to Python Programming	3	3	20	50	70	3 hrs.
		Practical	1	2	10	20	30	3 hrs.
DSE-A4 4 credit (Select any one option	B23-HIT-603	Data Communication & Computer Networks	3	3	20	50	70	3 hrs.
		Practical	1	2	10	20	30	3 hrs.
	B23-HIT-604	Data ware Housing & Data Mining	3	3	20	50	70	3 hrs.
		Practical	1	2	10	20	30	3 hrs.
DSE-A5 4 Credits (Select any one option)	B23-HIT-605	Linux & Shell Programming	3	3	20	50	70	3 hrs.
		Practical	1	2	10	20	30	3 hrs.
	B23-HIT-606	Internet Concepts & Applications	3	3	20	50	70	3 hrs.
		Practical	1	2	10	20	30	3 hrs.
CC-M6(V) 4 credit	From Available CC-M6(V) of 4 credits as per NEP							
SEC-4 2 credit	From Available SEC-4 of two credits as per NEP							

FOURTH YEAR: SEMESTER-7								
Course	**Paper(s)**	**Nomenclature of Paper**	**Credits**	**Hours/ Week**	**Internal marks**	**External Marks**	**Total Marks**	**Exam Duration**
CC-H1 4 credit	B23-HIT-701	Artificial Intelligence & Machine Learning	4	4	30	70	100	3 hrs.
CC-H2 4 credit	B23-HIT-702	Software Engineering	4	4	30	70	100	3 hrs.
CC-H3 4 credits	B23-HIT-703	Satellite Communication	4	4	30	70	100	3 hrs.
DSE-H1 4 credits (Select any one option)	B23-HIT-704	Introduction to VHDL	4	4	30	70	100	3 hrs.
	B23-HIT-705	Cloud Computing	4	4	30	70	100	3 hrs.
PC-H1 4 credits	B23-HIT-706	Practical Based on B23-HIT -701 TO 704/705	4	8	30	70	100	6 hrs
CC-HM1 4 credits	From Available Minor of 4 credits as per NEP							
FOURTH YEAR: SEMESTER-8								
CC-H4 4 credit	B23-HIT-801	Signals & Systems	4	4	30	70	100	3 hrs.
CC-H5 4 credit	B23-HIT-802	Computer Graphics	4	4	30	70	100	3 hrs.
CC-H6 4 Credits	B23-HIT-803	Optical Fiber Communication	4	4	30	70	100	3 hrs.
DSE-H2 4 credits (Select any one option	B23-HIT-804	Mobile App Development	4	4	30	70	100	3 hrs.
	B23-HIT-805	Internet of Things	4	4	30	70	100	3 hrs.
PC-H2 4 credits	B23-HIT-806	Practical Based on B23-HIT-801 TO 804/805	4	8	30	70	100	6 hrs
CC-HM2 4 credits	From Available Minor of 4 credits as per NEP							
OR								
Course	**Paper(s)**	**Nomenclature of Paper**	**Credits**	**Hours/ Week**	**Internal marks**	**External Marks**	**Total Marks**	**Exam Duration**
CC-H4 4 credit	B23-HIT-801	Signals & Systems	4	4	30	70	100	3 hrs.
CC-H5 4 credit	B23-HIT-802	Computer Graphics	4	4	30	70	100	3 hrs.
Project/ Dissertation 12 credits	B23-HIT-807	Project/ Dissertation	8+4		-	300	300	-
CC-HM2 4 credits	From Available Minor of 4 credits as per NEP							

Session: 2023-24			
Part A - Introduction			
Name of the Programme	**Bachelor of Science (B.Sc.) (Hons) (Information Technology**		
Subject	Information Technology		
Semester	FIRST		
Name of the Course	DIGITAL ELECTRONICS-I		
Course Code	B23-HIT-101		
Course Type: (CC/MCC/MDC/CC-M/DSEC/VOC/DSE/PC/AEC/VAC)	MCC-A1		
Level of the course	100-199		
Pre-requisite for the course (if any)	PHYSICS as a subject AT LEVEL-4.0 (CLASS XII)		
Course Learning Outcomes (CLO):	After completing this course, the learner will be able to: **CLO-1**: To understand the basics of various Number systems and their conversions **CLO-2**: To understand the basics of logic gates, Boolean algebra and use of kmap **CLO-3** To understand how to design combinational circuits **CLO-4**: To understand the working and use of Sequential digital circuits **CLO-5:** To learn and understand the use of various electronic components a equipments used for analysis of basic digital electronic circuits.		
Credits	**Theory**	**Practical**	**Total**
	3	1	4
Contact Hours	45	30	75
Max. Marks: 100(70 Theory +30 Practical) Internal Assessment Marks: 20 Theory +10 Practical End Term Exam Marks: 50 Theory +20 Practical		Time: 3 Hours each for Theory & Practical	

Part B- Contents of the Course

Instructions for Paper- Setter

1. Nine questions will be set in all. All questions will carry equal marks.
2. Question No. 1, which will be short answer type covering the entire syllabus, will be compulsory. The remaining eight questions will be set unit wise selecting two questions from each Unit I to IV. The candidate will be required to attempt question No. 1 compulsory and four more questions selecting one question from each unit.

Unit	Topics	Contact Hours
I	**Number Systems:** Binary, Octal, Hexadecimal number system and base conversions, Binary Arithmetic Operations, 1's and 2's complement representation and there arithmetic. Binary Codes- BCD, Grey, cyclic, ASCII, EBCDIC, Parity Bit Code, Unicode, Sequential Code	**12**
II	**Logic Gates and K-Map:** AND, OR, NOT, XOR, XNOR, NOR, NAND (Definition, Symbols& Truth table). Boolean Algebra: Postulates, Duality Principal, De Morgan's Law, Simplification of Boolean Identities, Standard SOP & POS Forms, Simplification using K-map, don't care condition implementation of SOP & POS form using NAND and NOR Gate, Logic Families- NAND and NOR Logics (DTL, TTL and CMOS)	**12**
III	**Combinational Logic Design:** Combinational Circuit design procedure, Half adder, full adder, half Subtractor, full Subtractor, parallel binary adder, 2'S complement adder/ Subtractor, Multiplexer and Demultiplexer, Decoder, Encoder, Code Converter.	**10**
IV	**Sequential Circuits:** 1 Bit memory cell, RS Flip-Flop, Clocked RS FF, JK-FF, Race around condition, MASTER SLAVE JK T-FF, D-FF, and Excitation table of Flip Flop, Conversion of Flip Flops.	**11**
V*	**Students have to perform six practicals out the list** 1. Measurement of resistance by colour code method and using M/M and to design a potential divider arrangement and familiarization of components such as capacitors, potentiometer, diode, transistors, etc. Study of basis logic gate (AOI). 2. Familiarization and Identification of the Digital ICs. 3. Circuit Design of AOI using discrete components on Breadboard 4. Realization of Boolean Identities on Digital Trainer Kit 5. Study of DTL NAND gate. 6. Study of TTL NAND gate. 7. Digital trainer using AOI. 8. Digital trainer using NAND. **9.** Half adder/Full adder.	**30**

Suggested Evaluation Methods	
Internal Assessment: ➢ **Theory(10 Marks)** • Class Participation **(4 Marks)** • Seminar/presentation/assignment/quiz/class test etc.: • Mid-Term Exam: **(6 Marks)** ➢ **Practicum (5 Marks)** • Class Participation: • Seminar/Demonstration/Viva-voce/Lab records etc**.(5 Marks)** • Mid-Term Exam:	**End Term Examination:** **Theory: 50 Marks** **Practical: 20 Marks**
Part C-Learning Resources	
Recommended Books/e-resources/LMS: • Digital E1ectroics & Micro computers - R. K. Gaur (4 th edition). • Modern Digital Electronics by R.P. Jain. • Digital Fundamentals by Thomas J Floyd	

Session: 2023-24			
Part A - Introduction			
Name of the Programme	**Bachelor of Science (B.Sc.) (Hons) (Information Technology)**		
Subject	Information Technology		
Semester	FIRST		
Name of the Course	Computer and Programming Fundamentals		
Course Code	B23-HIT-102		
Course Type: (CC/MCC/MDC/CC-M/DSEC/VOC/DSE/PC/AEC/VAC)	MCC-A2		
Level of the course	100-199		
Pre-requisite for the course (if any			
Course Learning Outcomes (CLO):	After completing this course, the learner will be able to: **CLO1:** To Learn about evaluation and various generations of computers **CLO-2**: to learn the concept of various secondary storage devices **CLO-3** To learn how to plan a computer program **CLO-4**: To learn to concepts of making algorithms **CLO-5:** To get the Handson practice on Windows and Office Tools		
Credits	**Theory**	**Practical**	**Total**
	3	1	4
Contact Hours	45	30	75
Max. Marks: 100(70 Theory +30 Practical) Internal Assessment Marks: 20 Theory +10 Practical End Term Exam Marks: 50 Theory +20 Practical		Time: 3 Hours each for Theory & Practical	

Part B- Contents of the Course		
Instructions for Paper- Setter 1. Nine questions will be set in all. All questions will carry equal marks. 2. Question No. 1, which will be short answer type covering the entire syllabus, will be compulsory. The remaining eight questions will be set unit wise selecting two questions from each Unit I to IV. The candidate will be required to attempt question No. 1 compulsory and four more questions selecting one question from each unit.		
Unit	**Topics**	**Contact Hours**
I	**Introduction to computer system:-** What is a Computer, Evolution & Generation of computers, Applications and characteristics of computers, Classification of Computers, Elements of Computer (Hardware, Software), Common input & output devices (Basic idea), Motherboard & Ports, Definition of software, relationship between hardware and software, types of software.	**12**
II	**Memory:** Concept of primary & secondary memory, RAM, ROM, types of ROM, Cache memory, CPU Registers, flash memory, Secondary storage devices: Sequential & direct access devices viz. magnetic tape, magnetic disk, CD, DVD.	**10**
III	**Planning the Computer Program:** Concept of problem solving, Problem definition, Program design, Debugging, Types of errors in programming, Documentation, Techniques of Problem Solving: Flowcharting, algorithms, pseudo code, decision table, Structured programming concepts, Programming methodologies viz. top-down and bottom-up programming.	**12**
IV	**Algorithm:** Searching, Sorting, and Merging: Linear & Binary Searching, Bubble, Selection, and Insertion Sorting, Merging. Computer Languages: Analogy with natural language, machine language, assembly language, high-level language, language translators, characteristics of a good programming language.	**11**
V*	**Students have to perform six practicals out the list** 1. Learn to create a folder, copy files, move files, delete files in Windows. 2. Learn to use the menu commands of MS-Word to Create, Edit, Modify, Format a document. 3. How to use mail merge and macro in MS Word. 4. Learn to use menu commands of MS-EXCEL to create and manipulate a spread sheet. 5. Working on spreadsheet like adding, deleting, merging cells, layout and style. 6. Create different charts in excel and implement formulas (automatic and use defined). 7. Create a spreadsheet with LOOKUP/VLOOKUP features. 8. Plot graphs and charts in MS EXCEL. 9. Create a Power Point presentation using slide template, animation, transition, adding tables and charts.	**30**

Suggested Evaluation Methods	
Internal Assessment: ➢ **Theory(10 Marks)** • Class Participation **(4 Marks)** • Seminar/presentation/assignment/quiz/class test etc.: • Mid-Term Exam: **(6 Marks)** ➢ **Practicum (5 Marks)** • Class Participation: • Seminar/Demonstration/Viva-voce/Lab records etc**.(5 Marks)** • Mid-Term Exam:	**End Term Examination:** **Theory: 50 Marks** **Practical: 20 Marks**

Part C-Learning Resources

Recommended Books/e-resources/LMS:

1. Sinha, P.K. &Sinha, Priti, Computer Fundamentals, BPB
2. Dromey, R.G., How to Solve it By Computer, PHI

REFERENCE BOOKS

1. Balagurusamy E, Computing Fundamentals and C Programming, Tata McGraw Hill.

2. Norton, Peter, Introduction to Computer, McGraw-Hill

3. Leon, Alexis & Leon, Mathews, Introduction to Computers, Leon Tech World

4. Rajaraman, V., Fundamentals of Computers, PHI

SEMESTER-II

Session: 2023-24			
Part A - Introduction			
Name of the Programme	**Bachelor of Science (B.Sc.) (Hons) (Information Technology**		
Subject	Information Technology		
Semester	SECOND		
Name of the Course	DIGITAL ELECTRONICS-II		
Course Code	B23-HIT-201		
Course Type: (CC/MCC/MDC/CC-M/DSEC/VOC/DSE/PC/AEC/VAC)	MCC-A3		
Level of the course	100-199		
Pre-requisite for the course (if any)	Concepts of design of combinational circuits as learned in semester-I		
Course Learning Outcomes (CLO):	After completing this course, the learner will be able to: **CLO-1**: To understand the design and working of Sequential circuits **CLO-2**: To learn how shift registers work and its applications **CLO-3** To understand the concept of digital memory and its uses **CLO-4**: To understand the working , types and use of Analog to Digital and Digital to Analog converters circuits **CLO-5:** Handson with various combinational and sequential circuits.		
Credits	**Theory**	**Practical**	**Total**
	3	1	4
Contact Hours	45	30	75
Max. Marks: 100(70 Theory +30 Practical) Internal Assessment Marks: 20 Theory +10 Practical End Term Exam Marks: 50 Theory +20 Practical		Time: 3 Hours each for Theory & Practical	

Part B- Contents of the Course

Instructions for Paper- Setter

3. Nine questions will be set in all. All questions will carry equal marks.
4. Question No. 1, which will be short answer type covering the entire syllabus, will be compulsory. The remaining eight questions will be set unit wise selecting two questions from each Unit I to IV. The candidate will be required to attempt question No. 1 compulsory and four more questions selecting one question from each unit.

Unit	Topics	Contact Hours
I	**Sequential Circuits-I Counters:** Asynchronous Counters- Mod-N or divided by N Counter. Synchronous Counter-Modulo Counters, Decade Counter. UP-Down Counters, Basic principle of digital clock.	**11**
II	**Sequential Circuits-II: Registers :** Shift Registers, Serial-in serial out (SISO), serial-in-parallel out (SIPO), parallel-in-serial-out (PISO) parallel-in-parallel-out (PIPO), bi-directional shift register, Universal Shift Register Applications of shift register – Ring counter, Twisted Ring Counter, Sequence Generator	**10**
III	**Digital Memories:** Memory System Parameters, ROM, PROM, EPROM, EEPROM, RAM (Static and dynamic), Programmable Logic Devices: Programmable Logic Arrays, Programmable Array Logic, Expanding Memory Size	**12**
IV	**D/A and A/D converters:** Digital and Analog Representation, D/A Converters: Weighted Resistor DAC, R-2R Ladder Type DAC, Specifications of DAC. A/D converters: Single slope A/D converter, Dual slope A/D converter, Successive approximation A/D converter, Specification of ADC and DAC	**12**
V*	**Students have to perform six practicals out the list :** 1. Design of 2's complement Adder/Subtractor using ICs on Breadboard 2. Multiplexer(4:1) and Demultiplexer Circuit (1:4) 3. JK, D & T Flip-Flops. 4. Divide by N Counter. 5. Shift register 6. DAC 7. ADC 8. Ripple' binary counter. 9. Synchronous binary-counter. 10. Up. Down counter	**30**

Suggested Evaluation Methods	
Internal Assessment: ➢ **Theory(10 Marks)** • Class Participation **(4 Marks)** • Seminar/presentation/assignment/quiz/class test etc.: • Mid-Term Exam: **(6 Marks)** ➢ **Practicum (5 Marks)** • Class Participation: • Seminar/Demonstration/Viva-voce/Lab records etc**.(5 Marks)** • Mid-Term Exam:	**End Term Examination:** **Theory: 50 Marks** **Practical: 20 Marks**
Part C-Learning Resources	
Recommended Books/e-resources/LMS: • Digital E1ectroics & Micro computers - R. K. Gaur (4 th edition). • Modern Digital Electronics by R.P. Jain. • Digital Fundamentals by Thomas J Floyd	

Session: 2023-24			
Part A - Introduction			
Name of the Programme	**Bachelor of Science (B.Sc.) (Hons) (Information Technology**		
Subject	Information Technology		
Semester	SECOND		
Name of the Course	**Office Automation Tools**		
Course Code	B23-HIT-202		
Course Type: (CC/MCC/MDC/CC-M/DSEC/VOC/DSE/PC/AEC/VAC)	**DSEC-A1**		
Level of the course	100-199		
Pre-requisite for the course (if any)			
Course Learning Outcomes (CLO):	After completing this course, the learner will be able to: **CLO-1: F**unctionality of Operating Systems and its applications, use of spread sheets **CLO-2:** To learn how to make presentation **CLO-3:** Learning and use of internet **CLO-4:** Understanding the use of Google office tools **CLO-5:** Handson with the various office automation tolls.		
Credits	**Theory**	**Practical**	**Total**
	3	1	4
Contact Hours	45	30	75
Max. Marks: 100(70 Theory +30 Practical) Internal Assessment Marks: 20 Theory +10 Practical End Term Exam Marks: 50 Theory +20 Practical		Time: 3 Hours each for Theory & Practical	

Part B- Contents of the Course

Instructions for Paper- Setter

5. Nine questions will be set in all. All questions will carry equal marks.
6. Question No. 1, which will be short answer type covering the entire syllabus, will be compulsory. The remaining eight questions will be set unit wise selecting two questions from each Unit I to IV. The candidate will be required to attempt question No. 1 compulsory and four more questions selecting one question from each unit.

Unit	Topics	Contact Hours
I	**Introduction to GUI based OS:** Introduction to various types ofOS and its functions, User Interface. Various settings of GUI basedOS. File and Directory Management, Various types of file extensions, Common Utilities, Word: Introduction of Word, creating, editing a document, modifying and formatting a document, using the speller in word, Creating and using macros, Use of mail merge in Word.	**12**
II	**Spread Sheet:** Objective of Spreadsheet, Elements of ElectronicsSpreadsheet, Manipulation of Cells and worksheet, Function andCharts **Presentation:** Introduction and Objective,. Basics of Power Point, Creation of presentation, Preparation of Slides, ProvidingAesthetics, Presentation of Slides, Slide Show	**11**
III	**Network and Internet:** Introduction , Objective , Basics of Computer Networks, Concept and Basics of Internet Architecture, Preparing computer for Internet Access, World Wide Web, Web Browsing Software,. Configuring Web Browser, Search Engines	**11**
IV	**Google Office Tools:** Creating , saving , downloading , sharing files/folders from Google drive , creating and sharing Google docs,import and export docs, creating and sharing Google sheet, importand export Google sheet, Google forms and form responses , creating Google slides to present your ideas	**11**
V*	**Recommended Tools to be used: Microsoft office/ Libre Office / Open Office / G Suite** **Students have to perform at least six practicals out of the list** 1. Assembling of a system/ Identification of H/W components. 2. Installation of MS DOS, windows & other S/W. 3. Setting up of various input/output devices (monitor, printer, mouse, keypad etc.) in window environment. 4. H/W (Peripherals) installation. 5. Installation of S/W (OS, Application). 6. Use of S/W Tools (scandisk, antivirus, defragmentation etc) 7. Familiarization with basic DOS commands like screen handling, file & directory, disk, system handling commands. 8. In MS DOS creation of auto exec. Bat file & config.sys files and its implementation in installation of PC. 9. Use of multimedia applications using various multimedia tools.	**30**

	10. Internet: creating & sending e-mail, downloading, accessing, surfing, chatting, sending attachments. 11. Creating a Document on Word and use of Mail merge 12. Create and share files/folders in Google drive 13. Create and share Google docs. 14. Create and share Google sheets. 15. Create and share Google Forms. **16.** Create and share Google slides	

Suggested Evaluation Methods

Internal Assessment:	**End Term Examination:**
➢ **Theory(10 Marks)** • Class Participation **(4 Marks)** • Seminar/presentation/assignment/quiz/class test etc.: • Mid-Term Exam: **(6 Marks)** ➢ **Practicum (5 Marks)** • Class Participation: • Seminar/Demonstration/Viva-voce/Lab records etc**.(5 Marks)** • Mid-Term Exam:	**Theory: 50 Marks** **Practical: 20 Marks**

Part C-Learning Resources

Recommended Books/e-resources/LMS:

1. Libre Office, Getting Started Guide by Libre Office Documentation Team
2. Microsoft Office for Dummies by Wallace Wang
3. Mastering Office 2016 by Lalit Mali, Notion Press Companies
4. 4. Computer Networking by Titte Ed, McGraw Hills

Session: 2023-24			
Part A - Introduction			
Name of the Programme	**Bachelor of Science (B.Sc.) (Hons) (Information Technology**		
Subject	Information Technology		
Semester	SECOND		
Name of the Course	**Basics of Web Development**		
Course Code	B23-HIT-203		
Course Type: (CC/MCC/MDC/CC-M/DSEC/VOC/DSE/PC/AEC/VAC)	**DSEC-A1**		
Level of the course	100-199		
Pre-requisite for the course (if any)			
Course Learning Outcomes (CLO):	After completing this course, the learner will be able to: CLO-1 : To impart the basic concepts of Web Technologies CLO-2: To understand concept and need of CSS CLO-3 To learn the concept of XML CLO-4: To strengthen the basics of java CLO-5: To create dynamic applications on web through server side technologies.		
Credits	**Theory**	**Practical**	**Total**
	3	1	4
Contact Hours	45	30	75
Max. Marks: 100(70 Theory +30 Practical) Internal Assessment Marks: 20 Theory +10 Practical End Term Exam Marks: 50 Theory +20 Practical		Time: 3 Hours each for Theory & Practical	

Part B- Contents of the Course

Instructions for Paper- Setter

7. Nine questions will be set in all. All questions will carry equal marks.
8. Question No. 1, which will be short answer type covering the entire syllabus, will be compulsory. The remaining eight questions will be set unit wise selecting two questions from each Unit I to IV. The candidate will be required to attempt question No. 1 compulsory and four more questions selecting one question from each unit.

Unit	Topics	Contact Hours
I	Introduction: Concept of Internet- History of Internet, Protocols of Internet, World Wide Web, URL, Web Server, Web Browser. History of HTML, Structure of HTML Document: Text Basics, Document: Images and Multimedia, Links and webs, Document Layout	**11**
II	Cascading Style Sheet: CSS: Need for CSS, introduction to CSS, basic syntax and structure using CSS, inline, internal and external CSS, Selectors, colour Background Cursor, Text fonts, List Tables	**11**
III	XML: Introduction of XML- Some current applications of XML, Features of XML, Anatomy of XML document, structuring data, XML namespace, Document Type Definitions and Schemas, Document object model, DOM methods, XSL, SAX, SOAP	**11**
IV	JavaScript-I: Document Object Model (DOM), Obtaining user inputs, memory concepts, Operators, Control Structures, Looping constructs, break, continue statements, Programmer defined functions, Scoping rules. Recursion and iteration, Array declaration and allocation, passing arrays to function, Objects: String, Date, Boolean, Window, document; using cookies, form validation in Java Script, Handling Events Using JavaScript.	**12**
V*	**Students have to perform at least six practicals out of the list:** 1. Introduction to Web Design and HTML 2. Create, save and view a basic HTML page. 3. Use of body section tags in Web-page. 4. Use of head section elements and meta tags in web-page. 5. Use of block-level elements. 6. Use of external and internal links in a Document. 7. Use of colour and image tage for image insertion and background images and Colours 8. Incorporate multimedia (sound & video) elements in website/web-page. 9. Creating Web Pages using XML. 10. Write a Program using the concept of Java Script	**30**

Suggested Evaluation Methods	
Internal Assessment: ➢ **Theory(10 Marks)** • Class Participation **(4 Marks)** • Seminar/presentation/assignment/quiz/class test etc.: • Mid-Term Exam: **(6 Marks)** ➢ **Practicum (5 Marks)** • Class Participation: • Seminar/Demonstration/Viva-voce/Lab records etc**.(5 Marks)** • Mid-Term Exam:	**End Term Examination:** **Theory: 50 Marks** **Practical: 20 Marks**

Part C-Learning Resources

Recommended Books/e-resources/LMS:

1. HTML 4.0 by E.Stephen Mack & Janen Platt
2. HTML Example book by Farrar & Smith (BPB)
3. The Complete Reference HTML by Thomas A. Powell (TMH)
4. Paul Deitel , Harvey Deitel, Abbey Deitel ,"Internet and world wide web – How to Program", Prentice Hall

ANNEXURE-I

Levels of Courses

Levels of Courses: Courses shall be coded based on the learning outcomes, level of difficulty, and academic rigor. The coding structure is as follows:

0-99: Pre-requisite courses required to undertake an introductory course which will be a pass or fail course with no credits. It will replace the existing informal way of offering bridge courses that are conducted in some of the colleges/ universities.

100-199: Foundation or introductory courses that are intended for students to gain an understanding and basic knowledge about the subjects and help decide the subject or discipline of interest. These courses may also be prerequisites for courses in the major subject. These courses generally would focus on foundational theories, concepts, perspectives, principles, methods, and procedures of critical thinking in order to provide a broad basis for taking up more advanced courses. These courses seek to equip students with the general education needed for advanced study, expose students to the breadth of different fields of study; provide a foundation for specialized higher-level coursework; acquaint students with the breadth of (inter) disciplinary fields in the arts, humanities, social sciences, and natural sciences, and to the historical and contemporary assumptions and practices of vocational or professional fields; and to lay the foundation for higher level coursework.

200-299: Intermediate-level courses including subject-specific courses intended to meet the credit requirements for minor or major areas of learning. These courses can be part of a major and can be pre-requisite courses for advanced-level major courses.

300-399: Higher-level courses which are required for majoring in a disciplinary/interdisciplinary area of study for the award of a degree.

400-499: Advanced courses which would include lecture courses with practicum, seminar-based course, term papers, research methodology, advanced laboratory experiments/software training, research projects, hands-on-training, internship/apprenticeship projects at the undergraduate level or First year Postgraduate theoretical and practical courses.

500-599: Courses at first-year Master’s degree level for a 2-year Master’s degree programme

600-699: Courses for second-year of 2-year Master’s or 1-year Master’s degree programme

700 -799 & above: Courses limited to doctoral students

KURUKSHETRA UNIVERSITY KURUKSHETRA

("A+" Grade Accredited by NAAC)

Scheme of Examination and Syllabus for

Under-Graduate Programme

(Subject: Environmental Science)

Under Multiple Entry-Exit, Internship and CBCS-LOCF in accordance to NEP-2020w.e.f. 2023-24 (in phased manner)

INSTITUTE OF ENVIRONMNETAL STUDIES,
KURUKSHETRA UNIVERSITY, KURUKSHETRA
Scheme of Examination Subject: Environmental Science for Under-Graduate Programme Under Multiple Entry-Exit, Internship and CBCS-LOCF in accordance to NEP-2020 w.e.f. 2023-24 (in phased manner)

FIRST YEAR: SEMESTER-1									
Remarks	**Course**	**Paper(s)**	**Nomenclature of Paper**	**Credits**	**Hours/ Week**	**Internal marks**	**External Marks**	**Total Marks**	**Exam Duration**
Scheme A & C	**CC-1 MCC-1 4 credit**	B23 - EVS -101	Earth & Environment	3	3	20	50	70	3 hrs.
			Practical	1	2	10	20	30	4 hrs.
Scheme C only	**MCC-2 4 credit**	B23 - EVS -102	Natural Resources	3	3	20	50	70	3 hrs.
			Practical	1	2	10	20	30	4 hrs.
Scheme A	**CC-M1 2 credit**	B23 - EVS -103	Environment and Social Issues	1	1	10	20	30	3 hrs.
			Practical	1	2	5	15	20	4 hrs.
Scheme A & C	**MDC-1 3 credits**	B23 - EVS -104	Basics of Environmental Sciences	2	2	15	35	50	3 hrs.
			Practical	1	2	5	20	25	4 hrs.
Scheme C only	**CC-M1 4 credit**	From Available CC-M1 of 4 credits as per NEP							
Scheme A & C	**AEC-1 2 credit**	From Available AEC-1 of two credits as per NEP							
	SEC-1 3 credit	From Available SEC-1 of three credits as per NEP							
	VAC-1 2 credit	From Available VAC-1 of two credits as per NEP							

FIRST YEAR: SEMESTER-2									
Remarks	**Course**	**Paper(s)**	**Nomenclature of Paper**	**Credits**	**Hours/ Week**	**Internal marks**	**External Marks**	**Total Marks**	**Exam Duration**
Scheme A & C	**CC-2 MCC-3 4 credit**	B23 - EVS -201	Fundamentals of Ecology	3	3	20	50	70	3 hrs.
			Practical	1	2	10	20	30	4 hrs.
Scheme C only	**DSEC-2 4 credit**	B23 - EVS -202	Techniques of Environmental Analysis	3	3	20	50	70	3 hrs.
			Practical	1	2	10	20	30	4 hrs.
Scheme A only	**CC-M2 2 credit**	B23 - EVS -203	Climate Change	1	1	10	20	30	3 hrs.
			Practical	1	2	5	15	20	4 hrs.
Scheme A & C	**MDC-2 3 credits**	B23 - EVS -204	Environmental Issues	2	2	15	35	50	3 hrs.
			Practical	1	2	5	20	25	4 hrs.

Scheme C only	**CC-M2 4 credit**	From Available CC-M2 of 4 credits as per NEP
Scheme A & C	**AEC-2 2 credit**	From Available AEC-2 of two credits as per NEP
	SEC-2 3 credit	From Available SEC-2 of three credits as per NEP
	VAC-2 2 credit	From Available VAC-2 of two credits as per NEP
Internship of 4 credits of 4-6 weeks duration after 2nd Semester		

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SECOND YEAR: SEMESTER-3									
Remarks	**Course**	**Paper(s)**	**Nomenclature of Paper**	**Credits**	**Hours/ Week**	**Internal marks**	**External Marks**	**Total Marks**	**Exam Duration**
Scheme A, B & C	**CC-3 MCC-4 4 credit**	B23-EVS-301	Introduction to Biodiversity	3	3	20	50	70	3 hrs.
			Practical	1	2	10	20	30	4 hrs.
Scheme B & C	**MCC-5 4 credit**	B23-EVS-302	Disaster Management	3	3	20	50	70	3 hrs.
			Practical	1	2	10	20	30	4 hrs.
Scheme A, B & C	**MDC-3 3 credits**	B23-EVS-303	Environmental Conservation	2	2	15	35	50	3 hrs.
			Practical	1	2	5	20	25	4 hrs.
Scheme A & C	**CC-M3 4 credits**	From Available CC-M3 of 4 credits as per NEP							
Scheme B only	**CC-M3 (V) 4 credits**	From Available CC-M3(V) of 4 credits as per NEP							
Scheme A, B & C	**AEC-3 2 credit**	From Available AEC-3 of two credits as per NEP							
	SEC-3 3 credit	From Available SEC-3 of three credits as per NEP							
Scheme C only	**VAC-3 2 credits**	From Available VAC-3 of two credits as per NEP							
Scheme B only	**MCC-3**	**MCC-2 FROM SCHEME C OF FIRST SEMESTER**							
SECOND YEAR: SEMESTER-4									
Remarks	**Course**	**Paper(s)**	**Nomenclature of Paper**	**Credits**	**Hours/ Week**	**Internal marks**	**External Marks**	**Total Marks**	**Exam Duration**
Scheme A, B & C	**CC-4 MCC-6 4 credit**	B23-EVS-401	Environmental Pollution and Management	3	3	20	50	70	3 hrs.
			Practical	1	2	10	20	30	4 hrs.
Scheme B & C	**MCC-7 4 credit**	B23-EVS-402	Land Degradation and Management	3	3	20	50	70	3 hrs.
			Practical	1	2	10	20	30	4 hrs.
Scheme B & C	**MCC-8 4 credit**	B23-EVS-403	Environmental Chemistry	3	3	20	50	70	3 hrs.
			Practical	1	2	10	20	30	4 hrs.
Scheme B & C	**DSE-1 4 credit Select one option**	B23-EVS-404	Solid Waste Management	3	3	20	50	70	3 hrs.
			Practical	1	2	10	20	30	4 hrs.

		B23-EVS-405	Liquid Waste Management	3	3	20	50	70	3 hrs.
			Practical	1	2	10	20	30	4 hrs.
Scheme A, B & C	**CC-M4(V) 4 credits**	From Available CC-M4(V) of 4 credits as per NEP							
	AEC-4 2 credit	From Available AEC-3 of two credits as per NEP							
Scheme C only	**VAC-4 2 credits**	From Available VAC-4 of two credits as per NEP							
Scheme A & B	**VAC-3 2 credits**	From Available VAC-3 of two credits as per NEP							
Internship of 4 credits of 4-6 weeks duration after 4th Semester (if not done after second semester)									

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THIRD YEAR: SEMESTER-5									
Remarks	**Course**	**Paper(s)**	**Nomenclature of Paper**	**Credits**	**Hours/ Week**	**Internal marks**	**External Marks**	**Total Marks**	**Exam Duration**
Scheme A, B & C	**CC-5 MCC-9 4 credit**	B23-EVS-501	Environmental Biotechnology	3	3	20	50	70	3 hrs.
			Practical	1	2	10	20	30	4 hrs.
Scheme B & C	**MCC-10 4 credit**	B23-EVS-502	Water Resource and Management	3	3	20	50	70	3 hrs.
			Practical	1	2	10	20	30	4 hrs.
Scheme B & C	**DSE-2 4 credit Select one Option**	B23-EVS-503	Agroforestry and Agroecology	3	3	20	50	70	3 hrs.
			Practical	1	2	10	20	30	4 hrs.
		B23-EVS-504	Ecological Restoration	3	3	20	50	70	3 hrs.
			Practical	1	2	10	20	30	4 hrs.
Scheme B & C	**DSE-3 4 credit Select one Option**	B23-EVS-505	Biomedical and E-Waste Management	3	3	20	50	70	3 hrs.
			Practical	1	2	10	20	30	4 hrs.
		B23-EVS-506	Hazardous Waste Management	3	3	20	50	70	3 hrs.
			Practical	1	2	10	20	30	4 hrs.
Scheme A & C	**CC-M5(V) 4 credits**	From Available CC-M5(V) of 4 credits as per NEP							
Scheme A, B & C	**Internship 4 credits**	Internship#4 credit after 4th semester							
THIRD YEAR: SEMESTER-6									
Remarks	**Course**	**Paper(s)**	**Nomenclature of Paper**	**Credits**	**Hours/ Week**	**Internal marks**	**External Marks**	**Total Marks**	**Exam Duration**
Scheme	**CC-6**		Basics of Remote Sensing	3	3	20	50	70	3 hrs.

A, B & C	**MCC-11 4 credit**	B23-EVS-601	and GIS						
			Practical	1	2	10	20	30	4 hrs.
Scheme B & C	**MCC-12 4 credit**	B23-EVS-602	Waste Management	3	3	20	50	70	3 hrs.
			Practical	1	2	10	20	30	4 hrs.
Scheme B & C	**DSE-4 4 credit Select one Option**	B23-EVS-603	Environmental Legislation	3	3	20	50	70	3 hrs.
			Practical	1	2	10	20	30	4 hrs.
		B23-EVS-604	Environmental Management System and Standards	3	3	20	50	70	3 hrs.
			Practical	1	2	10	20	30	4 hrs.
Scheme B & C	**DSE-5 4 credit Select one Option**	B23-EVS-605	Energy and Environment	3	3	20	50	70	3 hrs.
			Practical	1	2	10	20	30	4 hrs.
		B23-EVS-606	Renewable & New Energy Sources	3	3	20	50	70	3 hrs.
			Practical	1	2	10	20	30	4 hrs.
Scheme A only	**CC-M6 4 credits**	From Available CC-M6 of 4 credits as per NEP							
Scheme A only	**CC-M7(V) 4 credits**	From Available CC-M7(V) of 4 credits as per NEP							
Scheme B only	**CC-M5(V) 4 credits**	From Available CC-M5(V) of 4 credits as per NEP							
Scheme C only	**CC-M6(V) 4 credits**	From Available CC-M6(V) of 4 credits as per NEP							
Scheme C only	**SEC-4 2 credit**	From Available SEC-4 of two credits as per NEP							

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FOURTH YEAR: SEMESTER-7 (FOR HONOURS/HONOURS WITH RESEARCH)									
Remarks	**Course**	**Paper(s)**	**Nomenclature of Paper**	**Credits**	**Hours/ Week**	**Internal marks**	**External Marks**	**Total Marks**	**Exam Duration**
for Honours in Environmental Science /Honours with Research in Environmental Science (For Scheme B & C)	**CC-H1 4 credit**	B23-EVS-701	Applications of Remote Sensing and GIS	4	4	30	70	100	3 hrs.
	CC-H2 4 credit	B23-EVS-702	Environmental Microbiology	4	4	30	70	100	3 hrs.
	CC-H3 4 credit	B23-EVS-703	Environmental Statistics & Modeling	4	4	30	70	100	3 hrs.
	DSE-H1 4 credit Select one Option	B23-EVS-704	Occupational Health & Safety	4	4	30	70	100	3 hrs.
		B23-EVS-705	Environmental Toxicology	4	4	30	70	100	3 hrs.
	PC-H1 4 credit	B23-EVS-706	Practical Based on B23-EVS-701 TO 704/705	4	8	30	70	100	6 hrs.
	CC-HM1 4 credit	From Available Minor of 4 credits as per NEP							
SEMESTER-8 (FOR HONOURS)									

Remarks	Course	Paper(s)	Nomenclature of Paper	Credits	Hours/ Week	Internal marks	External Marks	Total Marks	Exam Duration
Honours in Environmental Science (For Scheme B & C)	**CC-H4 4 credit**	B23-EVS-801	Environmental Impact Assessment	4	4	30	70	100	3 hrs.
	CC-H5 4 credit	B23-EVS-802	Research Methodology & Ethics	4	4	30	70	100	3 hrs.
	CC-H6 4 credit	B23-EVS-803	Environmental Economics	4	4	30	70	100	3 hrs.
	DSE-H2 4 credit Select one option	B23-EVS-804	Indian Knowledge System & Environment	4	4	30	70	100	3 hrs.
		B23-EVS-805	Space Mission for Earth System Monitoring	4	4	30	70	100	3 hrs.
	PC-H2 4 credit	B23-EVS-806	Practical Based on B23-EVS-801 TO 804/805	4	8	30	70	100	6 hrs.
	CC-HM2 4 credit	From Available Minor of 4 credits as per NEP							
OR SEMESTER-8 (FOR HONOURS WITH RESEARCH)									
Remarks	**Course**	**Paper(s)**	**Nomenclature of Paper**	**Credits**	**Hours/ Week**	**Internal marks**	**External Marks**	**Total Marks**	**Exam Duration**
Honours with Research in Environmental Science (For Scheme B & C)	**CC-H4 4 credit**	B23-EVS-801	Environmental Impact Assessment	4	4	30	70	100	3 hrs.
	CC-H5 4 credit	B23-EVS-802	Research Methodology & Ethics	4	4	30	70	100	3 hrs.
	Project/Dissertation 12 credit	B23-EVS-807	Project/Dissertation	8+4	-	-	300	300	-
	CC-HM2 4 credit	From Available Minor of 4 credits as per NEP							

CC-1/MCC-1

Session: 2023-2024			
Part A - Introduction			
Subject	Environmental Science		
Semester	SEMESTER-1		
Name of the Course	**EARTH AND ENVIRONMENT**		
Course Code	**B23-EVS-101**		
Course Type: (CC/MCC/MDC/CC-M/DSEC /VOC/DSE/PC/AEC/VAC)	**CC/MCC**		
Level of the course (As per Annexure-I	100-199		
Pre-requisite for the course (if any)	NA		
Course Learning Outcomes(CLOs):	After completing this course, the learner will be able to: 1. To have knowledge of the origination of Earth with help of various theories and understanding the Earth's system processes. 2. To acquire knowledge of the structure and key components of the biophysical environment. 3. To understand different types of geological disasters and mitigation measures. 4. To describes human impact on the Earth in relation to hydrological processes, geological processes and biological changes. 5*. To apply the knowledge after studying various theoretical aspects of biophysical environment in investigating the Earth's structure, extraction methods of the geological resources, impact of a natural disaster and resolving present day environmental issues arising out of adverse human impact on the present-day environment.		
Credits 4	Theory	Practical	Total
	3	1	4

Contact Hours	3	2	5
Max. Marks:100 **Internal Assessment Marks: 30** (Theory 20 +Practical 10) **End Term Exam Marks: 70** (Theory 50 + Practical 20)		**Time: 3hours**	

Part B- Contents of the Course

Instructions for Paper- Setter

For final theory exam time allowed will be of 3 hours and nine questions will be set. Question No.1 (objective/short answer type) covering the entire syllabus, will be compulsory. The remaining eight questions will be set unit-wise with two questions from each Unit. The candidates will be required to attempt Q.No.1 and any four, selecting one question from each unit. All the questions will carry equal marks.

Unit	Topics	Contact Hours
I	Origin of the Earth, Earth's orbit, Kepler's laws of planetary motion. Structure of the Earth - the Geosphere, Atmosphere and Hydrosphere. Theory of Plate Tectonics - Wegener theory of continental drift, Holmes theory of convection in the mantle, Hess theory of sea floor spreading, Vine and Matthews theory of magnetic reversals and Glomar Challenger theory of age of oceanic floors. Role of energy in Earth's processes - convection currents, photosynthesis and water cycle.	03 hours/ week
II	Non-renewable geological resources - minerals, fossil fuels and ores of economic significance. Geological disasters - earthquake, landslide, cyclones and volcanic eruptions. Impact of human activities on to the frequency and magnitude of natural disasters - droughts, floods, forest fire, landslides. Mitigation of geological disasters - building codes, early-warning systems and education. Impact of human on land - salinization, soil erosion, soil contamination; rehabilitation of salinity-affected area, methods of soil erosion prevention.	
III	Physical and chemical properties of sea water and their spatial variations. Residence times of elements in sea water. Ocean currents, waves and tides. Major water masses of the world's oceans. Impact of human on water resources; reuse of different types of	

	water - industrial wastewater, sewage and stormwater, concept of zero waste discharge.	
IV	Chemical composition of the atmosphere, lapse rate and stability. CLOsud formation and precipitation processes, air-sea interactions. Insolation and heat budget, general circulation of the atmosphere and ocean. General weather systems of India - Monsoon system, cyCLOsne and jet stream; western disturbances. Effect of introduced species on the environment - biotic and abiotic effects, impact on the decline or extinction of native species, economic impacts of the species; control and mitigation methods.	
V*	**Practical's** 1. Investigate evidence for the structure of the Earth using meteorite evidence to demonstrate its composition. 2. Investigate the locations and extraction methods of the geological resources – open-pit mining, underground mining methods, offshore and onshore drilling. 3. Investigate the zero waste discharge from a residential area. 4. Investigate the rehabilitation of salinity-affected area by preparing a case study. 5. Investigate volcanic eruption that has had a significant effect on the biosphere and atmosphere and assess its impact by preparing a case study.	02 hours/ week
Suggested Evaluation Methods		
Internal Assessment: ➢ **Theory** • Class Participation: 5 marks • Seminar/presentation/assignment/quiz/class test etc.: 5 marks • Mid-Term Exam: 10 marks ➢ **Practicum** • Class Participation: NA • Demonstration/Viva-voce/Lab records etc.: 10 marks • Mid-Term Exam: NA		**End Term Examination:** Theory: 50 marks (Written examination) Practical: 20 marks (Demonstration/Viva-voce/Lab records etc)
Part C-Learning Resources		

Recommended Books/e-resources/LMS:

1. Botkin, D.B. and Keller E.A (2004). *Environment Science: Earth as a Living Planet*. John Wiley & Sons Inc., New York.
2. Francisco B., Frances S.H., Juno H., Gerhard K. and Stephen A. L. (2007). *Earth Science: Geology, the Environment, and the Universe*. Glencoe/McGraw-Hill.
3. Steffen, W., Sanderson, A., Tyson, P.D., Jager, J., Matson, P.M., Moore, III, B., Oldfield, F., Richardson, K., Schnellnhuber, H.J., Turner, II, B.L. and Wasson. R.J (2004). *Global change and the Earth System: A Planet under Pressure*. Springer-Verlag, New York, New York, USA Reference books.

*Applicable for courses having practical component.

MCC-2

Session: 2023-24			
Part A - Introduction			
Subject	Environmental Science		
Semester	SEMESTER-1		
Name of the Course	**NATURAL RESOURCES**		
Course Code	**B23-EVS-102**		
Course Type: (CC/MCC/MDC/CC-M/DSEC /VOC/DSE/PC/AEC/VAC)	**MCC**		
Level of the course (As per Annexure-I	100-199		
Pre-requisite for the course (if any)	NA		
Course Learning Outcomes(CLOs):	After completing this course, the learner will be able to: 1. To understand about natural resources, their types and realize the importance of resources. 2. To acquire deep knowledge about land and forest resources. 3. To understand status of water resources and food resources. 4. To describes energy resources and mineral resources. 5*. To identify, study and map natural resources of India.		
Credits 4	Theory	Practical	Total
	3	1	4
Contact Hours	3	2	5
Max. Marks:100 **Internal Assessment Marks: 30** (Theory 20 +Practical 10) **End Term Exam Marks: 70** (Theory 50 + Practical 20)		**Time: 3hours**	
Part B- Contents of the Course			
Instructions for Paper- Setter For final theory exam time allowed will be of 3 hours and nine questions will be set. Question No.1 (objective/short answer type) covering the entire syllabus, will be compulsory. The remaining eight			

questions will be set unit-wise with two questions from each Unit. The candidates will be required to attempt Q.No.1 and any four, selecting one question from each unit. All the questions will carry equal marks.

Unit	Topics	Contact Hours
I	Natural Resources: definition, resource availability and factors acting their availability; major types of natural resources, renewable and non-renewable resources; economic categories of resources, interaction of human with natural resources.	03 hours/week
II	Land as a resource, types of lands, importance, ecological significance and economic importance of soil, effect of land use changes. Food resources, green revolution, effects of modern agriculture, world food problems, food security.	
III	Water resources – status, availability, demand, utilization sectors-domestic, industrial, agriculture, hydrological cycle, global water resources, surface and ground water, interlinking of rivers, water resources in India and their importance. Forest resources: forest types, primary and secondary products, utilization and economic importance, forest and tribal people, forest resources of India.	
IV	Energy resources: types, renewable (solar, wind, hydro and biomass) and non-renewable (coal, petroleum and natural gas) Mineral resources: types, availability, distribution, global consumption patterns.	
V*	**Practical's** 1. To identify and study some important minerals. 2. To study and map different soil types in India. 3. To study and map different forest in India. 4. To study and map different water resources in India. 5. To plot energy consumption scenario in pi-diagram in Indian context.	02 hours/ week
Suggested Evaluation Methods		

Internal Assessment:	**End Term Examination:**
➢ **Theory** • Class Participation: 5 marks • Seminar/presentation/assignment/quiz/class test etc.: 5 marks • Mid-Term Exam: 10 marks ➢ **Practicum** • Class Participation: NA • Demonstration/Viva-voce/Lab records etc.: 10 marks • Mid-Term Exam: NA	Theory: 50 marks (Written exam) Practical: 20 marks (Demonstration/Viva-voce/Lab records etc)

Part C-Learning Resources

Recommended Books/e-resources/LMS:

1.Basu, M., Xavier, S. (2016). Fundamentals of Environmental Studies, Cambridge University Press, India.

2. Singh, J.S., Singh, S.P. and Gupta, S.R. (2015). *Ecology, Environment and Resource Conservation,* S. Chand Publishing, New Delhi.

3. Owen, O. S. & Chiras, D. D. (1990). Natural resource conservation: an ecological approach (No. Ed. 5). Macmillan Publishing Company.

4. Holechek, J. L., Cole, R. A., Fisher, J. T. & Valdez, R. (2000). Natural resources: ecology, economics, and policy (No. HC85. N37 2003.). Upper Saddle River, NJ: Prentice Hall.

5. Owen, O. S. & Chiras, D. D. (1995). Natural resource conservation: management for a sustainable future (No. Ed. 6). Prentice-Hall International, Inc..

6. Craig. J.R., Vaughan, D.J. & Skinner. B.J. 1996. Resources of the Earth: Origin, use, and environmental impact (2nd edition). Prentice Hall, New Jersey.

7. Klee, G.A. 1991. Conservation of Natural Resources. Prentice Hall Publication.

8.Miller, T.G. 2012. Environmental Science. Wadsworth Publishing Co.

9.Ramakrishna, P.S., A. N. Purohit, K.G. Saxena, K.S. Rao & R.K. Maikhuri (1996) *Conservation and management of biological resources in Himalaya*, Oxford & IBH Publishing, New Delhi.

*Applicable for courses having practical component.

CC-M1

Session: 2023-24			
Part A - Introduction			
Subject	Environmental Science		
Semester	SEMESTER-1		
Name of the Course	**ENVIRONMENT AND SOCIAL ISSUES**		
Course Code	**B23- EVS-103**		
Course Type: (CC/MCC/MDC/CC-M/DSEC/ VOC/DSE/PC/AEC/VAC)	**CC-M**		
Level of the course (As per Annexure-I	100-199		
Pre-requisite for the course (if any)	NA		
Course Learning Outcomes(CLOs):	After completing this course, the learner will be able to: 1. To develop a multi-perspective analysis of pre-historic environment to the present condition. 2. Understand the issues of resource inequality, ecological degradation, environmental pollution. 3. Understand the impact of industrialization and technology on environment. 4. Able to find the solutions for the various environmental issues through case studies. 5*. To critically relate the social issues arising from the human development and its impact on environment and to suggest possible solutions.		
Credits 2	Theory	Practical	Total
	1	1	2
Contact Hours	1	2	3
Max. Marks: 50 **Internal Assessment Marks:15** (Theory 10 +Practical 05) **End Term Exam Marks: 35** (Theory 20 + Practical 15)		**Time: 3hours**	

Part B- Contents of the Course

Instructions for Paper- Setter

For final theory exam time allowed will be of 3 hours and nine questions will be set. Question No.1 (objective/short answer type) covering the entire syllabus, will be compulsory. The remaining eight questions will be set unit-wise with two questions from each Unit. The candidates will be required to attempt Q.No.1 and any four, selecting one question from each unit. All the questions will carry equal marks.

Unit	Topics	Contact Hours
I	Introduction : Social and cultural aspects of environment, Environmental thought from historical and contemporary perspective; Environmental education and Ethics, Poverty and environment, Environment and tribal community, Article 48A, Environmental Justice, Role of NGT in Environment Protection.	01 hour/ week
II	Historical developments in cultural, social and economic issues related to water, forest and land management, Issues of resource inequality, Ecological degradation-causes and impacts, environmental pollution; development-induced displacement, Global Climate change, Industrial disasters-Bhopal Gas Tragedy, Fukushima Disaster.	
III	Production and consumption oriented approaches to environmental issues in Indian and global context, impact of industrialization and technology on environment; urban sprawl, traffic congestion, lifestyle changes and environment, Sustainability - global, regional, and local environmental policies, Ecotourism and sustainability, Green urbanism and architecture, Ecological Footprint.	
IV	Rehabilitation and Resettlement, individual, National level initiatives to initiatives to ensure sustainable development, Promising new technologies, Community participation, Case studies of environmental movements (Appiko Movement, Chipko Movement, Narmada Bachao Andolan, Namami Gange); corporate responsibility movement; environmental groups and movements, role of NGOs in environment protection, Eco-restoration, Environmental Awards.	

V*	**Practical's** 1.To study the importance of NGT through case study 2. To study the importance of Article -48A through case study. 3. To study the impact of man-made hazard on environment through case study. 4. To compare the ecological footprints of different countries. 5. To study the importance of community participation in environment protection through case study.	02hours/ week
Suggested Evaluation Methods		
Internal Assessment: ➢ **Theory** • Class Participation: 04 marks • Seminar/presentation/assignment/quiz/class test etc.: NA • Mid-Term Exam: 06 marks ➢ **Practicum** • Class Participation: NA • Demonstration/Viva-voce/Lab records etc.: 05 marks • Mid-Term Exam: NA		**End Term Examination:** Theory: 20 marks (Written exam) Practical: 15 marks (Demonstration/Viva-voce/Lab records etc)
Part C-Learning Resources		
Suggested readings: 1. Chokkan, K.B., Pandya, H. & Raghunathan, H. (eds). 2004. Understanding Environment. Sagar Publication India Pvt. Ltd., New Delhi. 2. Elliot, D. 2003. Energy, Society and Environment, Technology for a Sustainable Future. Routledge Press. 3. Singh, J.S., Singh, S.P. and Gupta, S.R. (2015). Ecology, Environment and Resource Conservation, S. Chand Publishing, New Delhi. 4. National Research Council (NRC). 1996. Linking Science and Technology to Society's Environmental Goals. National Academy Press.		

*Applicable for courses having practical component.

MDC-1

Session: 2023-24			
Part A - Introduction			
Subject	Environmental Science		
Semester	SEMESTER-1		
Name of the Course	**BASICS OF ENVIRONMENT SCIENCE**		
Course Code	**B23-EVS-104**		
Course Type: (CC/MCC/MDC/CC-M/DSEC/ VOC/DSE/PC/AEC/VAC)	**MDC**		
Level of the course (As per Annexure-I	100-199		
Pre-requisite for the course (if any)	NA		
Course Learning Outcomes(CLOs):	After completing this course, the learner will be able to: 1. Become familiar with the principles of Environment Science and acquire knowledge about environment and sustainability. 2. Build an understanding of Earth's structure; soil formation, degradation and reclamation 3. Learn about atmosphere structure and Atmospheric processes. 4. Become familiar with the Global water balance and Hydrological cycle. 5*. Gain practical knowledge about the analysis of water and soil quality parameters		
Credits 3	Theory	Practical	Total
	2	1	3
Contact Hours	2	2	4
Max. Marks: 75 **Internal Assessment Marks: 20** (Theory 15 +Practical 05) **End Term Exam Marks: 55** (Theory 35 + Practical 20)		**Time: 3hours**	
Part B- Contents of the Course			

Instructions for Paper- Setter

For final theory exam time allowed will be of 3 hours and nine questions will be set. Question No.1 (objective/short answer type) covering the entire syllabus, will be compulsory. The remaining eight questions will be set unit-wise with two questions from each Unit. The candidates will be required to attempt Q.No.1 and any four, selecting one question from each unit. All the questions will carry equal marks.

Unit	Topics	Contact Hours
I	Environment science**:** Basic concept of environmental science; Components of Environment; Interactions of various components of the environment; Principle of environment science; Environment and sustainability; Sustainable development goals.	02 hours/ week
II	Earth system**:** Structure and composition of earth system; Soil formation (pedogenesis); Weathering and Types of Weathering; Soil types; Soil profiles; Soil degradation and desertification; Methodologies for soil Conservation.	
III	Atmosphere: Structure and composition of the atmosphere; Components of the atmosphere; Distinction of temperature and pressure in the atmosphere; Concept of heat budget of the atmosphere; Temperature inversion; Ozone Depletion; Water in the atmosphere-Acid rain.	
IV	Hydrosphere: Hydrosphere components; Sources of water; Global Water balance; Types of water; Hydrological cycle; Significance of hydrosphere.	
V*	**Practical's** 1. To study the soil profile and do draw the labeled diagram. 2. To measure soil temperature and moisture. 3. To determine water quality parameters with the help of an analysis kit. 4. Draw the pie diagram showing the global water balance. 5. To study the structure of the atmosphere with the help of a label diagram	02 hours/ week
Suggested Evaluation Methods		

Internal Assessment:	End Term Examination:
➢ **Theory** • Class Participation: 04 marks • Seminar/presentation/assignment/quiz/class test etc.: 04 marks • Mid-Term Exam: 07 marks ➢ **Practicum** • Class Participation: NA • Demonstration/Viva-voce/Lab records etc.: 05 marks • Mid-Term Exam: NA	Theory: 35 marks (Written exam) Practical: 20 marks (Demonstration/Viva-voce/Lab records etc)

Part C-Learning Resources

Suggested readings

1. Singh, J.S., Singh, S.P. and Gupta, S.R. (2015). *Ecology, Environment and Resource Conservation*. S. Chand Publishing, New Delhi
2. Botkin, D.B and Kodler, E.A. (2000). Environment Studies:the earth as a living planet. John Wiley and Sons Inc.
3. Cunningham, W.P. and Cunningham, M.A. (2002*). Environmental Science: Inquiry and Applications.* A Global Concern. Tata McGraw-Hill Publishing Company, New Delhi.
4. Pierzynski, G.M., Sims, J.T. and Vance, G.F. (2000). *Soils and Environmental Quality*. Second Edition. CRC press, New York.

*Applicable for courses having practical component.

CC-2/MCC-3

Session: 2023-24			
Part A - Introduction			
Subject	Environmental Science		
Semester	SEMESTER-2		
Name of the Course	**FUNDAMENTALS OF ECOLOGY**		
Course Code	**B23-EVS-201**		
Course Type: (CC/MCC/MDC/CC-M/DSEC/ VOC/DSE/PC/AEC/VAC)	**CC/MCC**		
Level of the course (As per Annexure-I	100-199		
Pre-requisite for the course (if any)	NA		
Course Learning Outcomes(CLOs):	After completing this course, the learner will be able to: 1.Understand the basic aspects of ecology 2.Understand the basic concepts of ecosystem dynamics and stability 3.Gain knowledge about concepts of population and their interactions 4.Understand community ecology and succession process in nature. 5*. Have a practical training on basic aspects of ecology.		
Credits 4	Theory	Practical	Total
	3	1	4
Contact Hours	3	2	5
Max. Marks:100 **Internal Assessment Marks: 30** (Theory 20 +Practical 10) **End Term Exam Marks: 70** (Theory 50 + Practical 20)		**Time: 3hours**	
Part B- Contents of the Course			

Instructions for Paper- Setter

For final theory exam time allowed will be of 3 hours and nine questions will be set. Question No.1 (objective/short answer type) covering the entire syllabus, will be compulsory. The remaining eight questions will be set unit-wise with two questions from each Unit. The candidates will be required to attempt Q.No.1 and any four, selecting one question from each unit. All the questions will carry equal marks.

Unit	Topics	Contact Hours
I	Definition, Scope and basic principles of ecology and environment. Biological levels of organization. Climatic, Edaphic and Topographical Factors; Habitat and ecological niche. Laws of limiting factors; Liebig's Law of the Minimum; Shelford's Law of Tolerance;	03 hours/ week
II	The Ecosystem Concept, Structure and Function of Ecosystem. Trophic levels, food chains and food webs. Ecological pyramids, Energy flow and in ecological systems, energy efficiencies. Biogeochemical Cycles. Ecosystem stability: resistance and resilience. Ecotypes; Ecads; Ecoclines.	
III	Population: Basic concepts, population characteristics – density, natality, mortality, age-structure, population growth. Ecological niche and habitat. Positive and negative interactions of populations – competition, predation, parasitism, mutualism.	
IV	Community structure and organization, keystone species, ecotone and edge effect. Methods of plant community analysis. Succession: Concepts of succession, Types of Succession. Trends in succession. Climax and stability.	
V*	**Practical's** 1. To study different method of plant community analysis 2. To determine minimum size of quadrat to study herbaceous vegetation 3. To determine minimum number of quadrats to study herbaceous vegetation 4. To study different components of an ecosystem 5. To prepare a check list of invasive species	02hours/ week
Suggested Evaluation Methods		

Internal Assessment:	**End Term Examination:**
➢ **Theory** • Class Participation: 5 marks • Seminar/presentation/assignment/quiz/class test etc.: 5 marks • Mid-Term Exam: 10 marks ➢ **Practicum** • Class Participation: NA • Demonstration/Viva-voce/Lab records etc.: 10 marks • Mid-Term Exam: NA	Theory: 50 marks (Written exam) Practical: 20 marks (Demonstration/Viva-voce/Lab records etc)

Part C-Learning Resources

Suggested Readings:

1. Odum, E.P. (1983). *Basic Ecology*. Sanders, Philadelphia.
2. Odum, E.P. (1971). *Fundamentals of Ecology*. W.B. Sounders.
3. Robert, R. (2001). *The Ecology of Nature*. Fifth Edition. W.H. Freeman and Company.
4. Smith, R.L. (1996). *Ecology and Field Biology*. Harper Collins, New York.
5. Botkin, D.B. & Keller, E.A. (2000). *Environment Science: Earth as a living planet*. Third Edition. John Wiley and Sons Inc.
6. Singh, J.S., Singh, S.P. & Gupta, S.R. (2006). *Ecology, Environment and Resource Conservation*. Anamaya Publications.

*Applicable for courses having practical component.

DSEC-1

Session: 2023-24			
Part A - Introduction			
Subject	Environmental Science		
Semester	SEMESTER-2		
Name of the Course	**TECHNIQUES OF ENVIRONMENTAL ANALYSIS**		
Course Code	**B23-EVS-202**		
Course Type: (CC/MCC/MDC/CC-M/DSEC /VOC/DSE/PC/AEC/VAC)	**DSEC**		
Level of the course (As per Annexure-I	200-299		
Pre-requisite for the course (if any)	NA		
Course Learning Outcomes(CLOs):	After completing this course, the learner will be able to: 1 To describes physical, chemical, nutrient, and microbial properties of the soil. 2. To have knowledge about the physical, chemical and biological properties of the water. 3. To describes the air quality of a geographical area. 4. To describes the level of ambient noise of a geographical area. 5*.To apply practical techniques to understand the physical, chemical and biological properties in the environmental samples.		
Credits 4	Theory	Practical	Total
	3	1	4
Contact Hours	3	2	5
Max. Marks:100 **Internal Assessment Marks: 30** (Theory 20 +Practical 10) **End Term Exam Marks: 70** (Theory 50 + Practical 20)		**Time: 3hours**	
Part B- Contents of the Course			

Instructions for Paper- Setter

For final theory exam time allowed will be of 3 hours and nine questions will be set. Question No.1 (objective/short answer type) covering the entire syllabus, will be compulsory. The remaining eight questions will be set unit-wise with two questions from each Unit. The candidates will be required to attempt Q.No.1 and any four, selecting one question from each unit. All the questions will carry equal marks.

Unit	Topics	Contact Hours
I	Analysis of physical properties of the soil: soil texture by particle size distribution (PSA) through hydrometer method, soil pH, soil bulk density, porosity, temperature, colour and resistivity. Analysis of organic matter in the soil - wet dichromate acid oxidation method, Walkley-Black method. Analysis of the soil nutrients - nitrogen using Kjeldahl method, phosphorus using molybdate-blue method, potassium using spectroscopic method. Soil microbial activity analysis: enumeration and isolation of soil microbes - plate count method, MPN technique. Measurement of soil enzyme activity - spectrophotometric and titrimetric method.	03 hours/ week
II	Physicochemical analysis of the water samples: DO (DO Meter or Winkler modified method), BOD (dilution method), COD (Potassium dichromate method), electrical conductivity (Conductivity meter), pH, Carbonate-bicarbonate as CaCO (titrimetric method), turbidity (gravimetry), Na and K (Flame photometry), Ca and Mg (EDTA Titrimetric), Chloride (Argentometric titration), fluoride (Ion meter, colorimetry), phosphate, nitrogen and nitrate-nitrite (colorimetry). Microbial analysis of water samples using membrane-filtration method, MPN and presence–absence tests.	
III	Parameters and methods of ambient air samples analysis: SO_2 (West and Gaeke Method), NO_2 (Jacob & Hochheiser modified (NaOH-$NaAsO_2$ method), $PM_{2.5}$ and PM_{10} (Gravimetric and TEOM), As, Ni and Pb (AAS/ICP Method), NH_3 (Chemiluminescence).	
IV	Noise monitoring using instrumentation - sound level meter and its functioning, ambient noise monitoring system, noise monitoring station, analysis of ambient noise monitoring on daily, monthly and annual basis.	

V*	**Practical's** 1. Investigate the physical properties of the given soil sample. 2. Investigate the DO and BOD of the given water sample for drinking purpose. 3. Investigate the particulate matter ($PM_{2.5}$ and PM_{10}) in ambient air on monthly basis using a case study data. 4. Investigate the ambient noise monitoring on monthly basis using a case study data. 5. To enumeration the soil microbes from a given soil sample using plate count method.	02 hours/ week

Suggested Evaluation Methods

Internal Assessment: ➢ **Theory** • Class Participation: 05 marks • Seminar/presentation/assignment/quiz/class test etc.: 05 marks • Mid-Term Exam: 10 marks ➢ **Practicum** • Class Participation: NA • Demonstration/Viva-voce/Lab records etc.: 10 marks • Mid-Term Exam: NA	**End Term Examination:** Theory: 50 marks (Written exam) Practical: 20 marks (Demonstration/Viva-voce/Lab records etc)

Part C-Learning Resources

Suggested Readings:

1. Chaudhery, M.H. and Rustem, K. (2019). *Modern Environmental Analysis Techniques for Pollutants*. Elsevier.
2. Patnaik, P. (2017). *Handbook of Environmental Analysis*.CRC Press.
3. Gupta, P.K. (2000). *Methods in Environmental Analysis : Water Soil and Air*. Agrobios (India) Publications.

*Applicable for courses having practical component.

CC-M2

Session: 2023-24			
Part A - Introduction			
Subject	Environmental Science		
Semester	SEMESTER-2		
Name of the Course	**Climate Change**		
Course Code	**B23-EVS- 203**		
Course Type: (CC/MCC/MDC/CC-M/DSEC/ VOC/DSE/PC/AEC/VAC)	**CC-M**		
Level of the course (As per Annexure-I	100-199		
Pre-requisite for the course (if any)	NA		
Course Learning Outcomes(CLOs):	After completing this course, the learner will be able to: 1. Learn about the origin, composition and structure of the atmosphere and about Earth's energy balance. 2. Understand the concept of changing climate, sources, and trends. 3. Learn about various impacts of climate change on the environment. 4. Gain knowledge on mitigation strategies adopted worldwide. 5*. To develop research aptitude in climate change research.		
Credits 2	Theory	Practical	Total
	1	1	2
Contact Hours	1	2	3
Max. Marks: 50 **Internal Assessment Marks:15** (Theory 10 +Practical 05) **End Term Exam Marks: 35** (Theory 20 + Practical 15)		**Time: 3hours**	

Part B- Contents of the Course

Instructions for Paper- Setter

For final theory exam time allowed will be of 3 hours and nine questions will be set. Question No.1 (objective/short answer type) covering the entire syllabus, will be compulsory. The remaining eight questions will be set unit-wise with two questions from each Unit. The candidates will be required to attempt Q.No.1 and any four, selecting one question from each unit. All the questions will carry equal marks.

Unit	Topics	Contact Hours
I	Introduction: Weather and climate; Atmosphere – origin, composition, structure, basic atmospheric properties; Radiations and Earth's energy balance.	01 hour/ week
II	Global atmospheric temperature, Greenhouse gases – sources and trends in GHGs emission, role of aerosol, ozone and trace gases; Global warming, Climate change, Climate variability in geological history, natural and human induced climate change.	
III	Impact of climate change: weather extreme, Sea level rise, Coral bleaching, Extinction risk of temperature sensitive species, melting of snow, ice and glaciers.	
IV	Mitigation strategies for global warming; biological carbon sequestration, carbon sequestration in geological formations, role of forests in carbon sequestration; Kyoto protocol, IPCC.	
V*	**Practical's** 1. To plot the decade wise trend of atmospheric CO_2 2. To draw a well label diagram of different types of radiations. 3. To plot melting trends of Gangotri glacier 4. To measure temperatures to learn about the greenhouse effect 5. To demonstrate how melting ice affects sea levels.	02hours/ week

Suggested Evaluation Methods

Internal Assessment:	**End Term Examination:**
➢ **Theory** • Class Participation: 04 marks • Seminar/presentation/assignment/quiz/class test etc.: NA • Mid-Term Exam: 06 marks ➢ **Practicum** • Class Participation: NA • Demonstration/Viva-voce/Lab records etc.: 05 marks • Mid-Term Exam: NA	Theory: 20 marks (Written exam) Practical: 15 marks (Demonstration/Viva-voce/Lab records etc)

Part C-Learning Resources

Suggested Readings:

1. Singh, J.S., Singh, S.P. and Gupta, S.R. (2015). *Ecology, Environment and Resource Conservation,* S. Chand Publishing, New Delhi.
2. Miller Jr., G.T. (1997). *Environmental Science: Working With the Earth*. Wadsworth Publishing Company, Belmont, California
3. Botkin, D.B. and E.A. Keller (2004). *Environment Science: Earth as a Living Planet*, John Wiley & Sons Inc., New York.
4. Philander, S.G. (ed.) (2008). EncyCLOspedia of global warming and climate change. 2nd edition, SAGE Publications, Inc., California.
5. Steffen, W., A. Sanderson, P. D. Tyson, J. Jager, P. M. Matson, B. Moore, III, F. Oldfield, K. Richardson, H. J. Schnellnhuber, B. L. Turner, II, and R. J. Wasson. (2004). *Global change and the Earth system: a Planet under Pressure*. Springer-Verlag, New York, New York, USA.

*Applicable for courses having practical component.

MDC-2

Session: 2023-24			
Part A - Introduction			
Subject	Environmental Science		
Semester	SEMESTER-2		
Name of the Course	**ENVIRONMENTAL ISSUES**		
Course Code	**B23-EVS- 204**		
Course Type: (CC/MCC/MDC/CC-M/DSEC /VOC/DSE/PC/AEC/VAC)	**MDC**		
Level of the course (As per Annexure-I	100-199		
Pre-requisite for the course (if any)	NA		
Course Learning Outcomes(CLOs):	After completing this course, the learner will be able to: 1. Students will gain knowledge about environmental issues related to industrialization and urbanization. 2. Students will be able to understand the issues related to population explosion, degradation, pollution 3. The students will gain knowledge about major global environmental issues. 4. Students will understand the issues related to energy and water consumption and international efforts for environmental protection. 5*. Students will be able have and practical insight on local and global environmental issues.		
Credits 3	Theory	Practical	Total
	2	1	3
Contact Hours	2	2	4
Max. Marks:75 **Internal Assessment Marks: 20** (Theory 15 +Practical 05) **End Term Exam Marks: 55** (Theory 35 + Practical 20)		**Time: 3hours**	
Part B- Contents of the Course			

Instructions for Paper- Setter

For final theory exam time allowed will be of 3 hours and nine questions will be set. Question No.1 (objective/short answer type) covering the entire syllabus, will be compulsory. The remaining eight questions will be set unit-wise with two questions from each Unit. The candidates will be required to attempt Q.No.1 and any four, selecting one question from each unit. All the questions will carry equal marks.

Unit	Topics	Contact Hours
I	Environment and Development; Industrialization: impact of industry and technology on environment; Production and consumption-oriented approaches to environmental issues Urbanization: urban sprawl, traffic congestion and social-economic problems.	02 hours/ week
II	Population Explosion and Ecological degradation; deforestation; environmental pollution; epidemics, development-induced displacement, resettlement, and rehabilitation: problems, concerns, and compensative mechanisms.	
III	Significant global environmental issues: acid rain, climate change, biodiversity loss; ozone layer depletion, resource depletion and conservation; interface between environment and society. Sustainable development	
IV	Nature, scope and analysis of local and global impacts of energy use on the environment; Issues related to water use, distribution and scarcity; International concerns and efforts for environmental protection: Role of United Nations, Stockholm Summit, Rio Summit	
V*	**Practical's** 1. To prepare a case study of local environmental issues in your surroundings. 2. To analyse the status of forest cover in the state of Haryana. 3. To study and analyse the trends of global climate change 4. To analyse the impacts of acid rain on historic monuments: a case study of TajMahal. 5. To prepare a report on international efforts for environmental protection	02 hours/ week
Suggested Evaluation Methods		

Internal Assessment:	**End Term Examination:**
➢ **Theory** • Class Participation: 04 marks • Seminar/presentation/assignment/quiz/class test etc.: 04 marks • Mid-Term Exam: 07 marks ➢ **Practicum** • Class Participation: NA • Demonstration/Viva-voce/Lab records etc.: 05 marks • Mid-Term Exam: NA	Theory: 35 marks (Written exam) Practical: 20 marks (Demonstration/Viva-voce/Lab records etc)

Part C-Learning Resources

Suggesting Readings:

1. Singh, J.S., Singh, S.P. & Gupta, S.R. (2017). Ecology, Environment and Conservation. S.Chand (G/L) & Company Ltd.
2. Kumar, A. & Roy, P. K. (2008). Environmental Issues and Solutions. Daya Publishing House, New Delhi
3. Vashishsta, A. & Johari, S. (2020). Case Studies: Contemporary Environmental Issues and Challenges. Bloomsbury Publishing.
4. Sudhir, M.A. & Masillamani, M.A. (2003). Environmental Issues. Reliance Publishing House.
5. Gope, A., Sarkar, A., Sarkar, P., Majumdar, S. & Gosai. K. (2019). Environmental Issues & Sustainable Development. Notion Press Media Pvt Ltd.
6. Rangarajan, M. (2006). Environmental Issues in India: A Reader. Pearson Education India.

*Applicable for courses having practical component.

CC-3/MCC-4

Session: 2023-24			
Part A - Introduction			
Subject	Environmental Science		
Semester	SEMESTER-3		
Name of the Course	**Introduction to Biodiversity**		
Course Code	**B23-EVS-301**		
Course Type: (CC/MCC/MDC/CC-M/DSEC/ VOC/DSE/PC/AEC/VAC)	**CC/MCC**		
Level of the course (As per Annexure-I	200-199		
Pre-requisite for the course (if any)	NA		
Course Learning Outcomes(CLOs):	After completing this course, the learner will be able to: 1. Become aware about biodiversity, types of biodiversity, Concept of speciation. 2. Acquire knowledge about levels of biodiversity, Concept of Hotspot of Biodiversity 3. Gain knowledge about biodiversity uses, services and threats to biodiversity 4. Become familiar with the various biodiversity conservation strategies and approaches. 5*. Acquire practical knowledge about the biodiversity of various ecosystems and at various levels		
Credits 4	Theory	Practical	Total
	3	1	4
Contact Hours	3	2	5
Max. Marks: 100 **Internal Assessment Marks: 30** (Theory 20 +Practical 10) **End Term Exam Marks: 70** (Theory 50 + Practical 20)		**Time: 3hours**	
Part B- Contents of the Course			

Instructions for Paper- Setter

For final theory exam time allowed will be of 3 hours and nine questions will be set. Question No.1 (objective/short answer type) covering the entire syllabus, will be compulsory. The remaining eight questions will be set unit-wise with two questions from each Unit. The candidates will be required to attempt Q.No.1 and any four, selecting one question from each unit. All the questions will carry equal marks.

Unit	Topics	Contact Hours
I	Definition, History and importance of Biodiversity; Concept of species and speciation ; Genetic variations, natural selection, genetic drift and gene flow; Biodiversity, magnitude, global accumulation; levels of biodiversity - species, genetic and ecosystem diversity; species diversity indices.	03 hours/ week
II	Biodiversity gradient – latitudinal and altitudinal; Biodiversity at global, national and local levels; Concept of hotspot of biodiversity; Criteria for determining hot spots; India as a Mega Diversity Nation. Indian hotspots diversity: Indo-Burma (Eastern Himalaya), Western Ghats, Sri Lanka and Sundaland; Biodiversity of mangroves, wetlands and coral reefs – A general account	
III	Value of Biodiversity- Intrinsic, consumptive, productive use, social, ethical, aesthetic and option values. Biodiversity uses and ecosystem services. Threats to biodiversity- habitat loss, habitat fragmentation, exotic species and environmental pollution; species extinction. Concept of IUCN threat categories; Concept of Red data book; Endangered and threatened species of India.	
IV	Approaches for Conservation of Biological diversity. *In- situ* and *ex-situ* conservation. In situ conservation.- Protected areas, Wildlife sanctuaries, National parks, Biosphere reserves. Strategies for ex situ conservation – Botanical Gardens, Seed banks, Field gene banks, Test tube gene banks, pollen banks, DNA bank, in vitro conservation.	
V*	**Practical's** 1. Determination of requisite size of quadrat for vegetation analysis. 2. Analysis of frequency distribution of plants in a grassland ecosystem by quadrant method 3. To determine basal cover of a tree in a forest ecosystem. 4. Field Survey in your campus for studying plant	02 hours/ week

	species diversity 5. Preparation of field report based on visit of a wildlife sanctuary/zoo/national park/ biosphere reserve 6. Determination of alpha, beta and gamma biodiversity with help of given data	

Suggested Evaluation Methods

Internal Assessment:	**End Term Examination:**
➢ **Theory** • Class Participation: 5 marks • Seminar/presentation/assignment/quiz/class test etc.: 5 marks • Mid-Term Exam: 10 marks ➢ **Practicum** • Class Participation: NA • Demonstration/Viva-voce/Lab records etc.: 10 marks • Mid-Term Exam: NA	Theory: 50 marks (Written exam) Practical: 20 marks (Demonstration/Viva-voce/Lab records etc)

Part C-Learning Resources

Suggested Readings:

1. Chandel, K.P.S., Shukla, G. and Sharma, N. (1996).Biodiversity in Medicinal and Aromatic Plants in India Conservation and Utilization, National Bureau of Plant Genetic Resources, New Delhi.
2. Heywood, V. (ed.) (1995). Global Biodiversity Assessment. United Nations Environment Programme, Cambridge University Press, Cambridge, U.K.
3. Gabriel M. (2000) Biodiversity and conservation Oxford and IBH publishing company Pvt Ltd. New Delhi.
4. Krishnamoorthy, K.V (2004) An Advanced text book on Biodiversity- principles and Practice: Oxford and IBH publishing company Pvt. Ltd. New Delhi.
5. Maiti, P. K. and Maiti, P. (2023). Biodiversity: perception, peril and preservation. PHI Learning Pvt. Ltd.
6. Huston, M.A. (1994). Biological Diversity: The Coexistence of Species on Changing Landscapes. Cambridge University Press, Cambridge.
7. Singh, J.S., Singh, S.P. and Gupta, S.R. (2015). Ecology, Environment and Resource Conservation, S. Chand Publishing, New Delhi.
8. Soule, M.E. (ed.) (1986): Conservation Biology. The Science of Scarcity and Diversity.Sinaur Associates, Inc., Sunderland, Massachusetts.

*Applicable for courses having practical component.

<table>
<tr><th colspan="4">MCC-5</th></tr>
<tr><td colspan="4">Session: 2023-24</td></tr>
<tr><td colspan="4">Part A - Introduction</td></tr>
<tr><td>Subject</td><td colspan="3">Environmental Science</td></tr>
<tr><td>Semester</td><td colspan="3">SEMESTER-3</td></tr>
<tr><td>Name of the Course</td><td colspan="3">Disaster Management</td></tr>
<tr><td>Course Code</td><td colspan="3">B23-EVS-302</td></tr>
<tr><td>Course Type: (CC/MCC/MDC/CC-M/DSEC/ VOC/DSE/PC/AEC/VAC)</td><td colspan="3">MCC</td></tr>
<tr><td>Level of the course (As per Annexure-I</td><td colspan="3">200-199</td></tr>
<tr><td>Pre-requisite for the course (if any)</td><td colspan="3">NA</td></tr>
<tr><td>Course Learning Outcomes(CLOs):</td><td colspan="3">After completing this course, the learner will be able to:
1. To have basic conceptual understanding of disasters.
2. To understand the causes, types and impacts of natural disasters.
3. To understand the different types of manmade disasters and their effects.
4. To build skills to respond to disaster and to understand the prevention, preparedness
and mitigation for disaster.
5*. To develop practical skills about disasters and their management</td></tr>
<tr><td rowspan="2">Credits 4</td><td>Theory</td><td>Practical</td><td>Total</td></tr>
<tr><td>3</td><td>1</td><td>4</td></tr>
<tr><td>Contact Hours</td><td>3</td><td>2</td><td>5</td></tr>
<tr><td colspan="2">Max. Marks: 100
Internal Assessment Marks: 30 (Theory 20 +Practical 10)
End Term Exam Marks: 70 (Theory 50 + Practical 20)</td><td colspan="2">Time: 3hours</td></tr>
</table>

Part B- Contents of the Course

Instructions for Paper- Setter

For final theory exam time allowed will be of 3 hours and nine questions will be set. Question No.1 (objective/short answer type) covering the entire syllabus, will be compulsory. The remaining eight questions will be set unit-wise with two questions from each Unit. The candidates will be required to attempt Q.No.1 and any four, selecting one question from each unit. All the questions will carry equal marks.

Unit	Topics	Contact Hours
I	Introduction to disaster: Definition, difference between hazard and disaster, understanding natural and manmade disasters, risk and vulnerability in disaster, reasons of disaster- population growth, urban expansion, pollution, epidemics, accidents. Disaster profile of India.	03 hours/ week
II	Natural disaster: Earthquake- causes, types and impacts; Floods- types and impacts; landslides- responsible factors, causes and effects; drought: different types of droughts- meteorological, agricultural, hydrological and effects; cyCLOsne and hurricanes; tsunamis: reasons and its impacts.	
III	Anthropogenic disaster: Types, causes and effects of: Technological hazards- Industrial hazards, Structural collapse, Power outage, Fire (building fire and forest fire), CBRN: Chemical disasters, biological disasters, Radiological disaster, Nuclear disasters, Sociological hazards- Crime, Terrorism, War.	
IV	Disaster Preparedness and mitigation: Definition, Disaster management cycle of earthquake, floods, drought, landslides and cyclone: prevention, preparation and mitigation, Disaster Information, Disaster Response: Disaster Rehabilitation, Reconstruction and Recovery. Role of National Disaster Management Authority (NDMA).	
V*	**Practical's** 1. Preparation of disaster management plan for earthquake and report submission. 2. Preparation of disaster management plan for flood and report submission. 3. Study on national and international disasters in recent year. 4. Report submission on Dos and Do not at individual or household levels, during and after a disaster earthquake. 5. Report submission on Dos and Do not at individual or	02 hours/ week

	household levels, during and after a disaster flood.	

Suggested Evaluation Methods

Internal Assessment:	**End Term Examination:**
➢ **Theory** • Class Participation: 05 marks • Seminar/presentation/assignment/quiz/class test etc.: 05 marks • Mid-Term Exam: 10 marks ➢ **Practicum** • Class Participation: NA • Demonstration/Viva-voce/Lab records etc.: 10 marks • Mid-Term Exam: NA	Theory: 50 marks (Written exam) Practical: 20 marks (Demonstration/Viva-voce/Lab records etc)

Part C-Learning Resources

Suggested Readings:

1. Singh V., Aleya L., Singh M., and Singh K.K. (2010). *Natural Disaster,* APH Publishing Corporation New Delhi.
2. Sahni P., Dhamija A. and Medury U. (2011). *Disaster Mitigation: Experiences and Reflections*, PHI; New title edition.
3. Pandey, M. (2014). *Disaster Management*, Wiley India Pvt. Ltd.
4. Rajan C.K. and Pandharinath N. (2009) *Earth and Atmospheric Disaster Management: Nature and Manmade* S Publication, Hyderabad.
5. Sharma S.C. (2021). *Disaster Management*, Khanna Publishing House,2021.
6. Murthy D.B.N. (2019). *Disaster Management*. Deep and Deep Publication PVT.Ltd. New Delhi.

*Applicable for courses having practical component.

MDC-3

Session: 2023-24			
Part A - Introduction			
Subject	Environmental Science		
Semester	SEMESTER-3		
Name of the Course	**Environmental Conservation**		
Course Code	**B23-EVS-303**		
Course Type: (CC/MCC/MDC/CC-M/DSEC/VOC/DSE/PC/AEC/VAC)	**MDC**		
Level of the course (As per Annexure-I	200-199		
Pre-requisite for the course (if any)	NA		
Course Learning Outcomes(CLOs):	After completing this course, the learner will be able to: 1. To understand overview of problems associated with natural resources and conservation aspects. 2. To acquire deep acquaintance about land degradation and water conservation methods. 3. To recognize and explain forest conservation and mineral resource conservation strategies. 4. To describes energy conservation technologies and practices. 5*. To attain practical knowledge on environmental conservation approaches in India.		
Credits 3	Theory	Practical	Total
	2	1	3
Contact Hours	2	2	4
Max. Marks: 75 **Internal Assessment Marks: 20** (Theory 15 +Practical 05) **End Term Exam Marks: 55** (Theory 35 + Practical 20)		**Time: 3hours**	

Part B- Contents of the Course

Instructions for Paper- Setter

For final theory exam time allowed will be of 3 hours and nine questions will be set. Question No.1 (objective/short answer type) covering the entire syllabus, will be compulsory. The remaining eight questions will be set unit-wise with two questions from each Unit. The candidates will be required to attempt Q.No.1 and any four, selecting one question from each unit. All the questions will carry equal marks.

Unit	Topics	Contact Hours
I	Resource degradation and conservation, human impact on natural resources, importance of environmental conservation, equitable use and conservation for sustainable lifestyles. Environmentally friendly technology, natural resources accounting, market-based mechanisms for environmental protection, role of an individual and NGOs in environmental conservation. IPR and Traditional Knowledge.	02 hours/ week
II	Land degradation, deforestation, desertification, soil erosion and control, sustainable land use planning, effects of modern agriculture, fertilizer-pesticide problems, agroforestry, afforestation and reforestation, reclamation & management of waste lands (case studies). Conflicts over water (International & Inter-state), Interlinking of rivers, water conservation methods, rain water harvesting, watershed management.	
III	Forest conservation practices, sustainable forest management designs- green certification, community forest management (case study); ecotourism, conservation of biodiversity. Mineral resources exploitation, types of mining and environmental impacts, conservation and recycling of minerals.	
IV	Environmental impacts of different forms of energy, efficient use of energy resources, alternate energy sources, Delhi CNG case study, Cogeneration of energy (case studies) Bioenergy, biogas, biofuels, IPR and Traditional Knowledge.	
V*	**Practical's** 1. Case study interlinking of rivers in India. 2. Visit to place/institution/fields having sustainable soil conservation practices. 3. To list down the different irrigation practices in India. 4. To study solar power installations in your campus/area/city. 5. To visit Sewage treatment plant in your campus/area/city.	02 hours/ week

Suggested Evaluation Methods	
Internal Assessment: ➢ **Theory** • Class Participation: 04 marks • Seminar/presentation/assignment/quiz/class test etc.: 04 marks • Mid-Term Exam: 07 marks ➢ **Practicum** • Class Participation: NA • Demonstration/Viva-voce/Lab records etc.: 05 marks • Mid-Term Exam: NA	**End Term Examination:** Theory: 35 marks (Written exam) Practical: 20 marks (Demonstration/Viva-voce/Lab records etc)

Part C-Learning Resources

Suggested Readings:

1. Singh, J.S., Singh, S.P. and Gupta, S.R. (2015). *Ecology, Environment and Resource Conservation,* S. Chand Publishing, New Delhi.
2. Owen, O. S., & Chiras, D. D. (1990). Natural resource conservation: an ecological approach (No. Ed. 5). Macmillan Publishing Company.
3. Biswas, A. K. (2007) Water resources: Environmental Planning, Management, and Development, McGraw-Hill, New Delhi.
4. Ladle, Richard and Richard J. Ladle (2009) Biodiversity and Conservation: Response to biodiversity loss, Taylor and Francis.
5. Singh, J. S et al. 1997, Restoration of Degraded Lands, concepts & strategies, Rastogi Publication.
6. Bansil, P.C. 2004. Water Management in India. Concept Publishing Company, India.

*Applicable for courses having practical component.

CC-4/MCC-6

Session: 2023-24			
Part A - Introduction			
Subject	Environmental Science		
Semester	SEMESTER-4		
Name of the Course	**Environmental Pollution and Management**		
Course Code	**B23-EVS-401**		
Course Type: (CC/MCC/MDC/CC-M/ DSEC /VOC/DSE/PC/AEC/VAC)	**CC/MCC**		
Level of the course (As per Annexure-I	200-199		
Pre-requisite for the course (if any)	NA		
Course Learning Outcomes (CLOs):	After completing this course, the learner will be able to: 1. Gain knowledge on the types and classification of air and noise pollution. 2. Link causes and effect of water and soil pollution on environment and human health. 3. Identify various control measures of pollution. 4. Link various biological measures to control pollution and the existing challenges to solve pollution mitigation strategies. 5*. To analyze physiochemical properties of waste water and contaminated soil.		
Credits 4	Theory	Practical	Total
	3	1	4
Contact Hours	3	2	5
Max. Marks: 100 **Internal Assessment Marks: 30** (Theory 20 +Practical 10) **End Term Exam Marks: 70** (Theory 50 + Practical 20)		**Time: 3hours**	
Part B- Contents of the Course			

Instructions for Paper- Setter

For final theory exam time allowed will be of 3 hours and nine questions will be set. Question No.1 (objective/short answer type) covering the entire syllabus, will be compulsory. The remaining eight questions will be set unit-wise with two questions from each Unit. The candidates will be required to attempt Q.No.1 and any four, selecting one question from each unit. All the questions will carry equal marks.

Unit	Topics	Contact Hours
I	Air Pollution: Sources, classification (primary and secondary) and properties of air pollutants, indoor air pollution, effects of air pollution on human health, Air Quality index, Air quality standards, Remedial measures to control Air pollution Noise pollution: sources frequency, intensity and permissible ambient noise levels; impacts on living organisms and humans, measures to control noise pollution.	03 hours/ week
II	Water Pollution: Sources, consequences of water pollution, Agriculture and Water pollution, Pesticides and drinking water, Sanitation and drinking Water, Marine pollution-sources and effects,Thermal pollution and its effects, water quality parameters and standards, Remedial measures to control water pollution. Soil Pollution: Sources, consequences of soil pollution and control measures, Radioactive material and sources of radioactive pollution; effect of radiation on human health.	
III	Air scrubbers, Electrostatic Precipitators, Baghouse filters, Impingers, Case study: implementation of CNG.Noise control meters, Air sparging, Land farming, Phytoremediation, bio-remediation; Biological mediated pollution control.	
IV	Activated Sludge Process (ASP),Trickling Filters, oxidation ponds, membrane bioreactor, ETP sludge management; up flow anaerobic sludge blanket reactor, hybrid reactors, bio scrubbers, bio trickling filters; regulatory framework for pollution monitoring and control, Coastal area management; existing challenges and management techniques. Case study: Ganga Action Plan; Yamuna Action Plan.	
V*	**Practical's** 1. Identification and listing of different types of air, water and soil pollutants in the locality. 2. Enlist the measures to control noise pollution in homes and industries. 3. Study the functioning of water treatment or sewage treatment	02 hours/ week

	plant-Case study 4. To study about the pH, EC and salinity of waste water and contaminated soil 5. To study about the BOD and COD of the waste water.	

Suggested Evaluation Methods

Internal Assessment:	**End Term Examination:**
➢ **Theory** • Class Participation: 5 marks • Seminar/presentation/assignment/quiz/class test etc.: 5 marks • Mid-Term Exam: 10 marks ➢ **Practicum** • Class Participation: NA • Demonstration/Viva-voce/Lab records etc.: 10 marks • Mid-Term Exam: NA	Theory: 50 marks (Written exam) Practical: 20 marks (Demonstration/Viva-voce/Lab records etc)

Part C-Learning Resources

Suggested Readings:

1. **Gurjar, B.R., Molina, L.T. & Ojha C.S.P. (2010). Air Pollution: Health and Environmental Impacts. CRC Press, Taylor & Francis.**
2. **Park, K. (2015). Park's Textbook of Preventive and Social Medicine (23rd edition). Banarsidas Bhanot Publishers.**
3. **Gupta, P.K. (2000). Methods in Environmental Analysis : Water Soil and Air. Agrobios (India) Publications.**
4. **Purohit, S.S. & Ranjan, R. (2007). Ecology, Environment & Pollution. Agrobios Publications.**
5. **Singh, J.S., Singh, S.P. & Gupta, S.R. (2015). Ecology, Environment and Resource Conservation, S. Chand Publishing, New Delhi.**

*Applicable for courses having practical component.

MCC-7

Session: 2023-24			
Part A - Introduction			
Subject	Environmental Science		
Semester	SEMESTER-4		
Name of the Course	**Land Degradation and Management**		
Course Code	**B23-EVS-402**		
Course Type: (CC/MCC/MDC/CC-M/DSEC /VOC/DSE/PC/AEC/VAC)	**MCC**		
Level of the course (As per Annexure-I	200-199		
Pre-requisite for the course (if any)	NA		
Course Learning Outcomes(CLOs):	After completing this course, the learner will be able to: 1. To understand the process of soil formation and different properties of soil 2. To know the different causes responsible for land degradation 3. To acquire knowledge about the indicators and impacts of land degradation 4. To learn the methods for reclamation and management of degraded land 5*. To develop skills and practical knowledge regarding soil properties and texture as well as will be able to identify the degraded land		
Credits 4	Theory	Practical	Total
	3	1	4
Contact Hours	3	2	5
Max. Marks: 100 **Internal Assessment Marks: 30** (Theory 20 +Practical 10) **End Term Exam Marks: 70** (Theory 50 + Practical 20)		**Time: 3hours**	
Part B- Contents of the Course			

Instructions for Paper- Setter

For final theory exam time allowed will be of 3 hours and nine questions will be set. Question No.1 (objective/short answer type) covering the entire syllabus, will be compulsory. The remaining eight questions will be set unit-wise with two questions from each Unit. The candidates will be required to attempt Q.No.1 and any four, selecting one question from each unit. All the questions will carry equal marks.

Unit	Topics	Contact Hours
I	Basics of soil science: Soil as a resource; soil formation; soil profile; classification of soil; Properties of soil: soil texture, alkalinity and acidity, soil moisture, soil salinity, soil temperature, water holding potential; soil organic matter; nutrients in soil; decomposition and mulching, soil biodiversity.	03 hours/ week
II	Land degradation: Definition; Causes of land degradation- deforestation; fertilizers and pesticides; unsustainable agricultural practices; urban expansion; overgrazing; salinization; soil acidification; water logging; nutrient depletion; soil pollution; mining; soil erosion; desertification.	
III	Indicators and Impacts of land degradation: Indicators of degraded land: development of rills, gullies, pedestals and armour Layer, tree root exposure and tree mound; Impacts on agriculture; impacts on biodiversity; reduction in productivity; loss of ecosystem services; impacts on nutrient cycles; impacts on environment.	
IV	Land degradation Management: Integrated soil fertility management; management of farming practices; sustainable land use management; Irrigation system management; maintenance of soil productive capacity; reclamation of mining affected areas; waste management; afforestation; reclamation of chemically degraded soil; community-based education and awareness.	
V*	**Practical's** 1. Determination of physical properties (pH, EC etc.) of soil 2. Analysis of texture (pore size) of soil 3. Measurement of water holding capacity in soil 4. Case study of a degraded land 5. Identification of different grasses used for soil conservation.	02 hours/ week

Suggested Evaluation Methods	
Internal Assessment: ➢ **Theory** • Class Participation: 5 marks • Seminar/presentation/assignment/quiz/class test etc.: 5 marks • Mid-Term Exam: 10 marks ➢ **Practicum** • Class Participation: NA • Demonstration/Viva-voce/Lab records etc.: 10 marks • Mid-Term Exam: NA	**End Term Examination:** Theory: 50 marks (Written exam) Practical: 20 marks (Demonstration/Viva-voce/Lab records etc)

Part C-Learning Resources

Suggested Readings:

1. **Brady, N.C., Weil, R.R. and Weil, R.R. 2008. The nature and properties of soils (Vol. 13). Upper Saddle River, NJ: Prentice Hall.**
2. **Bhattacharyya, R., Ghosh, B.N., Mishra, P.K., Mandal, B., Rao, C.S., Sarkar, D., Das, K., Anil, K.S., Lalitha, M., Hati, K.M. and Franzluebbers, A.J. 2015. Soil degradation in India: Challenges and potential solutions. Sustainability, 7(4), pp.3528-3570.**
3. **Gadgil, M. 1993. Biodiversity and India's degraded lands. Ambio 22: 167-172.**
4. **Johnson, D.L. 2006. Land Degradation (2nd edition). Rowman& Littlefield Publishers.**
5. **Marsh, W. M. & Dozier, J. 1983. Landscape Planning: Environmental Applications. John Wiley and Sons.**
6. **Oldeman, L. R. 1994. The global extent of soil degradation. Soil resilience and sustainable land use, 9. (http://library.wur.nl/isric/fulltext/isricu_i26803_001.pdf).**
7. **Mishra, P.K., Rai, A., Abdelrahman, K., Rai, S.C. and Tiwari, A. 2022. Land degradation, overland flow, soil erosion, and nutrient loss in the Eastern Himalayas, India. Land, 11(2), p.179.**
8. **Peterson, G. D., Cumming, G. S. & Carpenter, S. R. 2003. Scenario planning: a tool for conservation in an uncertain world. Conservation Biology 17: 358-366.**
9. **Scherr, S. J. 1999. Soil degradation: A threat to developing-country food security by 2020? (Vol. 27). International Food Policy Research Institute.**

*Applicable for courses having practical component.

MCC-8

Session: 2023-24			
Part A - Introduction			
Subject	Environmental Science		
Semester	SEMESTER-4		
Name of the Course	**Environmental Chemistry**		
Course Code	**B23-EVS -403**		
Course Type: (CC/MCC/MDC/CC-M/DSEC /VOC/DSE/PC/AEC/VAC)	**MCC**		
Level of the course (As per Annexure-I	200-199		
Pre-requisite for the course (if any)	NA		
Course Learning Outcomes(CLOs):	After completing this course, the learner will be able to: 1: Obtain basic knowledge about reactions in water. 2: Learn about atmospheric reactions, smog, acid rain and ozone layer depletion. 3: Develop understanding on the concept of rocks and soil chemistry. 4: Develop understanding about metals and organic chemicals in environment 5*. To develop research aptitude in environmental chemistry research		
Credits 4	Theory	Practical	Total
	3	1	4
Contact Hours	3	2	5
Max. Marks: 100 **Internal Assessment Marks: 30** (Theory 20 +Practical 10) **End Term Exam Marks: 70** (Theory 50 + Practical 20)		**Time: 3hours**	
Part B- Contents of the Course			
Instructions for Paper- Setter			

For final theory exam time allowed will be of 3 hours and nine questions will be set. Question No.1 (objective/short answer type) covering the entire syllabus, will be compulsory. The remaining eight questions will be set unit-wise with two questions from each Unit. The candidates will be required to attempt Q.No.1 and any four, selecting one question from each unit. All the questions will carry equal marks.

Unit	Topics	Contact Hours
I	Fundamentals of aquatic chemistry: acid-base, solubility, oxidation-reduction, and complexation reactions. Basic principles of sedimentation, coagulation, filteration and absorption. Gases in water.	03 hours/ week
II	The atmospheric chemistry: Composition of atmosphere; photochemical reactions in atmosphere; smog formation, types of smog (sulphur smog and photochemical smog), aerosols; chemistry of acid rain. ozone layer depletion, role of CFCs in ozone depletion.	
III	Soil chemistry: Structure and Properties of Minerals, Types of minerals and rocks, Soil composition; relation between organic carbon and organic matter, inorganic and organic components in soil; soil humus; cation and anion exchange reactions in soil; nitrogen, phosphorus and potassium in soil.	
IV	Fate of metals and organic chemicals in environment: Lead, mercury, arsenic, cadmium. Dioxins, PCBs. Sources of hydrocarbons. Persistent organic pollutants.	
V*	**Practical's** 1. To analyze pH and EC in given water samples. 2. To analyze pH and EC in soil samples. 3. To measure soil temperature and moisture. 4. To study the relationship between population growth and CO_2 concentration in atmosphere. 5. To study the relationship between CO_2 concentration in atmosphere and mean earth temperature.	02 hours/ week
Suggested Evaluation Methods		

Internal Assessment:	End Term Examination:
➢ **Theory** • Class Participation: 5 marks • Seminar/presentation/assignment/quiz/class test etc.: 5 marks • Mid-Term Exam: 10 marks ➢ **Practicum** • Class Participation: NA • Demonstration/Viva-voce/Lab records etc.: 10 marks • Mid-Term Exam: NA	Theory: 50 marks (Written exam) Practical: 20 marks (Demonstration/Viva-voce/Lab records etc)

Part C-Learning Resources

Suggested Readings:

1. A. K. De (2019). *Environmental Chemistry*. New Age International Publishers, Publisher
2. Botkin, D.B. and Keller E.A (2004). *Environment Science: Earth as a Living Plant*. John Wiley & Sons Inc., New York.
3. Manahan, S.E. (2000). *Environmental Chemistry*. Seventh Edition. Lewis Publishers, New York
4. Mitsch, W.J. and Jorgensen, S.E. (eds.) (1989). *Ecological Engineering: An Introduction to Ecotechnology*. John Wiley and Sons, New York.
5. Pierzynski, G.M., Sims, J.T. and Vance, G.F. (2000). *Soils and Environmental Quality*. Second Edition. CRC press, New York.

*Applicable for courses having practical component.

DSE-1

Session: 2023-24			
Part A - Introduction			
Subject	Environmental Science		
Semester	SEMESTER-4		
Name of the Course	**Solid Waste Management**		
Course Code	**B23-EVS-404**		
Course Type: (CC/MCC/MDC/CC-M/DSEC /VOC/DSE/PC/AEC/VAC)	**DSE**		
Level of the course (As per Annexure-I	200-199		
Pre-requisite for the course (if any)	NA		
Course Learning Outcomes(CLOs):	After completing this course, the learner will be able to: 1. To enhance the knowledge of students about different sources, types and classification of solid waste. 2. To know about storage, collection and transportation of solid waste. 3. To learn the different waste management methods. 4. To acquire knowledge regarding waste management rules and initiatives by government. 5*. To develop practical learning about collection, storage, classification and disposal methods of solid waste by surveying their own locality.		
Credits 4	Theory	Practical	Total
	3	1	4
Contact Hours	3	2	5
Max. Marks: 100 **Internal Assessment Marks: 30** (Theory 20 +Practical 10) **End Term Exam Marks: 70** (Theory 50 + Practical 20)		**Time: 3hours**	
Part B- Contents of the Course			

Instructions for Paper- Setter

For final theory exam time allowed will be of 3 hours and nine questions will be set. Question No.1 (objective/short answer type) covering the entire syllabus, will be compulsory. The remaining eight questions will be set unit-wise with two questions from each Unit. The candidates will be required to attempt Q.No.1 and any four, selecting one question from each unit. All the questions will carry equal marks.

Unit	Topics	Contact Hours
I	Introduction to solid waste: Definition; types of solid waste: Domestic Waste, commercial waste, industrial waste, agricultural waste, biomedical waste, E-waste, hazardous waste, institutional waste, construction and demolition waste. Classification of solid waste- hazardous and non-hazardous, degradable and non-degradable.	03 hours/ week
II	Processing of solid waste: Storage, Collection and Transportation of solid waste: waste segregation and storage, Collection methods of solid waste- tools and equipment, transportation of waste- types of vehicles, role of rag pickers and their utility for society.	
III	Disposal of Municipal solid waste: 5-Rs and their benefits: Refuse, Reduces, Reuse, Repurpose and Recycle; methods of waste disposal: composting, anaerobic digestion, incineration, pyrolysis, gasification and landfills.	
IV	Integrated waste management and Policies: Impact of solid waste on environment, human and plant health. Integrated waste management: concept and importance; waste management hierarchy; Solid Waste Management Rules 2016; Swachh Bharat Mission 2014; Vocational aspects of waste management.	
V*	**Practical's** 1. Estimate the moisture content and specific weight of solid waste sample 2. Collection, segregation and measurement of waste into biodegradable and non-biodegradable waste 3. Classification of household waste into different components 4. Survey your locality and identify different methods of handling, separation and storage household solid waste. 5. Survey your locality and identify different methods of waste	02 hours/ week

	disposal.	

Suggested Evaluation Methods

Internal Assessment:	**End Term Examination:**
➢ **Theory** • Class Participation: 05 marks • Seminar/presentation/assignment/quiz/class test etc.: 05 marks • Mid-Term Exam: 10 marks ➢ **Practicum** • Class Participation: NA • Demonstration/Viva-voce/Lab records etc.: 10 marks • Mid-Term Exam: NA	Theory: 50 marks (Written exam) Practical: 20 marks (Demonstration/Viva-voce/Lab records etc)

Part C-Learning Resources

Suggested Readings:

1. Kumar, S. (2009). *Solid Waste Management*, Northern Book Centre New Delhi.
2. Ramchandra, T.V. (2009), *Management of Municipal Solid Waste*, TERI Press, the Energy and Resource Institute, Lodhi Road New Delhi.
3. Singh J. and Ramanathan A.L. (2010). *Solid Waste Management: Present and Future Challenges,* International Publishing House Pvt. Ltd. New Delhi.
4. Muthuraman L. and Ramaswamy S. (2018). *Solid Waste Management*, MJP Publishers Chennai.

*Applicable for courses having practical component.

DSE-1

Session: 2023-24			
Part A - Introduction			
Subject	Environmental Science		
Semester	SEMESTER-4		
Name of the Course	**Liquid Waste Management**		
Course Code	**B23-EVS-405**		
Course Type: (CC/MCC/MDC/CC-M/DSEC /VOC/DSE/PC/AEC/VAC)	**DSE**		
Level of the course (As per Annexure-I	200-199		
Pre-requisite for the course (if any)	NA		
Course Learning Outcomes (CLOs):	After completing this course, the learner will be able to: 1: Understand the sources, types, and health importance of liquid waste. 2: Obtain basic knowledge of waste water collection and transport. 3: Understand the working principles of different types of wastewater treatment. 4: Learn about storm water and sludge management. 5*. To acquire practical knowledge about liquid waste characteristics.		
Credits 4	Theory	Practical	Total
	3	1	4
Contact Hours	3	2	5
Max. Marks: 100 **Internal Assessment Marks: 30** (Theory 20 +Practical 10) **End Term Exam Marks: 70** (Theory 50 + Practical 20)		**Time: 3hours**	
Part B- Contents of the Course			
Instructions for Paper- Setter			

For final theory exam time allowed will be of 3 hours and nine questions will be set. Question No.1 (objective/short answer type) covering the entire syllabus, will be compulsory. The remaining eight questions will be set unit-wise with two questions from each Unit. The candidates will be required to attempt Q.No.1 and any four, selecting one question from each unit. All the questions will carry equal marks.

Unit	Topics	Contact Hours
I	Sources, types and quantities of liquid waste; health importance of liquid waste: diseases associated to excreta and their transmission; characteristics of wastewater and sewage.	03 hours/ week
II	Wastewater collection: Septic tanks, Seepage pits, Cesspools. Conveyance of liquid wastes: small bore grey water drainage system, simplified sewer system conventional piped sewer system, and septage transport; ISI tolerance limits for discharging treated waste water and treated sewage water and industrial effluents into surface water, into public sewers and on to land for irrigation.	
III	Liquid waste treatment: Primary treatment: sedimentation, coagulation and flocculation, filtration; Secondary treatment: aerobic and anaerobic treatment; activated sludge process, rotationg biological filters; Tertiary treatment: nitrification and denitrification processes, phosphorous removal.	
IV	Advanced waste water treatment: ion exchange, electro-dialysis, reverse osmosis, and ultra filtration. Disinfection of water: different types of disinfectants. Sludge management: dewatering, sludge stabilization, and sludge drying beds. Storm water management. Excreta and waste water management in disaster situations. Gobar Dhan scheme.	
V*	**Practical's** 1. To analyze the pH and EC of inlet sewage water samples. 2. To analyze the pH and EC of outlet sewage water samples. 3. To analyze the BOD of inlet sewage water samples. 4. To analyze the BOD of outlet sewage water samples. 5. To calculate the efficiency of sewage treatment plant based on given data.	02 hours/ week
Suggested Evaluation Methods		

Internal Assessment:	**End Term Examination:**
➢ **Theory** • Class Participation: 5 marks • Seminar/presentation/assignment/quiz/class test etc.: 5 marks • Mid-Term Exam: 10 marks ➢ **Practicum** • Class Participation: NA • Demonstration/Viva-voce/Lab records etc.: 10 marks • Mid-Term Exam: NA	Theory: 50 marks (Written exam) Practical: 20 marks (Demonstration/Viva-voce/Lab records etc)

Part C-Learning Resources

Suggested Readings:

1. Metcalf and Eddy. (1995). *Waste water Engineering – Collection, Treatment, Disposal and Reuse*. McGraw Hill Pub. Co.
2. Rao, M.N. & Dutta, A.K. (1982). *Waste Water Treatment*. 3rd Edition, IBH Publishers,
3. A. K. De. (2019). *Environmental Chemistry*. New Age International Publishers, Publisher
4. Manahan, S.E. (2000). *Environmental Chemistry*. Seventh Edition. Lewis Publishers, New York.

*Applicable for courses having practical component.

ANNEXURE-I

Levels of Courses

Levels of Courses: Courses shall be coded based on the learning outcomes, level of difficulty, and academic rigor. The coding structure is as follows:

0-99: Pre-requisite courses required to undertake an introductory course which will be a pass or fail course with no credits. It will replace the existing informal way of offering bridge courses that are conducted in some of the colleges/ universities.

100-199: Foundation or introductory courses that are intended for students to gain an understanding and basic knowledge about the subjects and help decide the subject or discipline of interest. These courses may also be prerequisites for courses in the major subject. These courses generally would focus on foundational theories, concepts, perspectives, principles, methods, and procedures of critical thinking in order to provide a broad basis for taking up more advanced courses. These courses seek to equip students with the general education needed for advanced study, expose students to the breadth of different fields of study; provide a foundation for specialized higher-level coursework; acquaint students with the breadth of (inter) disciplinary fields in the arts, humanities, social sciences, and natural sciences, and to the historical and contemporary assumptions and practices of vocational or professional fields; and to lay the foundation for higher level coursework.

200-299: Intermediate-level courses including subject-specific courses intended to meet the credit requirements for minor or major areas of learning. These courses can be part of a major and can be pre-requisite courses for advanced-level major courses.

300-399: Higher-level courses which are required for majoring in a disciplinary/interdisciplinary area of study for the award of a degree.

400-499: Advanced courses which would include lecture courses with practicum, seminar-based course, term papers, research methodology, advanced laboratory experiments/software training, research projects, hands-on-training, internship/apprenticeship projects at the undergraduate level or First year Postgraduate theoretical and practical courses.

500-599: Courses at first-year Master's degree level for a 2-year Master's degree programme

600-699: Courses for second-year of 2-year Master's or 1-year Master's degree programme

700 -799 & above: Courses limited to doctoral students

KURUKSHETRA UNIVERSITY KURUKSHETRA

("A+" Grade Accredited by NAAC)

Scheme of VAC-2 course for

Under-Graduate Programme

(Subject: Environmental Science)

Under Multiple Entry-Exit, Internship and CBCS-LOCF in accordance to NEP-2020 w.e.f. 2023-24 (in phased manner)

INSTITUTE OF ENVIRONMNETAL STUDIES,
KURUKSHETRA UNIVERSITY, KURUKSHETRA
Scheme of VAC course Subject: Environmental Science for Under-Graduate Programme Under Multiple Entry-Exit, Internship and CBCS-LOCF in accordance to NEP-2020 w.e.f. 2023-24 (in phased manner)

FIRST YEAR: SEMESTER-1/ SEMESTER-2									
Remarks	**Course**	**Paper(s)**	**Nomenclature of Paper**	**Credits**	**Hours/ Week**	**Internal marks**	**External Marks**	**Total Marks**	**Exam Duration**
Scheme A, B & C	**VAC 2 credit**	B23-VAC-201	Environmental Studies	2	2	15	35	50	3 hrs.

VAC 2 B23-VAC-201

Session: 2023-24			
Part A - Introduction			
Subject	Environmental Science		
Semester	I/ II		
Name of the Course	**Environmental Studies**		
Course Code	**B23-VAC-201**		
Course Type: (CC/MCC/MDC/CC-M/DSEC /VOC/DSE/PC/AEC/VAC)	**VAC**		
Level of the course (As per Annexure-I	100-199		
Pre-requisite for the course (if any)	NA		
Course Learning Outcomes (CLO):	After completing this course, the learner will be able to: 1. Understand the concept of environmental studies, sustainable development and ecosystem. 2. Learn about the various natural resources and about biodiversity and its conservation. 3. Know about the types of pollution, solid waste management, global environmental issues and environmental laws. 4. Understand the concept of population growth and its impacts on environment and disaster management. 5. Get knowledge about the environment, its problems, impacts and solutions.		
Credits	Theory	Practical	Total
	2	NA	2
Contact Hours	2	NA	2
Max. Marks: 50 **Internal Assessment Marks:** 15 **End Term Exam Marks:** 35		**Time:** 2 hours	
Part B- Contents of the Course			

Instructions for Paper- Setter

Total number of questions set will be nine. Questions no. 1 is compulsory covering the entire syllabus. Two questions will be set from each unit. Students have to attempt five questions in all, selecting one question from each unit including the compulsory question. Each question is of 7 marks. All questions carry equal marks. Final theory exam time allowed will be of 3 hours.

Unit	Topics	Contact Hours
I	**Introduction to environmental studies:** Multidisciplinary nature of environmental studies; Scope and importance; Concept of sustainability and sustainable development. **Ecosystems:** Definition, structure and function of ecosystem; Energy flow in an ecosystem: food chains, food webs, Major ecosystems types: Forest ecosystem, Grassland ecosystem, Desert ecosystem and Aquatic ecosystem (lakes, rivers, oceans).	02 hours/week
II	**Natural resources: Renewable and Non- renewable Resources** Land resources: Land degradation and soil erosion. Forest resources: Importance of forests, deforestation: causes and impacts on environment. Water resources: Use and over- exploitation of surface and ground water. Energy resources: Renewable and non- renewable energy sources. **Biodiversity and Conservation:** Definition and its types, Endangered and endemic species of India. Threats to biodiversity: Habitat loss, poaching of wildlife, man- wildli conflicts, biological invasions; Conservation of biodiversity: In-situ ar Ex- situ conservation of biodiversity. Ecosystem and biodiversity services: Ecological, economic, social, ethical, aesthetic and informational values.	
III	**Environmental pollution** Environmental pollution: types, causes, effects and controls; Air, water, soil and noise pollution. Solid waste management: Sources, methods of disposal: Landfill, incineration and composting. Climate change, global warming, ozone layer depletion, acid rain and impacts on human communities and agriculture. **Environmental Policies & Practices** Environmental laws: Environment (Protection) Act, 1986, Air	

	(Prevention & Control of Pollution) Act, 1981, Water (Prevention and control of Pollution) Act, 1974.	
IV	**Human Communities and the Environment:** Human population growth: Impacts on environment, human health and welfare. Resettlement and rehabilitation of project affected person. Disaster management: floods, earthquake, cyclones, landslides and drought. Environmental ethics: Role of Indian and other religions and cultures in environmental conservation.	

Suggested Evaluation Methods

Internal Assessment:15 marks ➢ **Theory** • Class Participation: 4 marks • Seminar/presentation/assignment/quiz/class test etc.: 4marks • Mid-Term Exam: 7 marks	**End Term Examination:** Theory: 35 marks (Written exam)

Part C-Learning Resources

Recommended Books/e-resources/LMS:

1. Kaushik, A & Kaushik, C.P. 2022. Perspectives in Environmental Studies. New Age International Pvt Ltd, New Delhi.
2. Bharucha, E. 2021. A Textbook of Environmental Studies for Undergraduate Courses, Orient Blackswan Pvt Ltd.
3. Goswami, P., Mandal, J. & Singh, S. 2022. A Textbook on Environmental Studies, Ashok book stall, Assam.
4. Joshi, P.C. & Joshi, N. 2009. A Text Book of Environmental Science. APH Publishing Corporation.
5. Basu, M. & Xavier Savarimuthu, S.J. 2017. Fundamentals of Environmental Studies. Cambridge University Press.
6. Singh, R.P. & Islam, Z. 2012. Environmental Studies. Concept Publishing Company.

KURUKSHETRA UNIVERSITY KURUKSHETRA

("A+" Grade Accredited by NAAC)

Scheme of SEC-215, SEC-218, SEC-317

courses for

Under-Graduate Programme

(Subject: Environmental Science)

Under Multiple Entry-Exit, Internship and CBCS-LOCF in accordance to NEP-2020w.e.f. 2023-24 (in phased manner)

INSTITUTE OF ENVIRONMNETAL STUDIES,
KURUKSHETRA UNIVERSITY, KURUKSHETRA
Scheme of SEC courses Subject: Environmental Science for Under-Graduate Programme
Under Multiple Entry-Exit, Internship and CBCS-LOCF in accordance to NEP-2020
w.e.f. 2023-24 (in phased manner)

SECOND YEAR: SEMESTER-4									
Remarks	**Course**	**Paper(s)**	**Nomenclature of Paper**	**Credits**	**Hours/ Week**	**Internal marks**	**External Marks**	**Total Marks**	**Exam Duration**
Scheme A, B & C	**SEC 4 credit**	B23-SEC-215	Food Waste and By-Product Utilization	2	2	15	35	50	3 hrs.
			Practical	1	2	5	20	25	4 hrs.
Scheme A, B & C	**SEC 4 credit**	B23-SEC-218	Environmental Auditing	2	2	15	35	50	3 hrs.
			Practical	1	2	5	20	25	4 hrs.
Scheme A, B & C	**SEC 4 credit**	B23-SEC-317	Waste Management Techniques	2	2	15	35	50	3 hrs.
			Practical	1	2	5	20	25	4 hrs.

B23-SEC-215

Session: 2023-24	
Part A - Introduction	
Subject	Life Science
Semester	IV
Name of the Course	**Food Waste and By-Product Utilization**
Course Code	**B23-SEC-215**
Course Type: (CC/MCC/MDC/CC-M/DSEC/ VOC/DSE/PC/AEC/VAC)	**SEC**
Level of the course (As per Annexure-I	Intermediate-level
Pre-requisite for the course (if any)	
Course Learning Outcomes(CLO):	After the successful completion of course, the students will be able to 1. Understand the concept of food waste and its impact on the environment, economy, and society. 2. Explore different techniques and technologies for food waste management and reduction 3. Understand sustainable strategies for utilizing food waste and by-products to create value-added products. 4. Understand various applications of food waste by-products.
5* Apply theoretical knowledge to practical scenarios related to food waste and by-product utilization	

Credits	Theory	Practical	Total
	2	1	3
Contact Hours (per week)	2	2	4
Max. Marks: 75 **Internal Assessment Marks: 20** (Theory 15 +Practical 05) **End Term Exam Marks: 55** (Theory 35 + Practical 20)		**Time: 3 Hours**	

Part B- Contents of the Course

Instructions for Paper- Setter

For final theory exam time allowed will be of 3 hours and nine questions will be set. Question No.1 (objective/short answer type) covering the entire syllabus, will be compulsory. The remaining eight questions will be set unit-wise with two questions from each Unit. The candidates will be required to attempt Q.No.1 and any four, selecting one question from each unit. All the questions will carry equal marks.

Unit	Topics	Contact Hours
I	Introduction to Food Waste: Definition and types of food waste; Environmental, economic, and social impacts of food waste; Food waste throughout the supply chain; Factors Contributing to Food Waste; Post-harvest losses and storage challenges; Retail and consumer-related food waste; Food waste in foodservice establishments and restaurants	3 hours/week
II	Food Waste Management and Reduction: Source reduction strategies; Food donation and redistribution programs; Composting and anaerobic digestion; Innovative technologies for food waste reduction	
III	Overview of by-product utilization; Extraction of bioactive compounds from food waste; Conversion of food waste into biofuels and energy; Recovery of value-added materials from food waste	
IV	Applications of Food Waste By-Products; Food industry applications (e.g., food additives, functional ingredients); Animal feed and pet food production; Fertilizer and soil amendment production; Waste-to-packaging concepts; Policy frameworks and regulations	
V*	1. To conduct an on-campus food waste audit 2. To study the process of composting to convert food waste to compost. 3.To study the process of anaerobic digestion to convert food waste	2 hours/week

	to biogas. 4.To study a successful food waste and by-product utilization project. 5.To visit a local food processing industry and prepare a report.	
Suggested Evaluation Methods		
Internal Assessment: ➢ **Theory** ● Class Participation: 4 marks ● Seminar/presentation/assignment/quiz/class test etc.: 4 marks ● Mid-Term Exam: 7 marks ➢ **Practicum** ● Class Participation: NA ● Seminar/Demonstration/Viva-voce/Lab records etc.: 5 marks ● Mid-Term Exam:NA		**End Term Examination:** Theory: 35 marks (Written exam) Practical: 20 marks (Demonstration/Viva-voce/Lab records etc)
Part C-Learning Resources		
Recommended Books/e-resources/LMS: 1. Subbulakshmi, G., Udipi, S.A. and Ghurge, P.S. 2021. Food Processing and Preservation. New Age International Private Limited 2. Westendorf, M. L. 2007. Food Waste to Animal Feed. John Wiley (WSE & Wiley India). 3. Arvanitoyannis, I.S. 2008. Waste Management for the Food Industries (Food Science and Technology). Academic Press Inc. 4. Joshi, V. K. and Sharma, S. K. 2011. Food Processing waste Management. New India Publishing Agency 5. Waldron, K. 2007. Handbook of Waste Management and Co-Product Recovery in Food Processing. Woodhead Publishing Limited, Cambridge, England		

*Applicable for courses having practical component.

B23-SEC-218

Session: 2023-24			
Part A - Introduction			
Subject	Life Science		
Semester	IV		
Name of the Course	**Environmental Auditing**		
Course Code	**B23-SEC-218**		
Course Type: (CC/MCC/MDC/CC-M/DSEC /VOC/DSE/PC/AEC/VAC)	**SEC**		
Level of the course (As per Annexure-I	Intermediate-level		
Pre-requisite for the course (if any)			
Course Learning Outcomes(CLO):	After completing this course, the learner will be able to: 1. To have knowledge of the origin, scope and requisites of the environmental audit. 2. To develop understanding about the environmental audit process. 3. To understand the basis of environmental audit in India. 4. To describe career aspects in environmental audit. _____ 5*. To apply the knowledge after studying various theoretical aspects of environmental audit in maintaining a sustainable environment.		
Credits	Theory	Practical	Total
	2	1	3
Contact Hours (per week)	2	2	4
Max. Marks: 75 **Internal Assessment Marks: 20** (Theory 15 +Practical 05) **End Term Exam Marks: 55** (Theory 35 + Practical 20)		**Time: 3 Hours**	
Part B- Contents of the Course			

Instructions for Paper- Setter

For final theory exam time allowed will be of 3 hours and nine questions will be set. Question No.1 (objective/short answer type) covering the entire syllabus, will be compulsory. The remaining eight questions will be set unit-wise with two questions from each Unit. The candidates will be required to attempt Q.No.1 and any four, selecting one question from each unit. All the questions will carry equal marks.

Unit	Topics	Contact Hours
I	Environmental Audit: Definition; Historical background - International and Indian. Objectives andscope; Benefits for sustainable development. Importance of environmental audit for the public, industries and the governments.	03 hours/week
II	GOI Notification on Environmental Audit - The Environment (Protection) Act, 1986; EIA notification 2006 - Prior EC requirements, authority and committees, categorisation of projects and activities require EC.	
III	Component of environmental audit, stages in the EIA. Appraisal process, application structure of EIA documents - ToR, different forms. Validity of EC, Post-EC monitoring.	
IV	Need of public hearing in EIA, methods of public hearing. Environmental auditing firms, industry good practices to maintain a healthy environment, vocational aspects of environmental audit.	
V*	1. Environmental auditing of a new township project - a case study. 2. Public participation in the EIA process - a sand mining project as a case study. 3. Environmental audit in India - a MoEF&CC owned environmental clearance portal as a case study. 4. Raising FAR in a building project - through different methods of raising environmental performance. 5. Different environmental audit institutions in India.	02 hours/week
Suggested Evaluation Methods		

Internal Assessment: ➢ **Theory** ● Class Participation: 4 marks ● Seminar/presentation/assignment/quiz/class test etc.: 04 marks ● Mid-Term Exam: 07 marks ➢ **Practicum** ● Class Participation: NA ● Seminar/Demonstration/Viva-voce/Lab records etc.: 5 marks ● Mid-Term Exam: NA	**End Term Examination:** Theory: 35 marks (Written exam) Practical: 20 marks (Demonstration/Viva-voce/Lab records etc)

Part C-Learning Resources

Recommended Books/e-resources/LMS:

1. Shrivastava, A. K. (2003). Environmental auditing. 1st Ed., APH Publishing.
2. Pathak, H. (2015). Environmental Audit. 1st Ed., Createspace Independent Publications.

*Applicable for courses having practical component.

B23-SEC-317

Session: 2023-24			
Part A - Introduction			
Subject	Life Science		
Semester	IV		
Name of the Course	**Waste Management Techniques**		
Course Code	**B23-SEC-317**		
Course Type: (CC/MCC/MDC/CC-M/DSEC/VOC/DSE/PC/AEC/VAC)	**SEC**		
Level of the course (As per Annexure-I	Intermediate-level		
Pre-requisite for the course (if any)			
Course Learning Outcomes(CLO):	After completing this course, the learner will be able to: 1. Identify various types of wastes and their sources 2. Understand the sanitary landfill and other disposal method for solid waste. 3. Understand the treatment methods for waste water. 4. Examine the role of biotechnology in reduction of different waste. 5*. To compare the different waste treatment techniques and suggest for better environment.		
Credits	Theory	Practical	Total
	2	1	3
Contact Hours (per week)	2	2	4
Max. Marks: 75 **Internal Assessment Marks: 20** (Theory 15 +Practical 05) **End Term Exam Marks: 55** (Theory 35 + Practical 20)		**Time: 3 Hours**	
Part B- Contents of the Course			
Instructions for Paper- Setter			

For final theory exam time allowed will be of 3 hours and nine questions will be set. Question No.1 (objective/short answer type) covering the entire syllabus, will be compulsory. The remaining eight questions will be set unit-wise with two questions from each Unit. The candidates will be required to attempt Q.No.1 and any four, selecting one question from each unit. All the questions will carry equal marks.

Unit	Topics	Contact Hours
I	Waste: Classification, generations and characterization. Basic aspects of Solid waste management generation; on-site handling, storage and processing; collection of solid wastes; transfer and transport; processing techniques; ultimate disposal. Hazardous waste –Definition, sources, effects, disposal and management techniques. Physical, chemical, physico-chemical treatment, and thermal treatment;-Solidification, chemical fixation, encapsulation, pyrolysis and incineration. Biomedical wastes – Definition, categories, and management, E-waste: Sources and management	03 hours/week
II	Disposal of Solid waste: sanitary land filling – site selection, design and operation of sanitary landfills – Leachate collection & treatment. Secure land filling. Incineration: Mass burn, Rotatory Kiln, Fluidized Bed incinerator, liquid injection incinerator, Waste gas flare incinerator, fixed grate incinerators, Plasma Pyrolysis. Composting, vermicomposting.	
III	Principles of Industrial waste treatment - sources of pollution physical chemical, organic and biological properties. Manufacturing processes, flow sheets, characteristics and composition of wastes including waste reduction, treatment and disposal methods for Food Industries: Sugar, Fermentation, Material Industries: Paper, Steel - Metal - plating and petroleum refineries.	
IV	Role of Biotechnology in waste minimization; Recovery of by-products and raw material from wastewater conversion: waste recovery and reuse, reclamation by ground water recharge, agriculture reuse of effluent; sludge as fertilizer; biomass for energy, metal recovery, bioscrubbing. Biological Treatment Biological methods for waste processing: Biomethanation, Biodeisel, Biohydrogen.	

V*	1. To study about the various sources of solid waste generation in the locality. 2. To study about the categories of hazardous waste . 3. To study about the sanitary land fill management –case study 4. To estimate the BOD_5 and COD of the waste water. 5. To study about the working of Sewage treatment plant-case study.	02 hours/week
Suggested Evaluation Methods		
Internal Assessment: ➢ **Theory** ● Class Participation: 04 marks ● Seminar/presentation/assignment/quiz/class test etc.: 04 marks ● Mid-Term Exam: 07 marks ➢ **Practicum** ● Class Participation: NA ● Seminar/Demonstration/Viva-voce/Lab records etc.: 05 marks ● Mid-Term Exam: NA		**End Term Examination:** Theory: 35 marks (Written exam) Practical: 20 marks (Demonstration/Viva-voce/Lab records etc)
Part C-Learning Resources		
Recommended Books/e-resources/LMS: 3. Crites R.W., Reed S.C. and Bastion R. (2000). Land Treatment Systems for Municipal & Industrial Wastes. McGraw Hill Companies Inc. 4. Eckenfelder W.W. (Jr.) (1966). Industrial Water Pollution Control. McGraw Hill Publications. 5. Bhatia S.C. (2007). Solid and Hazardous Waste Management, Nice Printing Press, Delhi. 6. Singh, J.S., Singh, S.P. and Gupta, S.R. (2015). Ecology, Environment and Resource Conservation, S. Chand Publishing, New Delhi. 7. Sidwick J.M and Holdom R.S. (1987). Biotechnology waste treatment and exploitation, Ellis horwood limited, England.		

*Applicable for courses having practical component.

Kurukshetra University, Kurukshetra

Scheme of Examination UG Programme (Interdisciplinary): Scheme D

Subject: Bachelor of Physical Education, Health Education and Sports Science

as per NEP 2020 Curriculum Framework for Undergraduate Programme (Multiple Entry-Exit, Internships and Choice Based Credit System implemented form session 2023-24.

SEMESTER	Type of Course	COURSE CODE	PAPER/TITLE	CREDITS			Contact Hours (T+P)	Max. Marks				
				Theory	Practical	Total		Theory		Practical		Total
								External	Internal	External	Internal	
1	Core Course - 1	23-BPE-101	History and Foundation of Physical Education	3	1	4	5 (3+2)	50	20	20	10	100
	Core Course - 2	23-BPE-102	Heath Education	3	1	4	5 (3+2)	50	20	20	10	100
	Core Course - 3	23-BPE-103	Basic Anatomy and Physiology	3	1	4	5 (3+2)	50	20	20	10	100
	Core Course Minor - 1	23-BPE-104	Olympics Movement	2	0	2	2	35	15	-	-	50
	Multidisciplinary Courses (MDC) - 1	Course from Pool of Courses Available in College/Institute										
	Ability Enhancement Courses (AEC) - I	Course from Pool of Courses Available in College/Institute										
	Skill Enhancement Courses (SEC) - I	Course from Pool of Courses Available in College/Institute										
	Value Added Course – 1	B-23- VAC-101	Human Values and Ethics	2	0	2	2	35	15	-	-	50
2	Core Course - 4	23-BPE-201	Exercise Physiology	3	1	4	5 (3+2)	50	20	20	10	100
	Core Course - 5	23-BPE-202	Sports Psychology	3	1	4	5 (3+2)	50	20	20	10	100
	Core Course - 6	23-BPE-203	Sports Nutrition	3	1	4	5 (3+2)	50	20	20	10	100

	Core Course Minor - 2	**23-BPE-204**	**Asian and Commonwealth Games**	1	1	2	3 (1+2)	20	10	15	5	50
	Multidisciplinary Courses (MDC) - 2	**Course from Pool of Courses Available in College/Institute**										
	Ability Enhancement Courses (AEC) - 2	**Course from Pool of Courses Available in College/Institute**										
	Skill Enhancement Courses (SEC) - 2	**Course from Pool of Courses Available in College/Institute**										
	Value Added Course - 2	**B-23- VAC-201**	**Environment Studies**	2	0	2	2	35	15	-	-	50
Internship of 4 credits of 4-6 weeks duration after 2nd semester												
3	**Core Course - 7**	**23-BPE-301**	**History and Foundation of Physical Education**	3	1	4	5 (3+2)	50	20	20	10	100
	Core Course - 8	**23-BPE-302**	**Heath Education**	3	1	4	5 (3+2)	50	20	20	10	100
	Core Course - 9	**23-BPE-303**	**Basic Anatomy and Physiology**	3	1	4	5 (3+2)	50	20	20	10	100
	Core Course Minor - 3	**23-BPE-304**	**Athletics – Track Events and Road Races**	3	1	4	5 (3+2)	50	20	20	10	100
	Multidisciplinary Courses (MDC) - 3	**Course from Pool of Courses Available in College/Institute**										
	Ability Enhancement Courses (AEC) - 3	**Course from Pool of Courses Available in College/Institute**										
	Skill Enhancement Courses (SEC) - 3	**Course from Pool of Courses Available in College/Institute**										
4	**Core Course - 10**	**23-BPE-401**	**Physical Fitness**	3	1	4	5 (3+2)	50	20	20	10	100
	Core Course - 11	**23-BPE-402**	**Sports Sociology**	3	1	4	5 (3+2)	50	20	20	10	100
	Core Course - 12	**23-BPE-403**	**Organization and Administration**	3	1	4	5 (3+2)	50	20	20	10	100
	Core Course Minor - 4 (V)	**Course from Pool of Courses Available in College/Institute**										
	Ability Enhancement Courses (AEC) - 4	**Course from Pool of Courses Available in College/Institute**										
	Value Added	**Course from Pool of Courses Available in College/Institute**										

	Course - 3											
Internship of 4 credits of 4-6 weeks duration after 4th semester												
5	**Core Course - 13**	**23-BPE-501**	**Sports Training**	3	1	4	5 (3+2)	50	20	20	10	100
	Core Course - 14	**23-BPE-502**	**Kinesiology**	3	1	4	5 (3+2)	50	20	20	10	100
	Core Course - 15	**23-BPE-503**	**Sports Management**	3	1	4	5 (3+2)	50	20	20	10	100
	Core Course Minor- 5 (V)	**23-BPE-504**	**Stress Management**	3	1	4	5 (3+2)	50	20	20	10	100
	Internship of 4 Credits											
6	**Core Course - 16**	**23-BPE-601**	**Measurement and Evaluation**	3	1	4	5 (3+2)	50	20	20	10	100
	Core Course - 17	**23-BPE-602**	**Biomechanics**	3	1	4	5 (3+2)	50	20	20	10	100
	Core Course - 18	**23-BPE-603**	**Officiating and Coaching**	3	1	4	5 (3+2)	50	20	20	10	100
	Core Course Minor- 6	**23-BPE-604**	**Posture and Athletic Care**	3	1	4	5 (3+2)	50	20	20	10	100
	Core Course Minor- 7	**23-BPE-605**	**Sports Journalism**	3	1	4	5 (3+2)	50	20	20	10	100

1st Semester (Bachelor of Physical Education, Health Education and Sports Science)
(According to NEP2020 from Session 2023 - 24)

Core Course - 1

Part A - Introduction			
Subject:	**Physical Education, Health Education and Sports Science**		
Semester	**1st Semester**		
Name of the Course	**History and Foundation of Physical Education**		
Course Code	**23-BPE-101**		
Course Type:	**Core Course - 1**		
Level of the Course	100-199		
Pre-requisite (if any)	12th pass from any streams (Arts/Science/ Commerce) preferable with Sports Background. It is open for all.		
Course Learning Outcomes (CLO):	After completing this course, the learner will be able to: 1. Describe the Aims, Objectives and scope of Physical Education. 2. Explain the historical development of Physical Education in India 3. Illustrate the basic knowledge of biological aspects of Physical Education 4. Tell the various Career opportunities in Physical Education and Sports.		
	5. Know the basic specifications of court/ground, general rules and demonstrate the basic skills of Kho Kho and Badminton.		
Credits	**Theory**	**Practical**	**Total**
	3	1	4
Contact Hours	3 hours per week	2 hours per week (Size of practical group = 20 students)	5
Max. Marks: 100 **Part I - Theory = 70** **(Internal Assessment - 20 Marks + End Term Exam – 50 Marks)** **Part II - Practical = 30** **(Internal Assessment - 10 Marks + End Term Exam – 20 Marks)**		Time: 3 Hours **For End Term Exam**	

Part B- Content of the Course

Instructions for Paper- Setter:

The question paper will consist of Five Units I, II, III, IV and V. Units I, II, III & IV will have two questions from their respective Units of the Syllabus and will carry 10 marks each. Unit Vth will consist of 5 short answer type questions, which will cover the entire syllabus and will carry 2 marks for each question.

Unit	Topics	Contact Hours
I	**Introduction of Physical Education:** • Meaning and definition of Physical Education • Relationship of Physical Education with Health and General Education • Aim and Objectives Physical Education • Scope of Physical Education. • Need of Physical Education in modern society. • Misconceptions regarding Physical Education. • Physical Education as Arts or Science	12

II	**History of Physical Education in India:** • Physical Education during Indus Valley Civilization (3250 BC – 2500 BC) • Physical Education during Vedic period (2500 BC – 600 BC) • Physical Education during Early Hindu Period (600 BC – 320 A.D) • Physical Education during Later Hindu Period (320 A.D – 1000 A.D) • Physical Education during Medieval Period (1000 A.D – 1757 A.D) • Physical Education during British Period (Till 1947) • Physical Education during After Independence	12
III	**Biological Basis of Physical Education:** • Meaning of Growth and Development • Meaning of Chronological Age, Anatomical age, Physiological age and Mental age • Principles of Growth and development • Difference between Growth and development • Factors affecting Growth and development • Growth and Development at various Levels of Childhood: Pre - Adolescence – Adolescence – Adulthood.	11
IV	**Career opportunities in Physical Education and Sports:** • Qualifications and responsibilities of Physical Education and Sports professionals at various levels of educational institutions. • Qualifications and responsibilities as Coach, Fitness Trainers, Yoga Instructors and others • Qualifications and responsibilities as sports Event Managers, Technical Officials, Researchers and others • Qualifications and responsibilities in Health Clubs and Fitness Centers, Aerobics, Dance & Recreation Clubs in Corporate Sectors and others. • Qualifications and responsibilities Sports Journalists, Commentators, Sports Photographers and Video Analysts • Career opportunities in various Central Govt, State Govt., Private Organizations and others • Career opportunities in Manufacturing and Marketing sectors. • Entrepreneurs opportunities in Physical Education and Sports.	10

Suggested Evaluation Methods:

Maximum Marks: 70 (Internal Assessment - 20 Marks + End Term Exam – 50 Marks)

Internal Assessment: 20 Marks Continuous ComprehensiveEvaluation (CCE): 20 Marks Class presentation = 5 Seminar/ Assignment/Quiz/class test, etc. = 5 Mid Term Test = 10	**End Term Exam: 50 Marks** **Time = 3 hrs** One question of 10 marks from each Units I to IV = 40 Marks. Five Questions short answer from entire syllabus = 5 × 2 Marks = 10 Marks**.**

Part II – Practical

(Internal Assessment - 10 Marks + External – 20 Marks)

Unit	Topics	Marks distribution	Contact Hours
I	**Kho - Kho:** Court specifications, general rules and basic skills	15 Marks	15
II	**Badminton:** Court specifications, general rules and basic skills	15 Marks	15

	Internal Assessment: 10 Marks Evaluation through Skill Test/ Assignments/ Quiz/ Viva Voce/ Practical Record File (5 Marks for Each Game)	**End Term Exam: 20 Marks** Evaluation through performance in Skill Test/ Demonstration/ Viva Voce/ Practical Record File (10 Marks for Each Game)

Part C-Learning Resources

- Suggested Readings:
- Baljit Singh (2009). Principles of Physical Education. New Delhi: Sports Publication.
- Bevinson Perinbaraj. S (2002). History of Physical Education. Karaikudi: Vinsi Publications. Bucher A.
- Charles. (1983). Foundations of Physical Education. St. Louis:Mosbyco.
- Charles A. Bucher. (1982). Foundations of Physical Education. USA: The C.V. Mosby company.
- Charles C. Cowell & William L. France.(1963). Philosophy and Principles of Physical Education. New Jersey: Prentice-Hall.
- Singh Ajmer et.al. Modern Text Book of Physical Education, Health and Sports, Kalyani Publishers, Ludhiana,(2010).
- Sharma, V.K, Health & Physical Education, Saraswati House Pvt. Ltd . Daryagani, New Delhi. (2013).
- Singh Ajmer et. al. Olympic Movement, Kalyani Publishers, Ludhiana, (2000).
- Kamlesh & Sangral, Principles & History of Physical Education, Parkash Brothers, Ludhiana.(2000).
- Bucher, C. A. (n.d.) Foundation of physical education. St. Louis: The C.V. Mosby Co. Deshpande, S. H. (2014).
- Mohan, V. M. Principles of physical education. Delhi: Metropolitan Book Dep. Nixon, E. E. & Cozen, F.W. (1969). An introduction to physical education. Philadelphia: W.B. Saunders Co.
- Pinto John and Roshan Kumar Shetty (2021) Introduction to Physical Education, Louis Publications, Mangalore.
- Amit Arjun Budhe, (2015) Career aspects and Management in Physical Education, Sports Publication, New Delhi
- Anand, R.L (1987) Play Field Manual, Patiala: NIS Publication.

1st Semester (Bachelor of Physical Education, Health Education and Sports Science)
(According to NEP2020 from Session 2023 - 24)

Core Course - 2

Part A - Introduction			
Subject:	**Physical Education, Health Education and Sports Science**		
Semester	**1st Semester**		
Name of the Course	**Health Education**		
Course Code	**23-BPE-102**		
Course Type	**Core Course - 2**		
Level of the Course	**100-199**		
Pre-requisite (if any)	12th pass from any streams (Arts/Science/ Commerce) preferable with Sports Background. It is open for all.		
Course Learning Outcomes (CLO):	After completing this course, the learner will be able to: 1. Describe the concept of Health and Health Education. 2. Explain the concept of Occupational Health 3. Illustrate the basic knowledge of various Communicable Diseases 4. Acquire basic knowledge about the Communicable Diseases		
	5. Able to calculate and analyze Blood pressure, BMI, Peak Expiratory Flow and Oxygen saturation level		
Credits	**Theory**	**Practical**	**Total**
	3	1	4
Contact Hours	3 hours per week	2 hours per week (Size of practical group = 20 students)	5
Max. Marks: 100 **Part I - Theory = 70** **(Internal Assessment - 20 Marks + End Term Exam – 50 Marks)** **Part II - Practical = 30** **(Internal Assessment - 10 Marks + End Term Exam – 20 Marks)**		Time: 3 Hours **For End Term Exam**	

Part B- Content of the Course

Instructions for Paper- Setter:

The question paper will consist of Five Units I, II, III, IV and V. Units I, II, III & IV will have two questions from their respective Units of the Syllabus and will carry 10 marks each. Unit Vth will consist of 5 short answer type questions, which will cover the entire syllabus and will carry 2 marks for each question**.**

Unit	Topics	Contact Hours
I	**Introduction of Health and Health Education:** • Meaning and definition of Health • Meaning and definition of Health Education • Objectives of Health Education • Dimensions of Health Education • Scope of Health Education • Principles of Health Education. • Need of Health Education in modern society.	12
II	**Occupational Health** • Meaning and definition of Occupational Health • Scope of Occupational Health • Principles of Occupational Health. • Scope of Occupational Health • Factors responsible for Occupational Health Hazards and Diseases: Physical Hazards, Chemical Hazards, Biological Hazards, Mechanical Hazards, Psycho – Social Hazards. • Occupational diseases caused by Physical and Chemical factors	10

III	**Communicable Diseases** • Meaning of Communicable Diseases • Name of various Communicable Diseases • Meaning, Causes, symptoms and Treatment of HIV/ AIDS • Meaning, Causes, symptoms and Treatment of Hepatitis A, B and C • Meaning, Causes, symptoms and Treatment of Tuberculosis and Chicken Pox • Meaning, Causes, symptoms and Treatment of COVID-19	12
IV	**Non - Communicable Diseases** • Meaning of Non-Communicable Diseases • Name of various Non-Communicable Diseases • Meaning, Causes, symptoms and Treatment of various types cardiovascular disease • Meaning, Causes, symptoms and Treatment of various types of Typhoid and Attention Deficit Hyperactivity Disorder (ADHD) • Meaning, Causes, symptoms and Treatment of Type I and Type II Diabetes • Meaning, Causes, symptoms and Treatment of Arthritis	11

Suggested Evaluation Methods:

Maximum Marks: 70 (Internal Assessment - 20 Marks + End Term Exam – 50 Marks)

Internal Assessment: Continuous ComprehensiveEvaluation (CCE): 20 Marks Class presentation = 5 Seminar/ Assignment/Quiz/class test, etc. = 5 Mid Term Test = 10	**End Term Exam: 50 Marks Time = 3 hrs** One question of 10 marks from each Units I to IV = 40 Marks. Five Questions short answer from entire syllabus = 5 × 2 Marks = 10 Marks**.**

Part II – Practical

(Internal Assessment - 10 Marks + External – 20 Marks)

Unit	Topics	Marks distribution	Contact Hours
I	BMI: Calculation of BMI, Categories of BMI	5 - Marks	7
II	Calculation of Peak Expiratory Flow with Spirometer, Analysis of Peak Expiratory Flow	5 - Marks	8
III	Measurement of Pulse Rate and Blood Pressure	5 - Marks	7
IV	Measurement of Oxygen Saturation level, its interpretation	5 - Marks	8
	Internal Assessment: 10 Marks Evaluation through Assignments/ Quiz/ Viva Voce/ Practical Record File (2.5 Marks for Each Unit)	**University Exam (UE): 20 Marks** Evaluation through Skill of handling the instrument / Demonstration/ Viva Voce/ Practical Record File (5 Marks for Each Unit)	

Part C-Learning Resources

Suggested Readings:

- Sharma, V.K, Health & Physical Education Saraswati House Pvt. Ltd . Daryaganj, New Delhi.(2013).
- Bucher Olsen and Willgoose; The Foundation of Health Prentice Hall inc. Englewood Fliffs, New Jersey,(1976).

- Turner S and Smith, School Health and Health Education, The C.V. Mos by Company St.Loius (1961).
- Singh Ajmer et.al. Modern Text Book of Physical Education, Health and Sports, Kalyani Publishers, Ludhiana, (2010).
- Kang G.S. Deol N.S. An introduction to Health and Physical Education 21st century. Patiala (2008).
- Verma, K.K., “Health & Physical Education” Parkash Brothers, Ludhiana, 2015

1st Semester (Bachelor of Physical Education, Health Education and Sports Science)
(According to NEP2020 from Session 2023 - 24)

Core Course – 3

Part A - Introduction			
Subject:	**Physical Education, Health Education and Sports Science**		
Semester	**2nd Semester**		
Name of the Course	**Basic Anatomy and Physiology**		
Course Code	**23-BPE-103**		
Course Type:	**Core Course - 3**		
Level of the Course	100-199		
Pre-requisite (if any)	12th pass from any streams (Arts/Science/ Commerce) preferable with Sports Background. It is open for all.		
Course Learning Outcomes (CLO):	After completing this course, the learner will be able to: 1. Describe the Anatomy, Physiology and structure of Cells. 2. Explain the structure of Joints and Muscular System 3. Illustrate the basic knowledge about Anatomy, Physiology of Circulatory and Digestive Systems of human body 4. Explain the Anatomy, Physiology of Respiratory and Excretory Systems of human body		
	5. Identify name and locations of bones, muscles and organs of various systems of human body.		
Credits	**Theory**	**Practical**	**Total**
	3	1	4
Contact Hours	3 hours per week	2 hours per week (Size of practical group = 20 students)	5
Max. Marks: 100 **Part I - Theory = 70** **(Internal Assessment - 20 Marks + End Term Exam – 50 Marks)** **Part II - Practical = 30** **(Internal Assessment - 10 Marks + End Term Exam – 20 Marks)**		Time: 3 Hours **For End Term Exam**	

Part B- Content of the Course

Instructions for Paper- Setter:

The question paper will consist of five Units I, II, III, IV and V. Units I, II, III & IV will have two questions from their respective Units of the Syllabus and will carry 10 marks each. Unit Vth will consist of 5 short answer type questions, which will cover the entire syllabus and will carry 2 marks for each question.

Unit	Topics	Contact Hours
I	**Introduction of Anatomy and Physiology** • Meaning and Definition of Anatomy and Physiology. • Importance of Anatomy and Physiology in Physical Education and sports • Cell: Structure, Properties and functions • Meaning of Cell, Tissues, Organs and System. • Bone: Meaning and types • Skeletal System: Structure and functions of Skeletal System. • Axial and Appendicular Skeleton	12

II	**Joints and Muscular System** • Meaning of Joints, Types of Joints • Types of Synovial Joints present in human body • Meaning of Muscle, Types of muscles present in human body • Gross Structure of Skeletal Muscle, • Structural Classification of Skeletal muscles.	11
III	**Circulatory System and Digestive System** • Constituents of blood and Function of blood • Structure of the heart • Types of Blood Circulation: Systemic, Pulmonary and Coronary • Organs of Digestive System • Structure and functions of the digestive system, • Process of Food absorption, Name and functions of various digestive juices and enzymes	12
IV	**Respiratory System and Excretory System** • Organs of Respiratory system and their functions. • Structure of Respiratory system • Exchange of gases in the lungs and tissues • Organs of Excretory System: kidneys and skin • Parts and Functions of the urinary system • Structure and functions of Skin.	10

Suggested Evaluation Methods:

Maximum Marks: 70 (Internal Assessment - 20 Marks + End Term Exam – 50 Marks)

Internal Assessment: 20 Marks Continuous ComprehensiveEvaluation (CCE): 20 Marks Class presentation = 5 Seminar/ Assignment/Quiz/class test, etc. = 5 Mid Term Test = 10	**End Term Exam: 50 Marks** **Time = 3 hrs** One question of 10 marks from each Units I to IV = 40 Marks. Five Questions short answer from entire syllabus = 5 × 2 Marks = 10 Marks**.**

Part II – Practical

(Internal Assessment - 10 Marks + External – 20 Marks)

Unit	Topics	Marks distribution	Contact Hours
I	Identification of Name and location of Human Bones on Skeleton and Chart	10 Marks	10
II	Identification of Name and location of Major Muscles of Human Body on Model and Chart	10 Marks	10
III	Identification of Name and Location of organs of various systems: Circulatory, Digestive, Respiratory and Excretory on Models and Charts	10 Marks	10
	Internal Assessment: 10 Marks Evaluation through Assignments/ Quiz/ Viva Voce/ Practical Record File	**University Exam (UE): 20 Marks** Evaluation through Viva Voce/ Practical Record File:	

Part C-Learning Resources

- Singh Ajmer et.al. “Modern Text Book of Physical Education, Health and Sports”, Kalyani Publishers, Ludhiana,(2010).
- Gupta, A. P. (2010). Anatomy and physiology. Agra: Sumit Prakashan.
- Gupta, M. and Gupta, M. C. (1980). Body and anatomical science. Delhi: Swaran Printing Press.
- Guyton, A.C. (1996). Textbook of Medical Physiology, 9th edition. Philadelphia: W.B. Saunders.
- Karpovich, P. V. (n.d.). Philosophy of muscular activity. London: W.B. Saunders Co.
- Lamb, G. S. (1982). Essentials of exercise physiology. Delhi: Surjeet Publication.
- Moorthy, A. M. (2014). Anatomy physiology and health education. Karaikudi: Madalayam Publications.
- Morehouse, L. E. & Miller, J. (1967). Physiology of exercise. St. Louis: The C.V. Mosby Co.
- Pearce, E. C. (1962). Anatomy and physiology for nurses. London: Faber & Faber Ltd.
- Sharma, R. D. (1979). Health and physical education, Gupta Prakashan.
- Singh, S. (1979). Anatomy of physiology and health education. Ropar: Jeet Publications

1st Semester (Bachelor of Physical Education, Health Education and Sports Science)
(According to NEP2020 from Session 2023 - 24)

Minor Core Course - 1

Part A - Introduction			
Subject:	**Physical Education, Health Education and Sports Science**		
Semester	**1st Semester**		
Name of the Course	**Olympic Movement**		
Course Code	**23-BPE-104**		
Course Type	**Minor Core Course - 1**		
Level of the Course	100-199		
Pre-requisite (if any)	Course only for students studying Physical Education, Heath Education and Sports Science as Major subject		
Course Learning Outcomes (CLO):	After completing this course, the learner will be able to: 1. Describe the concept of Olympic Movement and Ancient Olympics. 2. Acquire basic knowledge about Modern Olympics. 3. Describe the various Types of Olympics.		
Credits	**Theory**	**Practical**	**Total**
	2	Nil	2
Contact Hours	2 hours per week	Nil	2
Max. Marks: 50 (Internal Assessment - 15 Marks + End Term Exam – 35 Marks)		Time: 3 Hours **For**	

Part B- Content of the Course

Instructions for Paper- Setter:

The question paper will consist of Four Units I, II, III & IV. Unit I, II and III will have two questions from their respective Units of the Syllabus and will carry 10 marks each. Unit IV will consist of 5 short answer type questions, which will cover the entire syllabus and will carry 1 mark for each question**.**

Unit	Topics	Contact Hours
I	**Origin of Olympic Movement** • Philosophy of Olympic movement • The significant stages in the development of the Ancient Olympic movement • Politics and Religion of Ancient Olympics, Opening ceremony, Different Events of Ancient Olympics, Participants of Various events, Prizes for winners, • Decline and Termination of the ancient Olympics	10
II	**Modern Olympic Games** • Revival of Olympic Games • Olympic Symbols: Motto, Rings, Flag, Medals, Flame, Torch Relay and Anthem • Opening ceremony, Closing ceremony, medal ceremony • Olympic Protocol for member countries • Indian Performance in Modern Olympics	10
III	**Different Olympic Games** • Paralympics Games: Brief History and symbols. Its relation with other Olympics • Winter Olympics: Brief History and symbols. Its relation with other Olympics • Youth Olympic Games: Brief History and symbols. Its relation with other Olympics • Indian Performance in Modern Paralympics, Winter and Youth Olympics.	10

Suggested Evaluation Methods:
Maximum Marks: 50 (Internal Assessment - 15 Marks + End Term Exam – 35 Marks)

Internal Assessment:	**End Term Exam: 35 Marks Time = 2 hrs**
Continuous ComprehensiveEvaluation (CCE): 15 Marks Class presentation = 4 Seminar/ Assignment/Quiz/class test, etc. = 4 Mid Term Test = 7	One question of 10 marks from each Units I to III = 30 Marks. Five Questions short answer from entire syllabus = 5 × 1 Marks = 5 Marks**.**

Part B - Learning Resources

Suggested Readings:

- Ajmeer Sing, Jagdish Bans, Jagtar Sing Gill , Rachpal Singh Brar and Nirmaljit Kaur Rathee (2004) Essentials of Physical Education, New Delhi: Kalyani Publisheres.
- Burbank, J. M., Andranovich, G. D. & cHeying Boulder, C. H. (2001). Olympic dreams: the impact of mega-events on local politics: Lynne Rienner Osborne, M. P. (2004).
- Magictree House Fact Tracker: Ancient Greece and the Olympics: A Nonfiction Companion To Magic Tree House: Hour of the Olympics. New york: random house books for young readers.

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Scheme of Examination for Undergraduate Programme

Subject: Health & Physical Education

as per NEP 2020 Curriculum Framework for Undergraduate Programme (Multiple Entry-Exit, Internships and Choice Based Credit System implemented form session 2023-24

YEAR/ PROGRAMME	SEMESTER	Type of Course	COURSE CODE	PAPER/TITLE	CREDITS			Contact Hours (T+P)	Max. Marks				
					Theory	Practical	Total		Theory		Practical		Total
									External	Internal	External	Internal	
1/BACHELOR'S CERTIFICATE	1	Core Course - 1 Major Core Course - 1	B23-PED-101	History and Foundation of Physical Education	3	1	4	5 (3+2)	50	20	20	10	100
		Major Core Course - 2	B23-PED-102	Heath Education	3	1	4	5 (3+2)	50	20	20	10	100
		Core Course Minor - 1	B23-PED-103	Olympics Movement	2	-	2	2	35	15	-	-	50
		Multidisciplinary course - 1	B23-PED-104	Fundamentals of Physical Education	2	1	3	4 (2+2)	35	15	20	5	75
	2	Core Course - 2 Major Core Course - 3	B23-PED-201	Basic Anatomy and Physiology	3	1	4	5 (3+2)	50	20	20	10	100
		Core Course Minor - 2	B23-PED-202	Asian and Commonwealth Games	2	-	2	2	35	15	-	-	50
		Discipline Specific Elective Course - 1	B23-PED-203	Athletics - Track Events and Road races	3	1	4	5 (3+2)	50	20	20	10	100
			B23-PED-204	First Aid	3	1	4	5 (3+2)	50	20	20	10	100

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		Multidisciplinary course - 2	B23-PED-205	Fundamentals of Yoga	2	1	3	4 (2+2)	35	15	20	5	75
2/ BACHELOR'S DIPLOMA	3	Core Course - 3 Major Core Course - 4	B23-PED-301	Exercise Physiology	3	1	4	5 (3+2)	50	20	20	10	100
		Major Core Course - 5	B23-PED-302	Sports Psychology	3	1	4	5 (3+2)	50	20	20	10	100
		Multidisciplinary course - 3	B23-PED-303	Basics of Naturopathy	2	1	3	4 (2+2)	35	15	20	5	75
	4.	Core Course - 4 Major Core Course - 6	B23-PED-401	Basics of Sports Fitness	3	1	4	5 (3+2)	50	20	20	10	100
		Major Core Course - 7	B23-PED-402	Sports Injuries and Rehabilitation	3	1	4	5 (3+2)	50	20	20	10	100
		Major Core Course - 8	B23-PED-403	Sports Nutrition	3	1	4	5 (3+2)	50	20	20	10	100
		Discipline specific Elective Courses -2	B23-PED-404	Athletics Field Events	3	1	4	5 (3+2)	50	20	20	10	100
			B23-PED-405	Cricket	3	1	4	5 (3+2)	50	20	20	10	100
3/ Degree	5	Core Course - 5 Major Core Course - 9	B23-PED-501	Sports Training	3	1	4	5 (3+2)	50	20	20	10	100
		Major Core Course - 10	B23-PED-502	Sports Sociology	3	1	4	5 (3+2)	50	20	20	10	100
		Discipline specific Elective -2	B23-PED-503	Sports Journalism	3	1	4	5 (3+2)	50	20	20	10	100
			B23-PED-504	Physical Literacy	3	1	4	5 (3+2)	50	20	20	10	100
		Discipline specific Elective - 3	B23- PED-504	Wellness and Life Style	3	1	4	5 (3+2)	50	20	20	10	100
			B23- PED-504	Kinesiology	3	1	4	5 (3+2)	50	20	20	10	100

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	6	Core Course - 6 Major Core Course - 11	B23-PED-601	Organisation and administration	3	1	4	5 (3+2)	50	20	20	10	100
		Major Core Course - 12	B23-PED-602	Sports Medicine	3	1	4	5 (3+2)	50	20	20	10	100
		Discipline specific Elective -4	B23-PED-603	Stress Management	3	1	4	5 (3+2)	50	20	20	10	100
			B23-PED-604	Bio Mechanics	3	1	4	5 (3+2)	50	20	20	10	100
		Discipline specific Elective - 5	B23- PED-605	Adapted Physical Education	3	1	4	5 (3+2)	50	20	20	10	100
			B23- PED-606	Test and Measurement in Physical Education	3	1	4	5 (3+2)	50	20	20	10	100

VOC, SEC & VAC under Department of Physical Education

Type of Course	COURSE CODE	PAPER/TITLE	Credits of Theory	Credits of Practical	Total Credits	Total Contact Hours	Theory External	Theory Internal	Practical External	Practical Internal	Total
Skill Enhancement Course - 2	B23-SEC-226	Self Defence Techniques	2	1	3	4 (2+2)	35	15	20	5	75
Vocational - 2	B23-VOC-113	Basic Physiotherapy Techniques	2	2	4	6 (2+4)	35	15	35	15	100
Vocational - 2	B23-VOC-213	Training in Yoga Asanas	2	2	4	6 (2+4)	35	15	35	15	100
Value Added Course - 3	B23-VAC-302	Yoga and Meditation	2	-	2	2	35	15	-	-	50
Vocational - 4	B23-VOC- 410	Sports for life	2	2	4	6 (2+4)	35	15	35	15	100

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PROGRAMME LEARNING OUTCOMES (PLOs)

PLO – 1. Knowledge and Understanding: Acquire knowledge about the various aspects of human body and effect of exercise on the it. Develop understanding for holistic development through participation in physical activities and sports.

PLO – 2. Skills/Technical Skills: Acquire basic skills/techniques of various sports & games, fitness activities, yoga and self-defence. Ability to analyze the local and global impact of sports, games & physical activities on individuals, organizations and society.

PLO – 3. Application of Knowledge and skills: Apply the knowledge and skill in evaluation of posture, general health & wellness, general fitness and administration of various physical education and sport programs.

PLO – 4. Communication Skills: Ability to communicate effectively among a range of audiences/ stakeholders.

PLO – 5. Critical thinking: Ability to Identify, define the actual requirements, formulate, and analyze complex physical education and sports related problems to reaching substantiated conclusions.

PLO – 6. Ethics: Understanding of professional, ethical, legal, security, social issues and responsibilities in teaching, learning and evaluation of physical education and sports.

PLO – 7. Life-long Learning: Ability to function effectively as an individual, and as a member or leader in diverse teams, and in multidisciplinary settings to accomplish a common goal of the society.

PLO – 8. Creativity: Acquire the ability to design, implement and evaluate process or program to meet desired needs in the field of physical education and sport at local, national and international level.

PLO – 9. Research Aptitude: Participation in sports and physical activity develops analytical skills, logical reasoning, and problem-solving abilities, which are crucial for research aptitude.

PLO – 10. Problem Solving: Apply the knowledge of basic sciences that is relevant and appropriate to physical education and sports leading to solution of complex sports related issues and problems.

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1st Semester Subject: Health & Physical Education
(According to NEP2020 implemented from Session 2023 - 24)
Core Course – 1& Major Core Course – 1

Part A - Introduction

Subject:	Health & Physical Education
Semester	1st Semester
Name of the Course	History and Foundation of Physical Education
Course Code	B23-PED-101
Course Type:	Core Course - 1 Major Core Course - 1
Level of the Course	100 - 199
Pre-requisite (if any)	12th pass from any streams (Arts/Science/ Commerce) preferable with Sports Background. It is open for all.
Course Learning Outcomes (CLOs):	After completing this course, the learner will be able to: 1. Describe the Aims, Objectives and scope of Physical Education. 2. Explain the historical development of Physical Education in India 3. Illustrate the basic knowledge of biological aspects of Physical Education 4. Tell the various Career opportunities in Physical Education and Sports. 5. Know the basic specifications of court/ground, general rules and demonstrate the basic skills of Kho Kho and Badminton.

Credits	Theory	Practical	Total
	3	1	4
Contact Hours	3 hours per week	2 hours per week (Size of practical group = 20 students)	5

Max. Marks: 100 **Part I - Theory = 70** **(Internal Assessment - 20 Marks + End Term Exam – 50 Marks)** **Part II - Practical = 30** **(Internal Assessment - 10 Marks + End Term Exam – 20 Marks)**	Time: 3 Hours **For End Term Exam**

Part B- Content of the Course

Instructions for Paper- Setter:

The question paper will consist of Five Units I, II, III, IV and V. Units I, II, III & IV will have two questions from their respective Units of the Syllabus and will carry 10 marks each. Unit Vth will consist of 5 short answer type questions, which will cover the entire syllabus and will carry 2 marks for each question.

Unit	Topics	Contact Hours
I	**Introduction of Physical Education:** • Meaning and definition of Physical Education • Relationship of Physical Education with Health and General Education • Aim and Objectives Physical Education • Scope of Physical Education. • Need of Physical Education in modern society. • Misconceptions regarding Physical Education. • Physical Education as Arts or Science	12

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II	**History of Physical Education in India:** • Physical Education during Indus Valley Civilization (3250 BC – 2500 BC) • Physical Education during Vedic period (2500 BC – 600 BC) • Physical Education during Early Hindu Period (600 BC – 320 A.D) • Physical Education during Later Hindu Period (320 A.D – 1000 A.D) • Physical Education during Medieval Period (1000 A.D – 1757 A.D) • Physical Education during British Period (Till 1947) • Physical Education during After Independence	12
III	**Biological Basis of Physical Education:** • Meaning of Growth and Development • Meaning of Chronological Age, Anatomical age, Physiological age and Mental age • Principles of Growth and development • Difference between Growth and development • Factor affecting Growth and development • Growth and Development at various Levels of Childhood: Pre - Adolescence – Adolescence – Adulthood.	11
IV	**Career opportunities in Physical Education and Sports:** • Qualifications and responsibilities of Physical Education and Sports professionals at various levels of educational institutions. • Qualifications and responsibilities as Coach, Fitness Trainers, Yoga Instructors and others • Qualifications and responsibilities as sports Event Managers, Technical Officials, Researcher and others • Qualifications and responsibilities in Health Clubs and Fitness Centers, Aerobics, Dance & Recreation Clubs in Corporate Sectors and others. • Qualifications and responsibilities Sports Journalists, Commentators, Sports Photographers and Video Analysts • Career opportunities in various Central Govt, State Govt., Private Organizations and others • Career opportunities in Manufacturing and Marketing sectors. • Entrepreneurs opportunities in Physical Education and Sports.	11

Suggested Evaluation Methods:

Maximum Marks: 70 (Internal Assessment - 20 Marks + End Term Exam – 50 Marks)

Internal Assessment: 20 Marks	**End Term Exam: 50 Marks** **Time = 3 hrs.**
Continuous Comprehensive Evaluation (CCE): 20 Marks Class presentation = 5 Seminar/ Assignment/Quiz/class test, etc. = 5 Mid Term Test = 10	One question of 10 marks from each Units I to IV = 40 Marks. Five Questions short answer from entire syllabus = 5 × 2 Marks = 10 Marks.

Part II – Practical

(Internal Assessment - 10 Marks + External – 20 Marks)

Unit	Topics	Marks distribution	Contact Hours
I	**Kho - Kho:** Court specifications, general rules and basic skills	15 Marks	15
II	**Badminton:** Court specifications, general rules and basic skills	15 Marks	15

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	Internal Assessment: 10 Marks Evaluation through Skill Test/ Assignments/ Quiz/ Viva Voce/ Practical Record File (5 Marks for Each Game)	**End Term Exam: 20 Marks** Evaluation through performance in Skill Test/ Demonstration/ Viva Voce/ Practical Record File (10 Marks for Each Game)

Part C-Learning Resources

- Suggested Readings:
- Baljit Singh (2009). Principles of Physical Education. New Delhi: Sports Publication.
- Bevinson Perinbaraj. S (2002). History of Physical Education. Karaikudi: Vinsi Publications.
- Bucher A.
- Charles. (1983). Foundations of Physical Education. St. Louis:Mosbyco.
- Charles A. Bucher. (1982). Foundations of Physical Education. USA: The C.V. Mosby company.
- Charles C. Cowell & William L. France. (1963). Philosophy and Principles of Physical Education. New Jersey: Prentice-Hall.
- Singh Ajmer et.al. Modern Text Book of Physical Education, Health and Sports, Kalyani Publishers, Ludhiana, (2010).
- Sharma, V.K, Health & Physical Education, Saraswati House Pvt. Ltd . Daryaganj, New Delhi. (2013).
- Singh Ajmer et. al. Olympic Movement, Kalyani Publishers, Ludhiana, (2000).
- Kamlesh & Sangral, Principles & History of Physical Education, Parkash Brothers, Ludhiana.(2000).
- Bucher, C. A. (n.d.) Foundation of physical education. St. Louis: The C.V. Mosby Co. Deshpande, S. H. (2014).
- Mohan, V. M. Principles of physical education. Delhi: Metropolitan Book Dep. Nixon, E. E. & Cozen, F.W. (1969). An introduction to physical education. Philadelphia: W.B. Saunders Co.
- Pinto John and Roshan Kumar Shetty (2021) Introduction to Physical Education, Louis Publications, Mangalore.
- Amit Arjun Budhe, (2015) Career aspects and Management in Physical Education, Sports Publication, New Delhi
- Anand, R.L (1987) Play Field Manual, Patiala: NIS Publication.

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1st Semester Subject: Health & Physical Education
(According to NEP2020 implemented from Session 2023 - 24)
Major Core Course - 2

Part A - Introduction			
Subject:	Health & Physical Education		
Semester	1st Semester		
Name of the Course	Health Education		
Course Code	B23- PED -102		
Course Type	Major Core Course - 2		
Level of the Course	100 - 199		
Pre-requisite (if any)	Course only for students studying Physical Education as Major subject		
Course Learning Outcomes (CLO):	After completing this course, the learner will be able to: 1. Describe the concept of Health and Health Education. 2. Explain the concept of Occupational Health 3. Illustrate the basic knowledge of various Communicable Diseases 4. Acquire basic knowledge about the Communicable Diseases 5. Able to calculate and analyze Blood pressure, BMI, Peak Expiratory Flow and Oxygen saturation level		
Credits	**Theory**	**Practical**	**Total**
	3	1	4
Contact Hours	3 hours per week	2 hours per week (Size of practical group = 20 students)	5
Max. Marks: 100 **Part I - Theory = 70** **(Internal Assessment - 20 Marks + End Term Exam – 50 Marks)** **Part II - Practical = 30** **(Internal Assessment - 10 Marks + End Term Exam – 20 Marks)**		Time: 3 Hours **For End Term Exam**	

Part B- Content of the Course

Instructions for Paper- Setter:

The question paper will consist of Five Units I, II, III, IV and V. Units I, II, III & IV will have two questions from their respective Units of the Syllabus and will carry 10 marks each. Unit Vth will consist of 5 short answer type questions, which will cover the entire syllabus and will carry 2 marks for each question.

Unit	Topics	Contact Hours
I	**Introduction of Health and Health Education:** • Meaning and definition of Health • Meaning and definition of Health Education • Objectives of Health Education • Dimensions of Health Education • Scope of Health Education • Principles of Health Education. • Need of Health Education in modern society.	12
II	**Occupational Health** • Meaning and definition of Occupational Health • Scope of Occupational Health	12

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	• Principles of Occupational Health. • Scope of Occupational Health • Factors responsible for Occupational Health Hazards and Diseases: Physical Hazards, Chemical Hazards, Biological Hazards, Mechanical Hazards, Psycho – Social Hazards. • Occupational diseases caused by Physical and Chemical factors	
III	**Communicable Diseases** • Meaning of Communicable Diseases • Name of various Communicable Diseases • Meaning, Causes, symptoms and Treatment of HIV/ AIDS • Meaning, Causes, symptoms and Treatment of Hepatitis A, B and C • Meaning, Causes, symptoms and Treatment of Tuberculosis and Chicken Pox • Meaning, Causes, symptoms and Treatment of COVID-19	11
IV	**Non - Communicable Diseases** • Meaning of Non-Communicable Diseases • Name of various Non-Communicable Diseases • Meaning, Causes, symptoms and Treatment of various types cardiovascular disease • Meaning, Causes, symptoms and Treatment of various types of Typhoid and Attention Deficit Hyperactivity Disorder (ADHD) • Meaning, Causes, symptoms and Treatment of Type I and Type II Diabetes • Meaning, Causes, symptoms and Treatment of Arthritis	10

Suggested Evaluation Methods:

Maximum Marks: 70 (Internal Assessment - 20 Marks + End Term Exam – 50 Marks)

Internal Assessment: Continuous Comprehensive Evaluation (CCE): 20 Marks Class presentation = 5 Seminar/ Assignment/Quiz/class test, etc. = 5 Mid Term Test = 10	**End Term Exam: 50 Marks** **Time = 3 hrs** One question of 10 marks from each Units I to IV = 40 Marks. Five Questions short answer from entire syllabus = 5 × 2 Marks = 10 Marks.

Part II – Practical

(Internal Assessment - 10 Marks + External – 20 Marks)

Unit	Topics	Marks distribution	Contact Hours
I	BMI: Calculation of BMI, Categories of BMI	5 - Marks	8
II	Calculation of Peak Expiratory Flow with Spirometer, Analysis of Peak Expiratory Flow	5 - Marks	8
III	Measurement of Pulse Rate and Blood Pressure	5 - Marks	7
IV	Measurement of Oxygen Saturation level, its interpretation	5 - Marks	7

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	Internal Assessment: 10 Marks Evaluation through Assignments/ Quiz/ Viva Voce/ Practical Record File (2.5 Marks for Each Unit)	**University Exam (UE): 20 Marks** Evaluation through Skill of handling the instrument / Demonstration/ Viva Voce/ Practical Record File (5 Marks for Each Unit)

Part C-Learning Resources

Suggested Readings:

- Sharma, V.K, Health & Physical Education Saraswati House Pvt. Ltd. Daryaganj, New Delhi.(2013).
- Bucher Olsen and Willgoose; The Foundation of Health Prentice Hall inc. Englewood Fliffs, New Jersey,(1976).
- Turner S and Smith, School Health and Health Education, The C.V. Mos by Company St. Loius (1961).
- Singh Ajmer et.al. Modern Text Book of Physical Education, Health and Sports, Kalyani Publishers, Ludhiana, (2010).
- Kang G.S. Deol N.S. An introduction to Health and Physical Education 21st century. Patiala (2008).
- Verma, K.K., "Health & Physical Education" Parkash Brothers, Ludhiana, 2015

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1st Semester Subject: Health & Physical Education
(According to NEP2020 implemented from Session 2023 - 24)
Minor Core Course - 1

Part A - Introduction			
Subject:	**Health & Physical Education**		
Semester	1st Semester		
Name of the Course	**Olympic Movement**		
Course Code	B23- PED-103		
Course Type	Minor Core Course - 1		
Level of the Course	100 - 199		
Pre-requisite (if any)	Course only for students studying Physical Education as Major subject		
Course Learning Outcomes (CLO):	After completing this course, the learner will be able to: 1. Describe the concept of Olympic Movement and Ancient Olympics. 2. Acquired basic knowledge about Modern Olympics. 3. Describe the various Types of Olympics.		
Credits	**Theory**	**Practical**	**Total**
	2	Nil	2
Contact Hours	2 hours per week	Nil	2
Max. Marks: 50 (Internal Assessment - 15 Marks + End Term Exam – 35 Marks)		Time: 3 Hours	**For**

Part B- Content of the Course

Instructions for Paper- Setter:

The question paper will consist of Four Units I, II, III & IV. Unit I, II and III will have two questions from their respective Units of the Syllabus and will carry 10 marks each. Unit IV will consist of 5 short answer type questions, which will cover the entire syllabus and will carry 1 mark for each question.

Unit	Topics	Contact Hours
I	**Origin of Olympic Movement** • Philosophy of Olympic movement • The significant stages in the development of the Ancient Olympic movement • Politics and Religion of Ancient Olympics, Opening ceremony, Different Events of Ancient Olympics, Participants of Various events, Prizes for winners, • Decline and Termination of the ancient Olympics	10
II	**Modern Olympic Games** • Revival of Olympic Games • Olympic Symbols: Motto, Rings, Flag, Medals, Flame, Torch Relay and Anthem • Opening ceremony, Closing ceremony, medal ceremony • Olympic Protocol for member countries • Indian Performance in Modern Olympics	10

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III	**Different Olympic Games** • Paralympics Games: Brief History and symbols. Its relation with other Olympics • Winter Olympics: Brief History and symbols. Its relation with other Olympics • Youth Olympic Games: Brief History and symbols. Its relation with other Olympics • Indian Performance in Modern Paralympics, Winter and Youth Olympics.	10

Suggested Evaluation Methods:
Maximum Marks: 50 (Internal Assessment - 15 Marks + End Term Exam – 35 Marks)

Internal Assessment:	**End Term Exam: 35 Marks Time = 3 hrs**
Continuous ComprehensiveEvaluation (CCE): 15 Marks Class presentation = 4 Seminar/ Assignment/Quiz/class test, etc. = 4 Mid Term Test = 7	One question of 10 marks from each Units I to III = 30 Marks. Five Questions short answer from entire syllabus = 5 × 1 Marks = 10 Marks.

Part B - Learning Resources

Suggested Readings:

- Ajmer Singh, Jagdish Bans, Jagtar Singh Gill , Rachpal Singh Brar and Nirmaljit Kaur Rathee (2004) Essentials of Physical Education, New Delhi: Kalyani Publishers.
- Burbank, J. M., Andranovich, G. D. & cHeying Boulder, C. H. (2001). Olympic dreams: the impact of mega-events on local politics: Lynne Rienner Osborne, M. P. (2004).
- Magictree House Fact Tracker: Ancient Greece and the Olympics: A Nonfiction Companion To Magic Tree House: Hour of the Olympics. New York: random house books for young readers.

1st Semester Subject: Health & Physical Education
(According to NEP2020 implemented from Session 2023 - 24)
Multidisciplinary Course - 1

Part A - Introduction			
Subject:	**Health & Physical Education**		
Semester	1st Semester		
Name of the Course	**Fundamentals of Physical Education**		
Course Code	B23- PED -104		
Course Type	Multidisciplinary Course - 1		
Level of the Course	100 - 199		
Pre-requisite (if any)	12th pass from any streams (Arts/Science/ Commerce). It is open for all.		
Course Learning Outcomes (CLO):	After completing this course, the learner will be able to: 1. Describe the Aims, Objectives and scope of Physical Education. 2. Illustrate the basic knowledge biological aspects of Physical Education 3. Tell the various Carriers opportunities in Physical Education and Sports.		
	4. Know the basic specifications of court/ground, general rules and demonstrate the basic skills of Kho-Kho and Badminton.		
Credits	**Theory**	**Practical**	**Total**
	2	1	3
Contact Hours	2 hours per week	2 hours per week (Size of practical group = 20 students)	4

Max. Marks: 75 **Part I - Theory = 50** (Internal Assessment - 15 Marks + End Term Exam – 35 Marks) **Part II - Practical = 25** (Internal Assessment - 5 Marks + End Term Exam – 20 Marks)	Time: 3 Hours For End Term Exam

Part B- Content of the Course

Instructions for Paper- Setter:

The question paper will consist of Four Units I, II, III & IV. Unit I, II and III will have two questions from their respective Units of the Syllabus and will carry 10 marks each. Unit IV will consist of 5 short answer type questions, which will cover the entire syllabus and will carry 1 mark for each question.

Unit	Topics	Contact Hours
I	**Introduction of Physical Education:** • Meaning and definition of Physical Education • Relationship of Physical Education with Health and General Education • Aim and Objectives of Physical Education • Professional Courses in Physical Education and Sports. • Need of Physical Education in modern society. • Misconceptions regarding Physical Education. • Physical Education as Arts or Science	10

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II	**Biological Basis of Physical Education:** • Meaning of Growth and Development • Meaning of Chronological Age, Anatomical age, Physiological age and Mental age • Principles of Growth and development • Difference between Growth and development • Factors affecting Growth and development • Growth and Development at various Levels of Childhood: Pre - Adolescence – Adolescence – Adulthood.	10
III	**Career opportunities in Physical Education and Sports:** • Qualifications and responsibilities of Physical Education and Sports professionals at various levels of educational institutions. • Qualifications and responsibilities as Coach, Fitness Trainers, Yoga Instructors and others • Qualifications and responsibilities as sports Event Managers, Technical Officials, Researchers and others • Qualifications and responsibilities in Health Clubs and Fitness Centers, Aerobics, Dance & Recreation Clubs in Corporate Sectors and others. • Qualifications and responsibilities of Sports Journalists, Commentators, Sports Photographers and Video Analysts • Career opportunities in various Central Govt, State Govt., Private Organizations and others • Career opportunities in Manufacturing and Marketing sectors. • Entrepreneur opportunities in Physical Education and Sports.	10

Suggested Evaluation Methods:
Maximum Marks: 50 (Internal Assessment - 15 Marks + End Term Exam – 35 Marks)

Internal Assessment:15 Continuous ComprehensiveEvaluation (CCE): 15 Marks Class presentation = 4 Seminar/Assignment/Quiz/class test, etc. = 4 Mid Term Test = 7	**End Term Exam: 35 Marks Time = 3 hrs.** One question of 10 marks from each Units I to III = 30 Marks. Five Questions short answer from entire syllabus = 5 × 2 Marks = 10 Marks.

Part II – Practical

Maximum Marks: 25 (Internal Assessment - 5 Marks + External – 20 Marks)

Unit	Topics	Marks distribution	Contact Hours
I	**Kho - Kho:** Court specifications, general rules and basic skills	10 Marks	15
II	**Badminton:** Court specifications, general rules and basic skills	10 Marks	15
	Internal Assessment: 5 Marks Demonstration of Skill/Viva-Voce/ Practical Record File	**University Exam (UE): 20 Marks** Evaluation through performance in Skill Test/ Demonstration/ Viva Voce/ Practical Record File: (10 Marks for each Sports)	

Part C-Learning Resources

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Suggested Readings:

- Baljit Singh (2009). Principles of Physical Education. New Delhi: Sports Publication.
- Bevinson Perinbaraj. S (2002). History of Physical Education. Karaikudi: Vinsi Publications. Bucher A.
- Charles. (1983). Foundations of Physical Education. St. Louis: Mosbyco.
- Charles A. Bucher. (1982). Foundations of Physical Education. USA: The C.V. Mosby company.
- Charles C. Cowell & William L. France. (1963). Philosophy and Principles of Physical Education. New Jersey: Prentice-Hall.
- Singh Ajmer et.al. Modern Text Book of Physical Education, Health and Sports, Kalyani Publishers, Ludhiana, (2010).
- Sharma, V.K, Health & Physical Education, Saraswati House Pvt. Ltd . Daryaganj, New Delhi. (2013).
- Singh Ajmer et. al. Olympic Movement, Kalyani Publishers, Ludhiana, (2000).
- Kamlesh & Sangral, Principles & History of Physical Education, Parkash Brothers, Ludhiana.(2000).
- Bucher, C. A. (n.d.) Foundation of physical education. St. Louis: The C.V. Mosby Co. Deshpande, S. H. (2014).
- Mohan, V. M. Principles of physical education. Delhi: Metropolitan Book Dep. Nixon, E. E. & Cozen, F.W. (1969). An introduction to physical education. Philadelphia: W.B. Saunders Co.
- Pinto John and Roshan Kumar Shetty (2021) Introduction to Physical Education, Louis Publications, Mangalore.
- Amit Arjun Budhe, (2015) Career aspects and Management in Physical Education, Sports Publication, New Delhi
- Anand, R.L (1987) Play Field Manual, Patiala: NIS Publication.

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2nd Semester Subject: Health & Physical Education
(According to NEP2020 implemented from Session 2023 - 24)
Core Course – 2 & Major Core Course - 3

Part A - Introduction			
Subject:	Health & Physical Education		
Semester	2nd Semester		
Name of the Course	**Basic Anatomy and Physiology**		
Course Code	B23- PED -201		
Course Type:	Core Course - 2 Major Core Course - 3		
Level of the Course	100 - 199		
Pre-requisite (if any)	Student who has opted Core Course – 1 in 1st Semester		
Course Learning Outcomes (CLO):	After completing this course, the learner will be able to: 1. Describe the Anatomy, Physiology and structure of Cells. 2. Explain the structure of Joints and Muscular System 3. Illustrate the basic knowledge about Anatomy, Physiology of Circulatory and Digestive Systems of human body 4. Explain the Anatomy, Physiology of Respiratory and Excretory Systems of human body 5. Identify name and locations of bones, muscles and organs of various systems of human body.		
Credits	**Theory**	**Practical**	**Total**
	3	1	4
Contact Hours	3 hours per week	2 hours per week (Size of practical group = 20 students)	5
Max. Marks: 100 **Part I - Theory = 70** **(Internal Assessment - 20 Marks + End Term Exam – 50 Marks)** **Part II - Practical = 30** **(Internal Assessment - 10 Marks + End Term Exam – 20 Marks)**		Time: 3 Hours **For End Term Exam**	

Part B- Content of the Course

Instructions for Paper- Setter:

The question paper will consist of five Units I, II, III, IV and V. Units I, II, III & IV will have two questions from their respective Units of the Syllabus and will carry 10 marks each. Unit Vth will consist of 5 short answer type questions, which will cover the entire syllabus and will carry 2 marks for each question.

Unit	Topics	Contact Hours
I	**Introduction of Anatomy and Physiology** • Meaning and Definition of Anatomy and Physiology. • Importance of Anatomy and Physiology in Physical Education and sports • Cell: Structure, Properties and functions • Meaning of Cell, Tissues, Organs and System. • Bone: Meaning and types • Skeletal System: Structure and functions of Skeletal System. • Axial and Appendicular Skelton	12

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II	**Joints and Muscular System** • Meaning of Joints, Types of Joints • Types of Synovial Joints present in human body • Meaning of Muscle, Types of muscles present in human body • Gross Structure of Skeletal Muscle, • Structural Classification of Skeletal muscles.	10
III	**Circulatory System and Digestive System** • Constituents of blood and Function of blood • Structure of the heart • Types of Blood Circulation: Systemic, Pulmonary and Coronary, • Organs of Digestive System • Structure and functions of the digestive system, • Process of Food absorption, Name and functions of various digestive juices and enzymes	12
IV	**Respiratory System and Excretory System** • Organs of Respiratory system and their functions. • Structure of Respiratory system • Exchange of gases in the lungs and tissues, • Organs of Excretory System kidneys and skin • Parts and Functions of the urinary system • Structure and functions of Skin.	11

Suggested Evaluation Methods:

Maximum Marks: 70 (Internal Assessment - 20 Marks + End Term Exam – 50 Marks)

Internal Assessment: 20 Marks Continuous ComprehensiveEvaluation (CCE): 20 Marks Class presentation = 5 Seminar/ Assignment/Quiz/class test, etc. = 5 Mid Term Test = 10	**End Term Exam: 50 Marks** **Time = 3 hrs** One question of 10 marks from each Units I to IV = 40 Marks. Five Questions short answer from entire syllabus = 5 × 2 Marks = 10 Marks.

Part II – Practical

(Internal Assessment - 10 Marks + External – 20 Marks)

Unit	Topics	Marks distribution	Contact Hours
I	Identification of Name and location of Human Bones on Skelton and Chart	10 Marks	10
II	Identification of Name and location of Major Muscles of Human Body on Model and Chart	10 Marks	10
III	Identification of Name and Location of organs of various systems: Circulatory, Digestive, Respiratory and Excretory on Models and Charts	10 Marks	10
	Internal Assessment: 10 Marks Evaluation through Assignments/ Quiz/ Viva Voce/ Practical Record File	**University Exam (UE): 20 Marks** Evaluation through Viva Voce/ Practical Record File:	

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Part C-Learning Resources

- Singh Ajmer et.al. "Modern Text Book of Physical Education, Health and Sports", Kalyani Publishers, Ludhiana, (2010).
- Gupta, A. P. (2010). Anatomy and physiology. Agra: Sumit Prakashan.
- Gupta, M. and Gupta, M. C. (1980). Body and anatomical science. Delhi: Swaran Printing Press.
- Guyton, A.C. (1996). Textbook of Medical Physiology, 9th edition. Philadelphia: W.B. Saunders.
- Karpovich, P. V. (n.d.). Philosophy of muscular activity. London: W.B. Saunders Co.
- Lamb, G. S. (1982). Essentials of exercise physiology. Delhi: Surjeet Publication.
- Moorthy, A. M. (2014). Anatomy physiology and health education. Karaikudi: Madalayam Publications.
- Morehouse, L. E. & Miller, J. (1967). Physiology of exercise. St. Louis: The C.V. Mosby Co.
- Pearce, E. C. (1962). Anatomy and physiology for nurses. London: Faber & Faber Ltd.
- Sharma, R. D. (1979). Health and physical education, Gupta Prakashan.
- Singh, S. (1979). Anatomy of physiology and health education. Ropar: Jeet Publications

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2nd Semester Subject: Health & Physical Education
(According to NEP2020 implemented from Session 2023 - 24)
Core Course Minor - 2

Part A - Introduction			
Subject:	Health & Physical Education		
Semester	2nd Semester		
Name of the Course	**Asian and Commonwealth Games**		
Course Code	B23- PED-202		
Course Type:	**Core Course Minor - 2**		
Level of the Course	100 - 199		
Pre-requisite (if any)	Course only for students studying Physical Education as Major subject		
Course Learning Outcomes (CLOs):	After completing this course, the learner will be able to: 1. Describe the concept of Commonwealth Games. 2. Acquire basic knowledge about Asian Games. 3. Describe the Indian's performance in Various Commonwealth and Asian Games		
Credits	**Theory**	**Practical**	**Total**
	2	0	2
Contact Hours	2 hours per week	0	2
Max. Marks: 50 **(Internal Assessment - 15 Marks + End Term Exam – 35 Marks)**		**Time: 3 Hours** **For End Term Exam**	

Part B- Content of the Course

Instructions for Paper- Setter:

The question paper will consist of Four Units I, II, III & IV. Units I, II and III will have two questions from their respective Units of the Syllabus and will carry 10 marks each. Unit IV will consist of 5 short answer type questions, which will cover the entire syllabus and will carry 1 mark for each question.

Unit	Topics	Contact Hours
I	**Commonwealth Games** • Meaning of Commonwealth Games • Brief History of Commonwealth Games • Symbol of Commonwealth Games, Mascots of Commonwealth Games • Countries that participate in the Commonwealth Games • Queen's Baton Relay, Opening and closing ceremony, Anthems of Commonwealth Games	10
II	**Asian Games** • Meaning of Asian Games • Brief History of Asian Games • Symbol of Asian Games, Mascots of Asian Games • Countries that participate in the Asian Games • Opening and closing ceremony • Indian Performance in the Commonwealth Games	10

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III	**Different Olympic Games** • Main features of Commonwealth games organized in India • Main features of Asian games organized in India • Indian Performance in the various Commonwealth Games • Indian Performance in the various Asian Games	10

Suggested Evaluation Methods:
Maximum Marks: 50 (Internal Assessment - 15 Marks + End Term Exam – 35 Marks)

Internal Assessment: Continuous Comprehensive Evaluation (CCE): 15 Marks Class presentation = 4 Seminar/ Assignment/Quiz/class test, etc. = 4 Mid Term Test = 7	**End Term Exam: 35 Marks Time = 3 hrs** One question of 10 marks from each Units I to III = 30 Marks. Five Questions short answer from entire syllabus = 5 × 1 Marks = 5 Marks.

Part B-Learning Resources

- Ajmer Singh, Jagdish Bans, Jagtar Singh Gill , Rachpal Singh Brar and Nirmaljit Kaur Rathee (2004) Essentials of Physical Education, New Delhi: Kalyani Publishers.
- Zeigler EF (2007). History and Status of Physical Education and Educational Sports. Sports Education. New Delhi.
- Gupta, Rakesh (2013), Health and Physical Education, Pinnacle India Education Publisher, New Delhi.
- Kamlesh ML (2013). Physical Education and Exercise Sciences: An Objective Approach. Friends Publication. Delhi.

2nd Semester Subject: Health & Physical Education
(According to NEP2020 implemented from Session 2023 - 24)
Discipline Specific Elective Course - 1

Part A - Introduction			
Subject:	Health & Physical Education		
Semester	2nd Semester		
Name of the Course	**Athletics Track Events**		
Course Code	B23-PED-203		
Course Type:	**Discipline Specific Elective Course - 1**		
Level of the Course	100 - 199		
Pre-requisite (if any)	Candidate have taken Physical Education as Major Course		
Course Learning Outcomes (CLO):	After completing this course, the learner will be able to: 1. Describe the Athletics Events and Governing Bodies of Athletics 2. Illustrate the basic knowledge about Sprints, Hurdles and Relay race events. 3. Describe the rules and regulations of Middle and Long Distance races and 3,000m Steeplechase. 4. Explain the rules and regulations of Marathon and Walking Events 5. Demonstrate the techniques of crouch start and Baton Exchange.		
Credits	**Theory**	**Practical**	**Total**
	3	1	4
Contact Hours	3 hours per week	2 hours per week (Size of practical group = 20 students)	5

Max. Marks: 100 **Part I - Theory = 70** **(Internal Assessment - 20 Marks + End Term Exam – 50 Marks)** **Part II - Practical = 30** **(Internal Assessment - 10 Marks + End Term Exam – 20 Marks)**	Time: 3 Hours **For End Term Exam**

Part B- Content of the Course

Instructions for Paper- Setter:

The question paper will consist of Five Units I, II, III, IV & V. Unit I, II, III & IV will have two questions from their respective Units of the Syllabus and will carry 10 marks each. Unit V will consist of 5 short answer type questions, which will cover the entire syllabus and will carry 2 marks for each question.

Unit	Topics	Contact Hours
I	**Introduction of Athletics** • Brief History of Athletics • National and International Governing bodies of Athletics • Events of Athletics for Men and Women • Marking of Athletics track 200m • Marking of Athletics Track 400m	12

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II	**Sprints, Hurdles and Relay race events** • Basic Rules of Sprints events: 100m, 200m and 400m • Basic Rules of Hurdle events: 100m,110m and 400m • Basic Rules of Relay races: (4×100) and (4×400) • Specification of starting blocks, Baton and Shoes used athletes in these events. • Famous Indian Athletes of Sprint and Hurdle events	11
III	**Middle and Long Distance races and 3,000m Steeplechase** • Basic Rules of Middle distance races: 800m and 1500m. • Basic Rules of Long Distance Races: 3000m, 5000m and 10000m • Basic Rules of Steeplechase: 3000m • Specifications of Hurdle and water jumps in steeplechase • Famous Indian Athletes of Middle & Long Distance races and 3,000m Steeplechase	11
IV	**Marathon and Walking Events** • Distance of Marathon, Walking and other road races, • Basic rules of Marathon Race • Basic Rules of Walking Events: 20 km and 50 km • Basic technique of walking. • Basic rules of Cross-Country races organized at university level. • Famous Indian Athletes of Marathon and walking events	11

Suggested Evaluation Methods:
Maximum Marks: 70 (Internal Assessment - 20 Marks + End Term Exam – 50 Marks)

Internal Assessment: 20 Continuous Comprehensive Evaluation (CCE): 20 Marks Class presentation = 5 Seminar/ Assignment/Quiz/class test, etc. = 5 Mid Term Test = 10	**End Term Exam: 50 Marks** **Time = 3 hrs.** One question of 10 marks from each Units I to IV = 40 Marks. Five Questions short answer from entire syllabus = 5 × 2 Marks = 10 Marks.

Part II – Practical
Maximum Marks: 30 (Internal Assessment - 10 Marks + End Term Exam – 20 Marks)

Unit	Topics	Marks distribution	Contact Hours
I	Technique Crouch Start	10 Marks	10
II	Techniques of Baton Exchange	10 Marks	10
III	Basics of Track Marking (200m/400m)	10 Marks	10
	Internal Assessment: 10 Marks Evaluation through Demonstration of Skill/ Assignments/ Quiz/ Viva Voce/ Practical Record File	**End Term Exam: 20 Marks** Practical demonstration of skill of crouch start and Baton exchange: 5 Marks for each Evaluation through Viva Voce/ Practical Record File: 10 Marks	

Part C-Learning Resources

- Arnheim, D., & William, E Prentice. (1991). Principles of athletic training. St. Louis: Mosby Year Book.
- Arnheim D., & William E Prentice. (1978). Athletic Training. St. Louis: Mosby Year Book.
- Authors Guide (2018) IAAF Competition Rules 2018-2019, Monaco Cedex: IAAF Publishing.
- George Immanuel.(1997).Track and Field Event layout and Marking. Chennai:
- Chauhan VS (1999). Khel Jagat Mein Athletics. A.P. Pub, Jalandhar.

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- Evans DA (1984). Teaching Athletics. Hodder, London
- Fox EL (1998). Physiological Basis of Physical Education and Athletics Brown Pub.
- Gothi E (2004). Teaching & Coaching Athletics. Sport Pub., New Delhi.
- Josse, P, Moprtensen., & John, M, Copper. (1998). Track and Field for Coach and Athlete. St.Louis: C.V.Mosphy Company.
- Kumar Pardeep. (2008). Historical Development of Track and Field. Friends Publication. New Delhi
- Renwick GR (2001). Play Better Athletics. Sports Pub, Delhi.
- Shrivastav AK. Abhay Kumar (1997). Athletics. S & S Parkashan.
- Singh Granth (1998). Track and Field Athletics. Ashoka, Delhi.
- Thani Lokesh (1995). Skills and Tactics-Track Athletics. Sports Pub. Delhi.
- Thani Y. (1991). Encyclopedia of Athletics. Gian Pub., Delhi.

3rd Semester (Health & Physical Education)
(According to NEP2020)
Discipline Specific Elective Course - 1

Part A - Introduction			
Subject:	Health & Physical Education		
Semester	3rd Semester		
Name of the Course	**First Aid**		
Course Code	B23-PED-204		
Course Type:	**Discipline Specific Elective Course - 1**		
Level of the Course	100 - 199		
Pre-requisite (if any)	It is open for all.		
Course Learning Outcomes (CLO):	After completing this course, the learner will be able to: 1. Understand the concept of First Aid and role of First Aider. 2. Manage an Incident and Assessing the Casualty 3. Explain First Aid management for Respiratory problem, Bone, Joint and Muscle Injuries. 4. Describe First Aid measures for Wounds, Foreign objects, poisoning, bites and medical conditions. 5. Provide First Aid through CPR and Dressings.		
Credits	**Theory**	**Practical**	**Total**
	3	1	4
Contact Hours	3 hours per week	2 hours per week (Size of practical group = 20 students)	5
Max. Marks: 100 **Part I - Theory = 70** **(Internal Assessment - 20 Marks + End Term Exam – 50 Marks)** **Part II - Practical = 30** **(Internal Assessment - 10 Marks + End Term Exam – 20 Marks)**		**Time: 3 Hours** **For End Term Exam**	

Part B- Content of the Course

Instructions for Paper- Setter:

The question paper will consist of five Units I, II, III, IV and V. Units I, II, III & IV will have two questions from their respective Units of the Syllabus and will carry 10 marks each. Unit Vth will consists of 5 short answer type questions, which will cover the entire syllabus and will carry 2 marks for each question.

Unit	Topics	Contact Hours
I	**Introduction of First Aid** • Meaning and definition of First Aid • Purpose of First Aid • Prerequisite personal qualities of a First Aider • Principles of First Aid • Material/Articles of First Aid Box	10
II	**Managing an Incident and Assessing the Casualty** • Action at an emergency: Traffic accidents, Fires, Electrical incidents, Water incidents, Major incident/Mass casualties. • *Assessing the Casualty: Primary survey, Secondary survey, Head-to-toe examination, Monitoring vital signs*	11

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	• Meaning and Technique of Cardiopulmonary Resuscitation CPR	
III	**First Aid for Respiratory problem, Bone, Joint and Muscle Injuries** • First Aid for Respiratory Problems: Airway obstruction, Choking, Hanging and strangulation, Drowning and Asthma Attack. • First Aid for Bone, Joint and Muscle Injuries: Fractures, Dislocated joint, Strains, Sprains and Cramps	12
IV	**First Aid for Wounds, Foreign objects, poisoning, bites and Medical conditions:** • First Aid for Wounds: Simple Bleeding, Severe external bleeding and Blisters, • First Aid for Foreign objects: Swallowed foreign object, foreign object in the eye, foreign object in the ear and Foreign object in the nose. • First Aid for poisoning and bites: Swallowed poisons, human bites, and Snake bite. • First Aid for Medical conditions: Heart attack, Stroke, Seizures and Allergy.	12

Suggested Evaluation Methods:

Maximum Marks: 70 (Internal Assessment - 20 Marks + End Term Exam – 50 Marks)

Internal Assessment: Continuous Comprehensive Evaluation (CCE): 20 Marks Class presentation = 5 Seminar/ Assignment/Quiz/class test, etc. = 5 Mid Term Test = 10	**End Term Exam: 50 Marks Time = 3 hrs** One question of 10 marks from each Units I to IV = 40 Marks. Five Questions short answer from entire syllabus = 5 × 2 Marks = 10 Marks.

Part II – Practical

(Internal Assessment - 10 Marks + End Term Exam – 20 Marks)

Unit	Topics	Marks distribution	Contact Hours
I	Technique of CPR	15 Marks	15
II	Technique of Dressings, Roller bandages, Tubular gauze bandages, square knots and Arm sling,	15 Marks	15
	Internal Assessment: 10 Marks Evaluation through Skill Test/ Assignments/ Quiz/ Viva Voce/ Practical Record File (5 Marks for Each)	**End Term Exam: 20 Marks** Evaluation through performance in Skill Test/ Demonstration/ Viva Voce/ Practical Record File (10 Marks for Each)	

Part C-Learning Resources

- The authorized manual of St. John Ambulance, St. Andrew's Ambulance association and the British red cross society, First Aid manual, 9th edition, Dorling Kindersley, London
- American college of emergency physicians, First Aid manual, 5th edition, Dorling Kindersley, London
- Clement Text book on First Aid & Emergency Nursing, First edition, JP brothers, 2012
- Philip Jevon, Emergency care and First Aid for Nurses, A practical guide, Churchill Living Stone, 2007

2nd Semester (Health & Physical Education)
(According to NEP2020)
Discipline Specific Elective Course - 1

Part A - Introduction			
Subject:	Health & Physical Education		
Semester	3rd Semester		
Name of the Course	**First Aid**		
Course Code	B23-PED-204		
Course Type:	**Discipline Specific Elective Course - 1**		
Level of the Course	100 - 199		
Pre-requisite (if any)	It is open for all.		
Course Learning Outcomes (CLO):	After completing this course, the learner will be able to: 1. Understand the concept of First Aid and role of First Aider. 2. Manage an Incident and Assessing the Casualty 3. Explain First Aid management for Respiratory problem, Bone, Joint and Muscle Injuries. 4. Describe First Aid measures for Wounds, Foreign objects, poisoning, bites and medical conditions. 5. Provide First Aid through CPR and Dressings.		
Credits	**Theory**	**Practical**	**Total**
	3	1	4
Contact Hours	3 hours per week	2 hours per week (Size of practical group = 20 students)	5

Max. Marks: 100 **Part I - Theory = 70** **(Internal Assessment - 20 Marks + End Term Exam – 50 Marks)** **Part II - Practical = 30** **(Internal Assessment - 10 Marks + End Term Exam – 20 Marks)**	Time: 3 Hours **For End Term Exam**

Part B- Content of the Course

Instructions for Paper- Setter:

The question paper will consist of five Units I, II, III, IV and V. Units I, II, III & IV will have two questions from their respective Units of the Syllabus and will carry 10 marks each. Unit Vth will consists of 5 short answer type questions, which will cover the entire syllabus and will carry 2 marks for each question.

Unit	Topics	Contact Hours
I	**Introduction of First Aid** • Meaning and definition of First Aid • Purpose of First Aid • Prerequisite personal qualities of a First Aider • Principles of First Aid • Material/Articles of First Aid Box	10
II	**Managing an Incident and Assessing the Casualty** • Action at an emergency: Traffic accidents, Fires, Electrical incidents, Water incidents, Major incident/Mass casualties. • Assessing the Casualty: Primary survey, Secondary survey, Head-to-toe examination, Monitoring vital signs	11

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	• Meaning and Technique of Cardiopulmonary Resuscitation CPR	
III	**First Aid for Respiratory problem, Bone, Joint and Muscle Injuries** • First Aid for Respiratory Problems: Airway obstruction, Choking, Hanging and strangulation, Drowning and Asthma Attack. • First Aid for Bone, Joint and Muscle Injuries: Fractures, Dislocated joint, Strains, Sprains and Cramps	12
IV	**First Aid for Wounds, Foreign objects, poisoning, bites and Medical conditions:** • First Aid for Wounds: Simple Bleeding, Severe external bleeding and Blisters, • First Aid for Foreign objects: Swallowed foreign object, foreign object in the eye, foreign object in the ear and Foreign object in the nose. • First Aid for poisoning and bites: Swallowed poisons, human bites, and Snake bite. • First Aid for Medical conditions: Heart attack, Stroke, Seizures and Allergy.	12

Suggested Evaluation Methods:
Maximum Marks: 70 (Internal Assessment - 20 Marks + End Term Exam – 50 Marks)

Internal Assessment: Continuous Comprehensive Evaluation (CCE): 20 Marks Class presentation = 5 Seminar/ Assignment/Quiz/class test, etc. = 5 Mid Term Test = 10	**End Term Exam: 50 Marks Time = 3 hrs** One question of 10 marks from each Units I to IV = 40 Marks. Five Questions short answer from entire syllabus = 5 × 2 Marks = 10 Marks.

Part II – Practical
(Internal Assessment - 10 Marks + End Term Exam – 20 Marks)

Unit	Topics	Marks distribution	Contact Hours
I	Technique of CPR	15 Marks	15
II	Technique of Dressings, Roller bandages, Tubular gauze bandages, square knots and Arm sling,	15 Marks	15
	Internal Assessment: 10 Marks Evaluation through Skill Test/ Assignments/ Quiz/ Viva Voce/ Practical Record File (5 Marks for Each)	**End Term Exam: 20 Marks** Evaluation through performance in Skill Test/ Demonstration/ Viva Voce/ Practical Record File (10 Marks for Each)	

Part C-Learning Resources

- The authorized manual of St. John Ambulance, St. Andrew's Ambulance association and the British red cross society, First Aid manual, 9th edition, Dorling Kindersley, London
- American college of emergency physicians, First Aid manual, 5th edition, Dorling Kindersley, London
- Clement Text book on First Aid & Emergency Nursing, First edition, JP brothers, 2012
- Philip Jevon, Emergency care and First Aid for Nurses, A practical guide, Churchill Living Stone, 2007

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2nd Semester Subject: Health & Physical Education
(According to NEP2020 implemented from Session 2023 - 24)
Multidisciplinary course - 2

Part A - Introduction			
Subject:	Health & Physical Education		
Semester	2nd Semester		
Name of the Course	**Fundamentals of Yoga**		
Course Code	B23-PED-205		
Course Type:	**Multidisciplinary Course - 2**		
Level of the Course	100 - 199		
Pre-requisite (if any)	It is open for all.		
Course Learning Outcomes (CLO):	After completing this course, the learner will be able to: 1. Describe the aims, objectives and principles of Yoga. 2. Illustrate the basic knowledge various types of yoga 3. Explain principles of various types of Asanas and Paranayams. 4. Perform various types of basic Asanas and Paranayams		
Credits	**Theory**	**Practical**	**Total**
	2	1	3
Contact Hours	2 hours per week	2 hours per week (Size of practical group = 20 students)	4

Max. Marks: 75 **Part I - Theory = 50** **(Internal Assessment - 15 Marks + End Term Exam – 35 Marks)** **Part II - Practical = 25** **(Internal Assessment - 5 Marks + End Term Exam – 20 Marks)**	Time: 3 Hours **For End Term Exam**

Part B- Content of the Course

Instructions for Paper- Setter:

The question paper will consist of Four Units I, II, III & IV. Unit I, II and III will have two questions from their respective Units of the Syllabus and will carry 10 marks each. Unit IV will consist of 5 short answer type questions, which will cover the entire syllabus and will carry 1 mark for each question.

Unit	Topics	Contact Hours
I	**Introduction of Yoga** • Meaning and Definition of Yoga • Aims and Objectives of Yoga • Traditional & Historical Development of Yoga • The Yoga Sutra: General Consideration • Need and Importance of Yoga in Modern Society • Misconceptions about Yoga	10
II	**Foundation of Yoga** • The Astanga Yoga: Yama, Niyama, Asana, Pranayama, Pratyahara, Dharana, Dhyana and Samadhi • Yoga in the Bhagavadgita - Karma Yoga, Raj Yoga, Jnana Yoga and Bhakti Yoga • Brief introduction of Hath Yoga.	10

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III	**Asanas and Paranayam** • Meaning of Asanas, Classifications of Asanas • Principles of Asanas • Meaning of Paranayam, Different Types of Paranayams • Principles of Paranayams. • Meaning of Shatkarm and types of Shatkarms	10

Suggested Evaluation Methods:
Maximum Marks: 50 (Internal Assessment - 15 Marks + End Term Exam – 35 Marks)

Internal Assessment: Continuous ComprehensiveEvaluation (CCE): 15 Marks Class presentation = 4 Seminar/ Assignment/Quiz/class test, etc. = 4 Mid Term Test = 7	**End Term Exam: 35 Marks Time = 3 hrs** One question of 10 marks from each Units I to III = 30 Marks. Five Questions short answer from entire syllabus = 5 × 1 Marks = 5 Marks.

Part II – Practical
Maximum Marks: 25 (Internal Assessment - 5 Marks + End Term Exam – 20 Marks)

Unit	Topics	Marks distribution	Contact Hours
I	**Asanas:** Ten Basic Asanas	10 Marks	15
II	**Paranayams:** Anulomvilom, Suryabehadan, Bhastrika, Shitali and Shitkari.	10 Marks	15
	Internal Assessment: 5 Marks Demonstration of Skill/Viva-Voce/ Practical Record File	**End Term Exam: 20 Marks** Demonstration of Asana and Paryanama = 5 Marks for each Evaluation through performance in Viva Voce/ Practical Record File: 10 Marks	

Part C-Learning Resources

- Iyengar, B.K.S. (1995). Light on Yoga : The Bible of Modern Yoga. Schocken Publishers, USA.
- Kaminoff, L. et al (2007). Yoga Anatomy. Human Kinetics, USA.
- Kirk, M. (2005). The Hatha Yoga Illustrated. Human Kinetics, USA.
- Mukerji, A.P. (2010). The Doctorine and Practice of Yoga. General Books, LLC, New Delhi.
- Norton, W.W. (2010). Yoga for Osteoporosis : The Complete Guide. W.W. Norton & Company, USA.
- Sarin N (2003). Yoga Dawara Rogoon Ka Upchhar. Khel Sahitya Kendra
- Sri Swami Rama, (2001). Breathing. Rishikesh Sadhana Mandir Trust.
- Swami Ram (2000). Yoga & Married Life. Rishikesh Sadhana Mandir Trust

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3rd Semester Subject: Health & Physical Education

(According to NEP2020 implemented from Session 2024 – 25 (IIHS from session 2023-24)

Core Course – 3 & Major Core Course - 4

Part A - Introduction			
Subject:	Health & Physical Education		
Semester	3rd Semester		
Name of the Course	**Exercise Physiology**		
Course Code	B23-PED-301		
Course Type:	**Core Course - 3** **Major Core Course - 4**		
Level of the Course	100 - 199		
Pre-requisite (if any)	Candidate who has opted Physical Education as Major		
Course Learning Outcomes (CLO):	After completing this course, the learner will be able to: 1. Describe the Exercise Physiology, Body Composition and types of muscle contractions 2. Explain the effect of exercise on the various aspects of Skelton muscles 3. Illustrate the effects of various aspects of circulatory system 4. Tell the various Effects of exercise on the various capacities and volumes of lung.		
	5. Know the basic specifications of court/ground, general rules and demonstrate the basic skills of Football and Boxing/Wrestling/Judo		
Credits	**Theory**	**Practical**	**Total**
	3	1	4
Contact Hours	3 hours per week	2 hours per week (Size of practical group = 20 students)	5

Max. Marks: 100 **Part I - Theory = 70** **(Internal Assessment - 20 Marks + End Term Exam – 50 Marks)** **Part II - Practical = 30** **(Internal Assessment - 10 Marks + End Term Exam – 20 Marks)**	Time: 3 Hours **For End Term Exam**

Part B- Content of the Course

Instructions for Paper- Setter:

The question paper will consist of five Units I, II, III, IV and V. Units I, II, III & IV will have two questions from their respective Units of the Syllabus and will carry 10 marks each. Unit Vth will consist of 5 short answer type questions, which will cover the entire syllabus and will carry 2 marks for each question..

Unit	Topics	Contact Hours
I	**Introduction of Exercise Physiology** • Meaning of Exercise Physiology, Anabolism, Catabolism and Metabolism • Importance of Exercise Physiology in Physical Education • Types of muscular Contractions: Isometric, Isotonic and Isokinetic • Meaning of Body Composition, Components of Body Composition • Effect of Exercises on the body composition.	11

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II	**Muscular System and Exercise** • Gross Structure of the Skeletal Muscle • Functions of Muscular system • Properties of slow-twitch and fast-twitch muscle fibers • Meaning of Aerobic Activity, Anaerobic Activity, Muscle Tone, Muscle Hypertrophy and Atrophy. • Effect of exercises and training on the muscular system	11
III	**Cardiovascular System and Exercise** • Meaning and functions of Cardiovascular System • Meaning of Stroke Volume, Cardiac Output, Heart Rate, Blood pressure and Cardiac Hypertrophy • Conduction System of the Heart • Blood circulation in the Heart, Blood Supply to the Heart • Effect of exercises and training on the Cardio vascular system.	12
IV	**Respiratory System and Exercise:** • Meaning of Lung Volumes: Inspiratory Reserve Volume, Expiratory reserve volume, Tidal Volume and Residual Volume • Meaning of Lung capacities: Total Lung Capacity, Inspiratory Capacity, Vital Capacity and Functional Residual Capacity. • Mechanism of Breathing • Diffusion of Gases: Exchange of Gases in the Lungs and Exchange of Gases in the Tissues • Effect of exercises and training on the respiratory system.	11

Suggested Evaluation Methods:
Maximum Marks: 70 (Internal Assessment - 20 Marks + End Term Exam – 50 Marks)

Internal Assessment: Continuous ComprehensiveEvaluation (CCE): 20 Marks Class presentation = 5 Seminar/ Assignment/Quiz/class test, etc. = 5 Mid Term Test = 10	**End Term Exam: 50 Marks Time = 3 hrs.** One question of 10 marks from each Units I to IV = 40 Marks. Five Questions short answer from entire syllabus = 5 × 2 Marks = 10 Marks.

Part II – Practical
(Internal Assessment - 10 Marks + External – 20 Marks)

Unit	Topics	Marks distribution	Contact Hours
I	**Football:** Court specifications, general rules and basic skills	15 Marks	15
II	**Wrestling/Judo/Boxing:** Ring/Mat specifications, general rules and basic skills	15 Marks	15
	Internal Assessment: 10 Marks Evaluation through Skill Test/ Assignments/ Quiz/ Viva Voce/ Practical Record File (5 Marks for Each Sports/Game)	**University Exam (UE): 20 Marks** Evaluation through performance in Skill Test/ Demonstration/ Viva Voce/ Practical Record File (10 Marks for Each Sports/Game)	

Part C-Learning Resources

- Clarke, D.H. (1975). Exercise Physiology. New Jersey: Prentice Hall Inc., Englewood Cliffs.
- David, L Costill. (2004). Physiology of Sports and Exercise. Human Kinetics.
- SandhyaTiwaji. (1999). Exercise Physiology. Sports Publishers.
- Fox, E.L., and Mathews, D.K. (1981). The Physiological Basis of Physical Education and Athletics.

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Philadelphia: Sanders College Publishing.

- Guyton, A.C. (1976). Textbook of Medical Physiology. Philadelphia: W.B. Sanders co.
- Richard, W. Bowers. (1989). Sports Physiology. WMC: Brown Publishers.
- Shaver, L. (1981). Essentials of Exercise Physiology. New Delhi: Subject Publications.
- Vincent, T. Murche. (2007). Elementary Physiology. Hyderabad: Sports Publication.
- William, D. McAradle. (1996). Exercise Physiology, Energy, Nutrition and Human Performance. Philadelphia: Lippincott Williams and Wilkins Company.
- Anand, R.L (1987) Play Field Manual, Patiala: NIS Publication.
- N Kumar (2003). Play and Learn Football. K.S.K. New Delhi.
- Sharma OP (2001). Teaching and Coaching –Football. Khel S.K. Delhi.
- N Kumar (2003). Play and Learn Football. K.S.K. New Delhi.

3rd Semester Subject: Health & Physical Education

(According to NEP2020 implemented from Session 2024 – 25(IIHS from session 2023-24)

Major Core Course - 5

Part A - Introduction			
Subject:	Health & Physical Education		
Semester	3rd Semester		
Name of the Course	**Sports Psychology**		
Course Code	B23- PED -302		
Course Type:	**Major Core Course - 5**		
Level of the Course	100-199		
Pre-requisite (if any)	Candidate who has opted Physical Education as Major		
Course Learning Outcomes (CLO):	After completing this course, the learner will be able to: 1. Describe the Sports Psychology and explain various dimensions of sports psychology. 2. Explain the laws of learning and its implications in motor learning 3. Illustrate the concept of motivation and its implication in sports 4. Tell the various dimensions of personality and its implication in sports.		
	5. Know the basic specifications of court/ground, general rules and demonstrate the basic skills of Kabaddi and table tennis.		
Credits	**Theory**	**Practical**	**Total**
	3	1	4
Contact Hours	3 hours per week	2 hours per week (Size of practical group = 20 students)	5

Max. Marks: 100 **Part I - Theory = 70** **(Internal Assessment - 20 Marks + End Term Exam – 50 Marks)** **Part II - Practical = 30** **(Internal Assessment - 10 Marks + End Term Exam – 20 Marks)**	Time: 3 Hours **For End Term Exam**

Part B- Content of the Course

Instructions for Paper- Setter:

The question paper will consist of five Units I, II, III, IV and V. Units I, II, III & IV will have two questions from their respective Units of the Syllabus and will carry 10 marks each. Unit Vth will consist of 5 short answer type questions, which will cover the entire syllabus and will carry 2 marks for each question.

Unit	Topics	Contact Hours
I	**Introduction of Sports Psychology** • Meaning and definition of Psychology and Sports Psychology • Importance of Sports Psychology in Physical Education and sports • Branches of Sports Psychology • Psychological factors effecting sports performance • Brief History of Sports Psychology.	11
II	**Leaning** • Meaning and definition of Learning • Laws of learning and its implications in sports • Meaning of Motor Skill learning, Principles of Motor Skill Learning • Meaning of Learning Curve, Types of Learning Curve	11

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	• Characteristics of Learning Curve • Implications of learning Curve in Physical Education and Sports.	
III	**Motivation** • Meaning and definition of Motivation • Importance of Motivation in Physical Education and Sports • Types of Motivations: Intrinsic and Extrinsic • Methods of motivation applicable in Physical Education and Sports • Drive theory of Motivation	11
IV	**Personality:** • Meaning and definition of Personality • Characteristics of Personality • Dimensions of Personality • Meaning of Personality traits and Its effects on sports performance • Factors affecting development of personality	12

Suggested Evaluation Methods:
Maximum Marks: 70 (Internal Assessment - 20 Marks + End Term Exam – 50 Marks)

Internal Assessment: Continuous Comprehensive Evaluation (CCE): 20 Marks Class presentation = 5 Seminar/ Assignment/Quiz/class test, etc. = 5 Mid Term Test = 10	**End Term Exam: 50 Marks Time = 3 hrs** One question of 10 marks from each Units I to IV = 40 Marks. Five Questions short answer from entire syllabus = 5 × 2 Marks = 10 Marks.

Part II – Practical
(Internal Assessment - 10 Marks + End Term Exam – 20 Marks)

Unit	Topics	Marks distribution	Contact Hours
I	**Kabaddi:** Court specifications, general rules and basic skills	15 Marks	15
II	**Table tennis:** General rules and basic skills	15 Marks	15
	Internal Assessment: 10 Marks Evaluation through Skill Test/ Assignments/ Quiz/ Viva Voce/ Practical Record File (5 Marks for Each Sports/Game)	**End Term Exam: 20 Marks** Evaluation through performance in Skill / Demonstration/ Viva Voce/ Practical Record File (10 Marks for Each Sports/Game)	

Part C-Learning Resources

- John D Lauther (2000) Psychology of Coaching. NerJersy: Prenticce Hall Inc.
- John D.Lauther (1998) Sports Psychology. Englewood, Prentice Hall Inc.
- Miroslaw Vauks& Bryant Cratty (1999) . Psychology and the Superior Athlete. London: The Macmillan Co.
- Robert N. Singer. (1989) The Psychology Domain Movement Behaviour. Philadelphia: Lea and Febiger.
- Thelma Horn. (2002). Advances in Sports Psychology. Human Kinetic.
- Sahni SP (2005). Psychology and Its Application in Sports. D.V.S. Delhi. Shaw D and Other (2005). Sport & Exercise Psychology. Bios. U.K.
- Verma V (1999). Sport Psychology & All Round Development. Sport Pub. New Delhi.
- Wann DL (1997). Sport Psychology. Prentice Hall. New Jerey.
- Kumar, Dharmander. (2018). Kabaddi and Its Playing Techniques. Writers Choice, New Delhi.
- Mishra , S.C. (2007). Teach Yourself Kabaddi. Sports Publications, NewDelhi.
- Rao CV (1983). Kabaddi. Native Indian Sports. NSNIS. PatialaPublisher
- Rao EP (1994). Modern Coaching in Kabaddi.D.V.S.Pub

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- Syal, M. (2004). Kabaddi Teaching. Prerna Parkashan, NewDelhi.

3rd Semester Subject: Health & Physical Education

(According to NEP2020 implemented from Session 2024 – 25(IIHS from session 2023-24)

Multidisciplinary course - 3

Part A - Introduction			
Subject:	**Health & Physical Education**		
Semester	**3rd Semester**		
Name of the Course	**Basics of Naturopathy**		
Course Code	**B23-PED-303**		
Course Type:	**Multidisciplinary course - 3**		
Level of the Course	100 - 199		
Pre-requisite (if any)	It is open for all.		
Course Learning Outcomes (CLO):	After completing this course, the learner will be able to: 1. Describe the meaning and principles of **Basics of Naturopathy** 2. Illustrate the basic knowledge of various types of yoga 3. Explain the basic knowledge of various types of Hydrotherapy. 4. Able to Perform Surya Namaskar, Jal Neti and Rubber Neti.		
Credits	**Theory**	**Practical**	**Total**
	2	1	3
Contact Hours	2 hours per week	2 hours per week (Size of practical group = 20 students)	4
Max. Marks: 75 **Part I - Theory = 50** **(Internal Assessment - 15 Marks + External – 35 Marks)** **Part II - Practical = 25** **(Internal Assessment - 5 Marks + External – 20 Marks)**		Time: 3 Hours **For End Term Exam**	

Part B- Content of the Course

Instructions for Paper- Setter:

The question paper will consist of Four Units I, II, III & IV. Unit I, II and III will have two questions from their respective Units of the Syllabus and will carry 10 marks each. Unit IV will consist of 5 short answer type questions, which will cover the entire syllabus and will carry 1 mark for each question.

Unit	Topics	Contact Hours
I	**Introduction of Naturopathy** • Meaning and Definition of Naturopathy • Philosophy of Naturopathy • Principles of Naturopathy • Misconceptions about Naturopathy, • Relationship of Naturopathy with Yoga	10
II	**Mudtherapy** • Meaning and Definition of Prithvi Tatva. • Principles of Mudtherapy. • Importance of Prithvi Tatva. • Different techniques of Mudtherapy and their benefits. • Uses of Mudtherapy in different illness.	10

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III	**Hydrotherapy** • Meaning and Definition of Jal Tatva. • General Principles of Hydro-therapy • Importance of Jal Tatva. • Different techniques of Hydrotherapy and their benefits • Uses of Hydrotherapy in different illness	10

Suggested Evaluation Methods:
Maximum Marks: 50 (Internal Assessment - 15 Marks + External – 35 Marks)

Internal Assessment: 15 Continuous Comprehensive Evaluation (CCE): 15 Marks Class presentation = 4 Seminar/ Assignment/Quiz/class test, etc. = 4 Mid Term Test = 7	**University Exam (UE): 35 Marks Time = 3 hrs** One question of 10 marks from each Units I to III = 30 Marks. Five Questions short answer from entire syllabus = 5 × 1 Marks = 5 Marks.

Part II – Practical
Maximum Marks: 25 (Internal Assessment - 5 Marks + External – 20 Marks)

Unit	Topics	Marks distribution	Contact Hours
I	Surya Namaskar : 12 Counts	10 Marks	15
II	Shatkarma: Rubber Neti and Jal Neti	10 Marks	15
	Internal Assessment: 5 Marks Demonstration of Skill/Viva-Voce/ Practical Record File	**University Exam (UE): 20 Marks** Evaluation through performance in Skill Test/ Demonstration/ Viva Voce/ Practical Record File: (10 Marks for each)	

Part C-Learning Resources

- History & Philosophy of Naturophaty – Dr. S. J. Singh
- Philosophy of Nature Cure – Dr. Henri Lindlhai.
- Rational Hydrotherapy: A Manual of the Physiological and Therapeutic Effects of Hydriatic
- Procedures, and the Technique of their Application in the Treatment of Disease Hardcover – 9 Sep. 2004 by John Harvey Kellogg (Author), Publisher: TEACH Services, Inc. (9 September 2004), ISBN-13: 978-1572582095
- Mud Therapy: Healing Through One of the Five Elements Paperback – 13 Sep 2013 by
- Ashish Indani (Author), Publisher: B Jain Publishers Pvt. Ltd. (13 September 2013), ISBN-
- 13:978-8131908457. Rational Fasting (Ehret's Health Literature) Mass Market Paperback – Import, Jun 1971 by
- Arnold Ehret (Author), Publisher: Benedict Lust Publications (1 June 1971), ISBN-13:978

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4th Semester Subject: Health & Physical Education

(According to NEP2020 implemented from Session 2024 – 25(IIHS from session 2023-24)

Core Course – 4 & Major Core Course - 6

Part A - Introduction			
Subject:	Health & Physical Education		
Semester	4th Semester		
Name of the Course	**Basics of Sports Fitness**		
Course Code	B23-PED-401		
Course Type:	**Core Course – 4** **Major Core Course - 6**		
Level of the Course	100 - 199		
Pre-requisite (if any)	Candidate have taken Physical Education as Major Course		
Course Learning Outcomes (CLO):	After completing this course, the learner will be able to: 1. Describe meaning, importance and norms of Physical Fitness. 2. Illustrate meaning, principles and methods of warming up. 3. Explain meaning, principles and methods of cooling down. 4. Describe the health related and skill related components of fitness 5. Demonstrate the techniques of measuring strength, flexibility, agility and hand eye coordination.		
Credits	**Theory**	**Practical**	**Total**
	3	1	4
Contact Hours	3 hours per week	2 hours per week (Size of practical group = 20 students)	5
Max. Marks: 100 **Part I - Theory = 70** **(Internal Assessment - 20 Marks + End Term Exam – 50 Marks)** **Part II - Practical = 30** **(Internal Assessment - 10 Marks + End Term Exam – 20 Marks)**		Time: 3 Hours **For End Term Exam**	

Part B- Content of the Course

Instructions for Paper- Setter:

The question paper will consist of Five Units I, II, III, IV & V. Unit I, II, III & IV will have two questions from their respective Units of the Syllabus and will carry 10 marks each. Unit V will consist of 5 short answer type questions, which will cover the entire syllabus and will carry 2 marks for each question.

Unit	Topics	Contact Hours
I	**Introduction of Physical Fitness** • Meaning and Definition of Physical Fitness • Benefits of Physical Fitness in Sports and daily life • Meaning and Types of Aerobic and Anaerobic activities • Exercises and Heart rate Zones for intensities of aerobic and anaerobic activities • WHO guidelines and recommendations of Physical Activities for children under 5 years of age, Children and adolescents aged 5-17 years and Adults aged 18–64 years.	11
II	**Warming Up** • Meaning and definition of Warming up • Principles of Warming up • Physiological and Psychological benefits of Warming up • Types of warming up • Methods of Warming up	11

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III	**Cooling Down** • Meaning and definition of Cooling Down • Principles of Cooling Down • Physiological and Psychological Benefits of Cooling Down • Procedure for Cooling Down • Types of Cooling Down	11
IV	**Components of Physical Fitness:** • Meaning of Health-related components of Physical fitness: (i) Cardiovascular Fitness, (ii) Muscular Strength, (iii) Muscular Endurance, (iv) Body Composition (v) Flexibility. • Meaning of Skill Related Fitness Components: (i) Agility, (ii) Balance, (iii) Neuro Muscular Adaptations and Coordinative abilities, (iv) Speed, (v) Strength (vi) Reaction Time.	12

Suggested Evaluation Methods:
Maximum Marks: 70 (Internal Assessment - 20 Marks + End Term Exam – 50 Marks

Internal Assessment: 20 Continuous Comprehensive Evaluation (CCE): 20 Marks Class presentation = 5 Seminar/ Assignment/Quiz/class test, etc. = 5 Mid Term Test = 10	**End Term Exam: 50 Marks Time = 3 hrs** One question of 10 marks from each Units I to IV = 40 Marks. Five Questions short answer from entire syllabus = 5 × 2 Marks = 10 Marks.

Part II – Practical
Maximum Marks: 30 (Internal Assessment - 10 Marks + End Term Exam – 20 Marks)

Unit	Topics	Marks distribution	Contact Hours
I	i) Measuring Hand Grip and Leg & Back Strength by Dynamometer ii) Measuring Flexibility by Sit and Reach Test	(5+5) 10 Marks	10
II	i) Hand eye Coordination Test	10 Marks	10
III	Measuring Agility by LUS Agility Obstacle Course	10 Marks	10
	Internal Assessment: 10 Marks Evaluation through Assignments/ Quiz/ Viva Voce/ Practical Record File/ score of test	**End Term Exam: 20 Marks** Evaluation through Demonstration of technique/ Viva Voce/ Practical Record File/ score of test	

Part C-Learning Resources

- Difiore, J.(1998). Complete guide to postnatal fitness. London: A & C Black,.
- Giam, C.K & The, K.C. (1994). Sport medicine exercise and fitness. Singapore: P.G. Medical Book.
- Mcglynn, G., (1993). Dynamics of fitness. Madison: W.C.B Brown.
- Sharkey, B. J.(1990). Physiology of fitness, Human Kinetics Book.
- David K. Miller & T. Earl Allen(1989), Fitness, A life time commitment, Surjeet Publication Delhi.
- Dificore Judy, the complete guide to the postnatal fitness, A & C Black Publishers Ltd. Bedford row, London 1998
- Uppal A.K (1992), Physical Fitness, Friends Publications (India),
- Warner W.K. Oeger& Sharon A. Hoeger(1990) Fitness and Wellness, Morton Publishing Company.
- Elizabeth & Ken day (1986), Sports fitness for women, B.T. Batsford Ltd, London.
- Hardayal Singh. (2005). Sports Training - General Theory and Methods. Patiala: NSNIS.
- https://www.who.int/news-room/fact-sheets/detail/physical-activity.

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4th Semester Subject: Health & Physical Education

(According to NEP2020 implemented from Session 2024 – 25(IIHS from session 2023-24)

Major Core Course - 7

Part A - Introduction			
Subject:	Health & Physical Education		
Semester	4th Semester		
Name of the Course	**Sports Injuries and Rehabilitation**		
Course Code	B23-PED-402		
Course Type:	**Major Core Course - 7**		
Level of the Course	100 - 199		
Pre-requisite (if any)	Candidate has taken Physical Education as Major Course		
Course Learning Outcomes (CLO):	After completing this course, the learner will be able to: 1. Describe meaning, reasons and classification of sports Injuries. 2. Illustrate meaning, Causes, Symptoms, First Aid and Treatment of common sports injuries 3. Explain Rehabilitation of Sports Injuries through Thermo therapy, Hydrotherapy, Electrotherapy and Cryotheraphy. 4. Describe the protective equipment used in different sports.		
	5. Explain the rules and regulations of Volleyball & Chess. Demonstrate the skills of Volleyball and Chess		
Credits	**Theory**	**Practical**	**Total**
	3	1	4
Contact Hours	3 hours per week	2 hours per week (Size of practical group = 20 students)	5

Max. Marks: 100 **Part I - Theory = 70** **(Internal Assessment - 20 Marks + End Term Exam – 50 Marks)** **Part II - Practical = 30** **(Internal Assessment - 10 Marks + End Term Exam – 20 Marks)**	**Time: 3 Hours** **For End Term Exam**

Part B- Content of the Course

Instructions for Paper- Setter:

The question paper will consist of Five Units I, II, III, IV & V. Unit I, II, III & IV will have two questions from their respective Units of the Syllabus and will carry 10 marks each. Unit V will consist of 5 short answer type questions, which will cover the entire syllabus and will carry 2 marks for each question.

Unit	Topics	Contact Hours
I	**Introduction of Sports Injuries** • Meaning and Definition of Sports Injuries • Causes of Sports injuries • Principles of injury prevention • Classification of sports Injuries: Soft tissue and Hard tissue Injuries • Meaning and benefits of P R I C E, • Meaning of Acute Injury and Overuse injuries	11

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II	**Common Sports Injuries:** • Meaning, Causes, Symptoms, First Aid and Treatment of common sports injuries: Contusion, Abrasion, Sprain, Strain and Punctured wounds. • Meaning, causes, symptoms and treatment of Fractures and Dislocation • Types of Fractures	11
III	**Rehabilitation of Sports Injuries:** • Meaning of Rehabilitation • Aims, Objectives and Guiding principles of rehabilitation of sports injuries • Brief description of Contrast bath, Whirlpool bath, Cryotherapy, Short wave diathermy, Infrared therapy and Ultrasound therapy. • Meaning, Aims and Objectives of therapeutic exercise	11
IV	**Protective Equipments Used in Sports:** • Meaning of Protective Equipments • Protective equipments of Ball games: Hockey, Football, Basketball and Cricket. • Protective equipments of Racket games: Badminton and Lawn Tennis, • Protective equipments of Combative Sports: Boxing, Wrestling and Judo • Protective equipments of Weight Lifting and Gymnastics.	12

Suggested Evaluation Methods:
Maximum Marks: 70 (Internal Assessment - 20 Marks + End Term Exam – 50 Marks)

Internal Assessment: 20 Continuous Comprehensive Evaluation (CCE): 20 Marks Class presentation = 5 Seminar/ Assignment/Quiz/class test, etc. = 5 Mid Term Test = 10	**End Term Exam: 50 Marks Time = 3 hrs.** One question of 10 marks from each Units I to IV = 40 Marks. Five Questions short answer from entire syllabus = 5 × 2 Marks = 10 Marks.

Part II – Practical
Maximum Marks: 30 (Internal Assessment - 10 Marks + End Term Exam – 20 Marks)

Unit	Topics	Marks distribution	Contact Hours
I	**Volleyball:** Court specifications, general rules and basic skills	15 Marks	15
II	**Chess: Board** specifications and general rules	15 Marks	15
	Internal Assessment: 10 Marks Evaluation through Skill Test/ Assignments/ Quiz/ Viva Voce/ Practical Record File (5 Marks for Each Sports/Game)	**End Term Exam: 20 Marks** Evaluation through performance in Skill Test/ Demonstration/ Viva Voce/ Practical Record File (10 Marks for Each Sports/Game)	

Part C-Learning Resources

- Pande, P. K. (1987) Outline of Sports Medicine (New Delhi: Jaypee Brothers).
- Roy, Steven and Richard, Irvin (1983) Sports Medicine, Benjamin Cummings, Boston, USA.
- Reed (2007) Sports Injuries – Assessment and Rehabilitation,
- W.B.Saunders. Richard B. Birrer(2005) Sports Medicine for the primary care Physician, CRC Press
- Authors Guide (2002) Rules of Games and Sports, New Delhi : YMCA Publishing House.
- Kenny, B. and Gregory, C. (2006). Volleyball : Steps to Success. Human Kinetics,USA.
- The National Alliance for Youth Sports (2009). Coaching Volleyball. For Dummies Publishers,USA.
- Saggar SK (1994). Cosco Skills Stactics - Volley Ball. Sport Publication.Delhi.
- Christopher M. Norris. (1993). Sports Injures Diagnosis and Management for Physiotherapists. East

4th Semester Subject: Health & Physical Education

(According to NEP2020 implemented from Session 2024 – 25(IIHS from session 2023-24)

Major Core Course - 8

Part A - Introduction			
Subject:	Health & Physical Education		
Semester	4th Semester		
Name of the Course	**Sports Nutrition**		
Course Code	B23-PED-403		
Course Type:	**Major Core Course - 8**		
Level of the Course	100 - 199		
Pre-requisite (if any)	Candidate has taken Physical Education as Major Course		
Course Learning Outcomes (CLO):	After completing this course, the learner will be able to: 1. Describe basic concept of Balanced diet. 2. Illustrate basic concept of Macro Nutrients. 3. Explain basic requirement and sources of vitamins. 4. Describe basic requirement and sources of Minerals. 5. Calculate BMR and design diet plan.		
Credits	**Theory**	**Practical**	**Total**
	3	1	4
Contact Hours	3 hours per week	2 hours per week (Size of practical group = 20 students)	5
Max. Marks: 100 **Part I - Theory = 70** **(Internal Assessment - 20 Marks + End Term Exam – 50 Marks)** **Part II - Practical = 30** **(Internal Assessment - 10 Marks + End Term Exam – 20 Marks)**		Time: 3 Hours **For End Term Exam**	

Part B- Content of the Course

Instructions for Paper- Setter:

The question paper will consist of Five Units I, II, III, IV & V. Unit I, II, III & IV will have two questions from their respective Units of the Syllabus and will carry 10 marks each. Unit V will consist of 5 short answer type questions, which will cover the entire syllabus and will carry 2 marks for each question.

Unit	Topics	Contact Hours
I	**Introduction of Sports Nutrition** • Meaning and Definition of Nutrition and Sports Nutrition • Meaning of Calories, Macro Nutrients, Micro Nutrients • Meaning of Basal Metabolic Rate (BMR) and its role in body • Meaning of Balanced diet, Components of Balanced diet • Factor affecting Balanced diet	10
II	**Macro Nutrients:** • Carbohydrate: Meaning, Sources and Functions in Body • Fat: Meaning, Sources and Functions in Body • Protein: Meaning, Sources and Functions in Body • Ratio of Carbohydrate, Fat and Protein required in Balanced diet for Normal Adult. • Ratio of Carbohydrate, Fat and Protein required in Balanced diet for Sports persons of different categories.	11

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III	**Micro Nutrients: Vitamins** • Meaning of Vitamins, Types of Vitamins: Fat soluble and water Soluble • Sources, Functions in body and Daily requirements: Fat soluble Vitamins: A, D, E, and K • Sources, Functions in body and Daily requirements: Water soluble Vitamins: Vitamin C and B vitamins (B_1, B_2, B_3, B_5, B_6, B_7, B_9 and B_{12}) • Disorders in body due to the deficiencies of different Vitamins.	12
IV	**Micro Nutrients: Minerals** • Sources, Functions in body and Daily requirements of Calcium, Phosphorus Potassium, Sodium, Chloride, Magnesium, Iron, Zinc and Iodine. • Disorders in body due to the deficiencies of Minerals • Dietary requirements before and after exercise	12

Suggested Evaluation Methods:
Maximum Marks: 70 (Internal Assessment - 20 Marks + End Term Exam – 50 Marks)

Internal Assessment: 20 Continuous ComprehensiveEvaluation (CCE): 20 Marks Class presentation = 5 Seminar/ Assignment/Quiz/class test, etc. = 5 Mid Term Test = 10	**End Term Exam: 50 Marks Time = 3 hrs** One question of 10 marks from each Units I to IV = 40 Marks. Five Questions short answer from entire syllabus = 5 × 2 Marks = 10 Marks.

Part II – Practical
Maximum Marks: 30 (Internal Assessment - 10 Marks + End Term Exam – 20 Marks)

Unit	Topics	Marks distribution	Contact Hours
I	Calculation of BMR for Men and Women	15 Marks	15
II	Designing of Basic Diet Plan: ratio of Carbohydrate, fat and protein in various meals	15 Marks	15
	Internal Assessment: 10 Marks Evaluation through Assignments/ Quiz/ Viva Voce/ Practical Record File (5 Marks for Each)	**End Term Exam: 20 Marks** Evaluation through Viva Voce/ Practical Record File (10 Marks for Each)	

Part C-Learning Resources

- Asker Jeukendrup and Michael Gleeson (2004) Sports nutrition Human Kinetics, inc
- Nieman, D.C., and B.K. Pederson (2000) Nutrition and Exercise Immunology. CRC press: Boca Raton, FL.
- Kathleen.c. Niedert, Nutrition care of the older adult, A handbook for nutrition throughout the continuum of care; third exition.
- Lal PR (2009) Handbook of Sports Nutrition, Friends Publication.
- Terras S. (1994) Stress, How Your Diet can Help: The Practical Guide to Positive Health Using Diet, Vitamins, Minerals, Herbs and Amino Acids, Thorons.
- Heather Hedrick fink, Lisa A. Burgoon, Alan E. Mikesy, (2006), Practical Application in sports Nutrition, Jones and Barlett.
- RonniChernoff , Geriatric Nutrition : The health professionals hand book; 4th edition.
- Wardlaw, Smith. Contemporary Nutrition: A Functional Approach. 2nd ed: 2012. McGraw Hill.
- Williams, Melvin. Nutrition for health, fitness and sports. 2004. McGraw Hill

4th Semester Subject: Health & Physical Education

(According to NEP2020 implemented from Session 2024 – 25(IIHS from session 2023-24)

Discipline Specific Elective Course - 2

Part A - Introduction			
Subject:	Health & Physical Education		
Semester	4th Semester		
Name of the Course	**Athletics Field Events**		
Course Code	B23-PED-404		
Course Type:	**Discipline Specific Elective Course - 2**		
Level of the Course	100 - 199		
Pre-requisite (if any)	Candidate has taken Physical Education as Major Course		
Course Learning Outcomes (CLO):	After completing this course, the learner will be able to: 1. Describe the about Athletics field events and rules, technique and specification of Javelin throw event. 2. Illustrate the basic rules, technique and specification of Discus Throw and Shot-put events. 3. Describe the rules, technique and specification of Long Jump and Triple Jump events. 4. Describe the rules, technique and specification of High Jump. 5. Demonstrate the techniques of Long Jump, shot-put and javelin throw.		
Credits	**Theory**	**Practical**	**Total**
	3	1	4
Contact Hours	3 hours per week	2 hours per week (Size of practical group = 20 students)	5

Max. Marks: 100 **Part I - Theory = 70** **(Internal Assessment - 20 Marks + End Term Exam – 50 Marks)** **Part II - Practical = 30** **(Internal Assessment - 10 Marks + End Term Exam – 20 Marks)**	Time: 3 Hours **For End Term Exam**

Part B- Content of the Course

Instructions for Paper- Setter:

The question paper will consist of Five Units I, II, III, IV & V. Unit I, II, III & IV will have two questions from their respective Units of the Syllabus and will carry 10 marks each. Unit V will consist of 5 short answer type questions, which will cover the entire syllabus and will carry 2 marks for each question.

Unit	Topics	Contact Hours
I	**Introduction of Athletics Field Events and Javelin throw:** • Various Categories of Field events • Dimensions of Javelin throw sector, Specifications of Javelin in various categories • Basic rules of Javelin throw, Basic rules of conduction Javelin throw event. • Basic technique of Javelin throw • National, Olympics and World records in Javelin throw Men & Women.	11

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II	**Discus Throw and shot put** • Dimensions of Discus Throw and Shot-put sector, Specifications of Discus and Shot-put for various categories • Basic rules of Discus Throw and Shot-put, Basic rules of conduction Discus Throw and Shot-put event. • Basic technique of Discus Throw and Shot-put • National, Olympics and World records in Discus Throw and Shot-put Men & Women.	11
III	**Long Jump and triple Jump** • Dimensions of long Jump and triple Jump: Landing Pit, runway and takeoff board. • Basic rules of Long Jump and triple Jump, Basic rules of conduction Long Jump and triple Jump event. • Basic technique of Long Jump and triple Jump • National, Olympics and World records in Long Jump and triple Jump Men & Women.	11
IV	**High Jump** • Dimensions of High Jump: Landing Pit, Runway, and Cross bar • Basic rules of High Jump, Basic rules of conduction High Jump event. • Basic technique of High Jump, Technique of resolving tie in high jump • National, Olympics and World records in High Jump Men & Women.	12

Suggested Evaluation Methods:
Maximum Marks: 70 (Internal Assessment - 20 Marks + End Term Exam – 50 Marks)

Internal Assessment: 20 Continuous ComprehensiveEvaluation (CCE): 20 Marks Class presentation = 5 Seminar/ Assignment/Quiz/class test, etc. = 5 Mid Term Test = 10	**End Term Exam: 50 Marks Time = 3 hrs** One question of 10 marks from each Units I to IV = 40 Marks. Five Questions short answer from entire syllabus = 5 × 2 Marks = 10 Marks.

Part II – Practical
Maximum Marks: 30 (Internal Assessment - 10 Marks + End Term Exam – 20 Marks)

Unit	Topics	Marks distribution	Contact Hours
I	Techniques of Shot-put	10 Marks	10
II	Techniques of Long Jump	10 Marks	10
III	Techniques of Javelin throw	10 Marks	10
	Internal Assessment: 10 Marks Evaluation through Assignments/ Quiz/ Viva Voce/ Practical Record File	**End Term Exam: 20 Marks** Evaluation through Demonstration of technique/ Viva Voce/ Practical Record File:	

Part C-Learning Resources

- Arnheim, D., & William, E Prentice. (1991). Principles of athletic training. St. Louis: Mosby Year Book.
- Arnheim D., & William E Prentice. (1978). Athletic Training. St. Louis: Mosby Year Book.
- Authors Guide (2018) IAAF Competition Rules 2018-2019, Monaco Cedex: IAAF Publishing.
- Authors Guide (2002) Rules of Games and Sports, New Delhi : YMCA Publishing House.

- Chauhan VS (1999). Khel Jagat Mein Athletics. A.P. Pub, Jalandhar.
- Evans DA (1984). Teaching Athletics. Hodder, London
- George Immanuel.(1997).Track and Field Event layout and Marking. Chennai:
- Kumar, Pardeep. (2008). Historical Development of Track & Field. Friends Publication. New Delhi
- Renwick GR (2001). Play Better Athletics. Sports Pub, Delhi.
- Shrivastav AK. Abhay Kumar (1997). Athletics. S & S Parkashan.
- Singh Granth (1998). Track and Field Athletics. Ashoka, Delhi.
- Thani Lokesh (1995). Skills and Tactics-Track Athletics. Sports Pub. Delhi.
- Thani Y. (1991). Encyclopedia of Athletics. Gian Pub., Delhi.
- Josse, P, Moprtensen., & John, M,Copper. (1998). Track and Field for Coach and Athlete. St.Louis: C.V.Mosphy Company

4th Semester Subject: Health & Physical Education

(According to NEP2020 implemented from Session 2024 – 25(IIHS from session 2023-24)

Discipline Specific Elective Course - 2

Part A - Introduction			
Subject:	**Physical Education**		
Semester	4th Semester		
Name of the Course	**Cricket**		
Course Code	B23-PED-405		
Course Type:	**Discipline Specific Elective Course - 2**		
Pre-requisite (if any)	It is open for all		
Course Learning Outcomes(CLO):	After completing this course, the learner will be able to: 1. Describe the dimension of cricket ground, famous grounds and championships. . 2. Explain the various basic rules and their interpretations 3. Explain various batting and balling techniques 4. Select a cricket team, explain different rules applicable in various types of cricket formats. 5. Demonstrate different cricketing shorts and balling technique		
Credits	**Theory**	**Practical**	**Total**
	3	1	4
Contact Hours	3 hours per week	2 hours per week (Size of practical group = 20 students)	5
Max. Marks: 100 **Part I - Theory = 70** **(Internal Assessment - 20 Marks + End Term Exam – 50 Marks)** **Part II - Practical = 30** **(Internal Assessment - 10 Marks + End Term Exam – 20 Marks)**			Time: 3 Hours **For End Term Exam**

Part I - Theory = 70

Instructions for Paper- Setter:

The question paper will consist of five Units I, II, III, IV and V. Units I, II, III & IV will have two questions from their respective Units of the Syllabus and will carry 10 marks each. Unit Vth will consists of 5 short answer type questions, which will cover the entire syllabus and will carry 2 marks for each question.

Unit	Topics	Contact Hours
I	**Introduction of Cricket:** • Brief history of Cricket • Dimensions of Cricket Ground, Pitch, Bowling crease, Return crease Popping crease • Preparation and maintenance of Cricket Pitches: Turf and Cemented • Famous Cricket Ground around the World and in India • Famous International Cups, Trophies, Championship at International National level.	11

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II	**Rules and Regulations** • Dimensions of Cricket Bat, Ball, Wicket, Stumps, and Bails • Brief explanation of Follow – on, Innings, LBW, Appeal, Off side, On side, Minimum Hours of play in different formats, Leg bye, Bye, Intervals • Brief explanation of Over, Numbers of Ball, Validity of Ball, Dead Ball, Wide ball and No Ball • Brief explanation of Types of Outs , Types of Scoring Runs, Protective equipments used in cricket	11
III	**Techniques of Balling and Batting** • Techniques of different types of balling • Different types of Shorts in Cricket: Defensive Shots, Shots Played to the On side and Off Side, Shots Played to the Leg Side, Other Innovative Shots • Meaning of different types of balls: Fast Balling - Bouncer, Outswinger, Inswingers, Reverse Swing, Leg and Off Cutter, Yorker and Slower Ball Spin Bowling: Leg Break and Off Break, Googly, Doosra, Top spinner, Carrom Ball, Slider and Arm Ball	**11**
IV	**General Rules :** • General Rules of Test match, One day and 20 – 20 Match • Kit of players and umpires in different formats of Matches, • Use of technology in the cricket • Duties of Umpire and match referee • Criteria for Selection of a Cricket Team	12

Suggested Evaluation Methods:
Maximum Marks: 70 (Internal Assessment - 20 Marks + End Term Exam – 50 Marks)

Internal Assessment: 20 Continuous Comprehensive Evaluation (CCE): 20 Marks Class presentation = 5 Seminar/ Assignment/Quiz/class test, etc. = 5 Mid Term Test = 10	**End Term Exam: 50 Marks Time = 3 hrs** One question of 10 marks from each Units I to IV = 40 Marks. Five Questions short answer from entire syllabus = 5 × 2 Marks = 10 Marks.

Part II – Practical
(Internal Assessment - 10 Marks + External – 20 Marks)

Unit	Topics	Marks distribution	Contact Hours
I	Technique of Defensive Shots, Off Side &Onside Shots, Shots Played to the Leg Side, Other Innovative Shots Shorts in Cricket	10 Marks	10
II	Technique of Fast and Spin Bowling,	10 Marks	10
III	Technique of Fielding and throwing	10 marks	10
	Internal Assessment: 10 Marks Evaluation through Skill Test/ Assignments/ Quiz/ Viva Voce/ Practical Record File (5 Marks for Each)	**University Exam (UE): 20 Marks** Evaluation through performance in Skill Test/ Demonstration/ Viva Voce/ Practical Record File (10 Marks for Each)	

Part C-Learning Resources

Suggested Readings:

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- Amarnath M. (1996). Learn to Play Good Cricket. UBS Publishers. NewDelhi.
- Boycott, G. (2010). Play Cricket the Right Way. Great Northern Books Limited,U.K.
- Cricket (2008). Sports Skills: Cricket Fielding (Know the Game). A & C BlackPublishers.
- Gupta, K. (2006). How to Play Cricket. Goodwill Publishing House, NewDelhi.
- Hobls, J. (2008). The Game of Cricket As it should be Played. Jepson Press,USA.
- Jain R. (2003). Fielding Drills in Cricket. Khel Sahitya Kendra. NewDelhi.
- Rachna (2002). Coaching Successfully: Cricket. Khel Sahitya Kendra. NewDelhi.
- Sharma P. (2003). Cricket.Shyam Parkashan.Jaipur.
- Vanaik A. (2017). Officiating and Coaching, Friends Publication. New Delhi

S1

2nd Semester Subject: Health & Physical Education
(According to NEP2020 implemented from Session 2023 - 24)
Skill Enhancement Course-2

Part A - Introduction			
Subject:	Health & Physical Education		
Semester	2nd Semester		
Name of the Course	**Self Defence techniques**		
Course Code	**B23-SEC-226**		
Course Type:	**Skill Enhancement Course-2**		
Level of the Course	100 - 199		
Pre-requisite (if any)	Open for all		
Course Learning Outcomes (LOs):	After completing this course, the learner will be able to: 1. Learn the principles of Self Defence and analyzes of various situations 2. Acquire the knowledge of everyday objects as improvised self-defense tools, Fundamental strikes and Meaning of Defensive Maneuvers. 3. Describe the various techniques of Joint Locks, Chokes, Escapes and holds. 4. Acquire the skills of improvising self-defence tools and various self-defence techniques against common weapons.		
Credits	**Theory**	**Practical**	**Total**
	2	1	3
Contact Hours	2 hours per week	2 hours per week (Size of practical group = 20 students)	4
Max. Marks: 75 **Part I - Theory = 50** **(Internal Assessment – 15 Marks + End Term Exam – 35 Marks** **Part II - Practical = 25** **(Internal Assessment -5 Marks + End Term Exam – 20 Marks)**			**Time: 3 Hours** **For End Term Exam**

Part B- Content of the Course

Instructions for Paper- Setter:

The question paper will consist of four Units I, II, III and IV. Units I , II and III will have two questions from their respective Units of the Syllabus and will carry 10 marks each. Unit IV will consist of 5 short answer type questions, which will cover the entire syllabus and will carry 1 marks for each question.

Unit	Topics	Contact Hours
I	**Introduction of Self Defence:** • Meaning of self-defence & personal safety and its significance in everyday life. • Basic principles of Self-defence and mindset required for effective self-defence. • Meaning of Situational Awareness, Techniques of observing and assessing one's surroundings, recognizing potential threats and techniques of avoiding dangerous situations.	10

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Part C-Learning Resources

- Steve Collins (2012) Self Defence: Techniques And Tactics. Kindle Edition.
- https://ymaa.com/sites/default/files/book/sample/FightBack.9781594394935.pdf
- https://www.kravmaga-women-protect.fr/images/Techniques-de-Self-Defense-Special-Femmes-anglais.pdf
- Dueep J. Singh, (2015) Self Defence for Women: Tips, Techniques and Methods to Protect Yourself. Mendon Cottage Books.

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S3

3rd Semester Subject: Health & Physical Education

(According to NEP2020 implemented from Session 2024 – 25(IIHS from session 2023-24)

Vocational Course - 2

Part A - Introduction			
Subject:	**Health & Physical Education**		
Semester	**3rd Semester**		
Name of the Course	**Basic Physiotherapy Technique**		
Course Code	**B23-VOC-113**		
Course Type:	**Vocational Course - 2**		
Level of the Course	**100 - 199**		
Pre-requisite (if any)	It is open for all.		
Course Learning Outcomes (CLO):	After completing this course, the learner will be able to: 1. Understand the concept and principles of Physiotherapy and Gross and Microscopic Structure of Skelton muscle 2. Acquire knowledge about the major muscles and main joints of human body 3. Develop an understanding about the nervous system and various mechanism of tissue healing. Explain concept of in Rehabilitation and Therapeutic Exercises 4. Assess the Range of motion on all joints. 5. Manually test muscle. Apply basic electrical components in electrotherapeutic equipments on various muscles. 6. Give massage to various muscles of upper limb, lower limb and back.		
Credits	**Theory**	**Practical**	**Total**
	2	2	4
Contact Hours	2 hours per week	4 hours per week (Size of practical group = 20 students)	6
Max. Marks: 100 **Part I - Theory = 50** **(Internal Assessment - 15 Marks + End Term Exam – 35 Marks)** **Part II - Practical = 50** **(Internal Assessment - 15 Marks + End Term Exam – 35 Marks)**		Time: 3 Hours **For End Term Exam**	

Part B- Content of the Course

Instructions for Paper- Setter:

The question paper will consist of five Units I, II, III and IV. Units I, II & III will have two questions from their respective Units of the Syllabus and will carry 10 marks each. Unit IV will consist of 5 short answer type questions, which will cover the entire syllabus and will carry 1 marks for each question.

Unit	Topics	Contact Hours
I	**Introduction of First Aid** • Meaning and definition of Physiotherapy • Purpose of Physiotherapy, Principles of Physiotherapy • Meaning of Anatomy and Physiology • Gross and Microscopic Structure of Skelton muscle • Basic Anatomy of Bones, Name and location of various bones present in the human body. • Types of bones present in human body.	10

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	• Meaning of Joint, Types of joints, • Types of Synovial joint, Structure of Synovial Joint	
II	**Important Muscles and Joints** • Name and locations of various muscles: Sternocleidomastoid muscle Latissimus Dorsi, Deltoid, Biceps, Triceps and Pactroralis Major Trap Rhomboid Major, Rectus Abdominal, Hamstrings group of Muscles, Quadriceps group of Muscles, Gastrocnemius Muscle. • Ligaments of Shoulder, Hip, Elbow and Knee, joints	10
III	**Introduction to Rehabilitation and Therapeutic Exercises**: • Meaning of rehabilitation, Guiding principles of rehabilitation of injuries • Description of Thermo therapy: Hot bag, Contrast bath and Whirlpool bath. • Description of Hydrotherapy: Cryotheraphy, Ice pack, Ice wrap and Ice massage • Description of Electro therapy: Short wave diathermy, Infrared therapy and Ultrasound therapy. • Meaning and principles of therapeutic Exercises • Meaning of PRICE, Physiology of PRICE • Mechanism of healing: Nervous tissue, Muscle and Bones	10

Suggested Evaluation Methods:
Maximum Marks: 50 (Internal Assessment - 15 Marks + End Term Exam – 35 Marks)

Internal Assessment: Continuous Comprehensive Evaluation (CCE): 15 Marks Class presentation = 5 Seminar/ Assignment/Quiz/class test, etc. = 5 Mid Term Test = 5	**End Term Exam: 35 Marks Time = 3 hrs** One question of 10 marks from each Units I to III = 30 Marks. Five Questions short answer from entire syllabus = 5 × 1 Marks = 5 Marks.

Part II – Practical
(Internal Assessment - 15 Marks + End Term Exam – 35 Marks)

Unit	Topics	Marks distribution	Contact Hours
I	Range of motion (PROM, AROM, AAROM) exercises to all joints, Measurement of joint range using goniometer, Manual muscle testing of individual muscles	15 Marks	20
II	Identify basic electrical components in electrotherapeutic equipments, Stimulation of motor points, stimulation of individual muscle and group muscle,	10 Marks	20
III	Coordination exercises, balancing exercises, General and local Relaxation techniques, Suspension exercise to all major joints. Massage – upper limb, lower limb, back and neck.	10 Marks	20
	Internal Assessment: 15 Marks Evaluation through Skill Test/ Assignments/ Quiz/ Viva Voce/ Practical Record File	**End Term Exam: 35 Marks** Evaluation through performance in Skill Test/ Demonstration/ Viva Voce/ Practical Record File	

	(5 Marks for Each +5 Marks of File)	(10 Marks for Each + 5 Marks of File)

Part C-Learning Resources

- The authorized manual of St. John Ambulance, St. Andrew's Ambulance association and the British red cross society, First Aid manual, 9th edition, Dorling Kindersley, London
- American college of emergency physicians, First Aid manual, 5th edition, Dorling Kindersley, London
- B.D. Chaurasia, Human Anatomy-Volume 1, 2, 3 CBS Publishers & Distributors.
- Philip Jevon, Emergency care and First Aid for Nurses, A practical guide, Churchill Living Stone, 2007
- Snell RS. Neuroanatomy: a review with questions and explanations. Little, Brown; 1992 Jan.
- Chaurasia BD. Human anatomy Volume- I, II & III, CBS Publisher; 2004. Singh Vishram Textbook of Anatomy Head, Neck, and Brain; Volume III;2014
- Gardiner MD. The principles of exercise therapy. G. Bell;1957.
- Kisner C, Colby LA, Borstad J. Therapeutic exercise: Foundations and techniques. Fa Davis; 2017 Oct18
- Hollis M. Massage for therapists: a guide to soft tissue therapy. Wiley-Blackwell; 2009.
- Hollis M, Cook PF, editors. Practical exercise therapy. Wiley-Blackwell;1999.
- Practical Exercise therapy, Margaret Hollis, Phyllis Fletcher Cook Wiley
- Norkin CC, White DJ. Measurement of joint motion. A guide to goniometry.1995
- Levangie PK, Norkin CC. Joint Structure and function: a comprehensive analysis. 3rd. Philadelphia: FA. Davis Company.2000.
- Houglum PA, Bertoti DB. Brunnstrom's clinical kinesiology. FA Davis;2011.
- World Health Organization; Global Strategy on Diet, Physical Activity and Health
- McArdle WD, Katch FI, Katch VL. Exercise physiology: nutrition, energy, and human performance. Lippincott Williams & Wilkins;2010.
- Kennedy-Armbruster C, Yoke M. Methods of group exercise instruction. Human Kinetics; 2014.

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4th Semester Subject: Health & Physical Education

(According to NEP2020 implemented from Session 2024 – 25(IIHS from session 2023-24)

Vocational - 2

Part A - Introduction			
Subject:	Health & Physical Education		
Semester	4th Semester		
Name of the Course	**Training in Yoga Asanas**		
Course Code	**B23-VOC-213**		
Course Type:	**Vocational - 2**		
Level of the Course	100 - 199		
Pre-requisite (if any)	It is open for all		
Course Learning Outcomes (CLOs):	After completing this course, the learner will be able to: 1. Describe the aims, objectives and philosophy of yoga. 2. Explain the philosophy behind various schools of yoga 3. Explain the various types of yoga, pranayama, Shatkarmas, Bandhas and Mudras.		
	4. Demonstrate various simple and advance asanas. 5. Able to perform Rubber and Jal Neti 6. Able to perform various types of Paranayamas		
Credits	**Theory**	**Practical**	**Total**
	2	2	4
Contact Hours	2 hours per week	4 hours per week (Size of practical group = 20 students)	6
Max. Marks: 100 **Part I - Theory = 50** **(Internal Assessment - 15 Marks + End Term Exam – 35 Marks)** **Part II - Practical = 50** **(Internal Assessment - 15 Marks + End Term Exam – 35 Marks)**		Time: 3 Hours **For End Term Exam**	

Part B- Content of the Course

Instructions for Paper- Setter:

The question paper will consist of five Units I, II, III and IV. Units I, II & III will have two questions from their respective Units of the Syllabus and will carry 10 marks each. Unit Vth will consist of 5 short answer type questions, which will cover the entire syllabus and will carry 1 mark for each question.

Unit	Topics	Contact Hours
I	**Introduction of Yoga** • Meaning and Definitions of Yoga • Philosophical aspect of Yoga, • Aim and Objectives of Yoga. • Principles of Yoga, Misconceptions and clarifications of Yoga • Relationship of yoga with Education and Sports	10
II	**Schools of Yoga and its brief Introduction.** • Meaning of Hatha Yoga, Bhakti Yoga, Jnana Yoga, Karma Yoga, Raja Yoga, Mantra Yoga, Laya Yoga and Yantra Yoga, • Astanga Yoga: Yama, Niyama, Asana, Pranayama, Pratyahara, Dharana, Dhyana, Samadhi, • Contributions to yoga by Swami Ramakrishna, Swami Vivekananda,	10

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	, Maharishi Mahesh yogi, Swami Dayanand Saraswathi and B.K.S Iyengar.	
III	**Parts of Yoga:** • Asana: Meaning, types and Principles. • Pranayama: Meaning, types and principles. • Shatkarmas: Meaning, types and principles. • Bandh & Mudra: Meaning, types and principles.	10

Suggested Evaluation Methods:
Maximum Marks: 50 (Internal Assessment - 15 Marks + End Term Exam – 35 Marks)

Internal Assessment: Continuous Comprehensive Evaluation (CCE): 15 Marks Seminar/ Assignment/Quiz/class test, etc. = 5 Mid Term Test = 10	**End Term Exam: 50 Marks Time = 3 hrs** One question of 10 marks from each Units I to III = 30 Marks. Five Questions short answer from entire syllabus = 5 × 1 Marks = 5 Marks.

Part II – Practical
(Internal Assessment - 15 Marks + End Term Exam – 35 Marks)

Unit	Topics	Marks distribution	Contact Hours
I	Basic Asanas = At least 15 Advance asanas = 5	10 +5 Marks	20
II	Rubber Nati , Jal Neti	10 Marks	20
III	**Pranayamas:** Anulom-vilom , Bhramari, Ujjayi , Kapalbhathi **and** Bhastrika	10 Marks	20
	Internal Assessment: 15 Marks Evaluation through Skill Test/ Assignments/ Quiz/ Viva Voce/ Practical Record File (5 Marks for Each)	**End Term Exam: 35 Marks** Evaluation through performance in Skill Test/ Demonstration/ Viva Voce/ Practical Record File (10 Marks for Each)	

Part C-Learning Resources

- Anand Omprarkash (2001). Yog Dawra Kaya Kalp, Kanpur. Sewasth Sahitya Perkashan
- Iyengar, B.K.S. (1995). Light on Yoga : The Bible of Modern Yoga. Schocken Publishers, USA.
- Kaminoff, L. et al (2007). Yoga Anatomy. Human Kinetics, USA.
- Kirk, M. (2005). The Hatha Yoga Illustrated. Human Kinetics, USA.
- Mukerji, A.P. (2010). The Doctorine and Practice of Yoga. General Books, LLC, New Delhi.
- Norton, W.W. (2010). Yoga for Osteoporosis : The Complete Guide. W.W. Norton & Company, USA
- Sarin N (2003). Yoga Dawara Rogoon Ka Upchhar. Khel Sahitya Kendra •
- Swami Rama, (2001). Breathing. Rishikesh Sadhana Mandir Trust.
- Swami Ram (2000). Yoga & Married Life. Rishikesh Sadhana Mandir Trust
- Swami Swatma Ram: Patanjali Yoga Sutra
- Swami Veda Bharti (2000). Yoga Polity. Economy and Family. Rishikesh Sadhana Mandir Trust

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SP

3rd Semester Subject: Health & Physical Education

(According to NEP2020 implemented from Session 2024 – 25(IIHS from session 2023-24)

Value Added Course - 3

Part A -Introduction

Subject:	Health & Physical Education
Semester	3rd Semester
Name of the Course	**Yoga and Meditation**
Course Code	B23-VAC-302
Course Type:	**Value Added Course - 3**
Level of the Course	100 - 199
Pre-requisite (if any)	It is open for all.
Course Learning Outcomes (CLO):	After completing this course, the learner will be able to: 1. Describe the aims, objectives and principles of Yoga. 2. Illustrate the basic knowledge various types of yoga 3. Explain principles of various types of Asanas and Paranayamas.

Credits	**Theory**	**Practical**	**Total**
	2	0	2
Contact Hours	2 hours per week	0	2

Max. Marks: 50
Part I - Theory = 50
(Internal Assessment - 15 Marks + End Term Exam – 35 Marks)

Time: 2 Hours

For End Term Exam

Part B- Content of the Course

Instructions for Paper- Setter:

The question paper will consist of Four Units I, II, III & IV. Unit I, II and III will have two questions from their respective Units of the Syllabus and will carry 10 marks each. Unit IV will consist of 5 short answer type questions, which will cover the entire syllabus and will carry 1 mark for each question.

Unit	Topics	Contact Hours
I	**Introduction of Yoga** • Meaning and Definition of Yoga • Aims and Objectives of Yoga • Traditional & Historical Development of Yoga • The Yoga Sutra: General Consideration • Need and Importance of Yoga in Modern Society • Misconceptions about Yoga	10
II	**Foundation of Yoga** • The Astanga Yoga: Yama, Niyama, Asana, Pranayama, Pratyahara, Dharana, Dhyana and Samadhi • Yoga in the Bhagavadgita - Karma Yoga, Raj Yoga, Jnana Yoga and Bhakti Yoga • Brief introduction of Hath Yoga.	10
III	**Meditation:** • Introduction to Meditation • Basic principles of meditation • Benefits of Meditation, Obstacles in Meditation • *Relationship of Concentration and meditation* • Meaning and Techniques of Trataka, Ujjayi and OM Meditation	10

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Suggested Evaluation Methods: Maximum Marks: 50 (Internal Assessment - 15 Marks + End Term Exam – 35 Marks)	
Internal Assessment: Continuous ComprehensiveEvaluation (CCE): 15 Marks Class presentation = 4 Seminar/ Assignment/Quiz/class test, etc. = 4 Mid Term Test = 7	**End Term Exam: 35 Marks Time = 2 hrs** One question of 10 marks from each Units I to III = 30 Marks. Five Questions short answer from entire syllabus = 5 × 1 Marks = 10 Marks.

Part C-Learning Resources

- Iyengar, B.K.S. (1995). Light on Yoga : The Bible of Modern Yoga. Schocken Publishers, USA.
- Kaminoff, L. et al (2007). Yoga Anatomy. Human Kinetics, USA.
- Kirk, M. (2005). The Hatha Yoga Illustrated. Human Kinetics, USA.
- Mukerji, A.P. (2010). The Doctorine and Practice of Yoga. General Books, LLC, New Delhi.
- Norton, W.W. (2010). Yoga for Osteoporosis : The Complete Guide. W.W. Norton & Company, USA.
- Sarin N (2003). Yoga Dawara Rogoon Ka Upchhar. Khel Sahitya Kendra
- Sri Swami Rama, (2001). Breathing. Rishikesh Sadhana Mandir Trust.
- Swami Ram (2000). Yoga & Married Life. Rishikesh Sadhana Mandir Trust

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