अध्ययन मंडल बैठक दिनांक 28.08.2024 एवं दिनांक 19.09.2024(Online)

विषय –वानिकी एवं वन्यजीव

विश्वविद्यालय अन्तर्गत संचालित एम.एस.सी. वानिकी एव वन्यजीव प्रोग्राम में केन्द्रीय अध्ययन मंडल द्वारा तैयार किये गये चार वर्षीय स्नातक प्रोग्राम के चतुर्थ वर्ष (VII एवंVIII सेमेस्टर) के पाठ्यक्रम को राष्ट्रीय शिक्षा नीति 2020 के अनुरूप स्नातकोत्तर प्रोग्राम के प्रथम एवं द्वितीय सेमेस्टर में लागू करने हेतु दिनांक 28/08/2024 **एवं दिनांक 19.09.2024** को आयोजित अध्ययन मंडल की बैठक के कार्यवाही विवरण में संशोधित करते हुए निम्नानुसार अनुशंसा की जाती है:–

Program : M.Sc. Forestry & Wildlife									
Course Type	**Course Code**	**Course Title**	**Paper**	**Semester**	**Credits**	**MaxMarks**	**MinMarks**	**CIA**	**ESE**
First Semester									
DSC	FOSC-7T	Principles of Agroforestry and Management	T	I	3	100	40	30	70
DSE	FOSC-5T	Medicinal & Aromatic Plant	T	I	3	100	40	30	70
DSE	FOSE-6T	NTFPs and Forest based Industries	T	I	3	100	40	30	70
DSE	FOSE-7T	Forest Management	T	I	4	100	40	30	70
DSE	FOSE-8T	Plantation Forestry	T	I	3	100	40	30	70
		Lab Course-I (Based on paper FOSC-7P and FOSE-8P)	P	I	2	100	40	30	70
		Lab Course-II (Based on paper FOSC-5P and FOSE-6P)	P	I	2	100	40	30	70
				Total	**20**	**700**			
Second Semester									
DSC	FOSC-8T	Wasteland and Watershed Management	T	II	3	100	40	30	70
DSE	FOSE-9T	Forest Protection	T	II	3	100	40	30	70
DSE	FOSE-10T	Remote Sensing & GIS	T	II	4	100	40	30	70
DSE	FOSE-11T	Wildlife Management	T	II	3	100	40	30	70
DSE	FOSE-12T	Forest Statistics & Research Methodology	T	II	3	100	40	30	70
		Lab Course-I (Based on paper FOSC-8P and FOSE-12P)	P	I	2	100	40	30	70
		Lab Course-II (Based on paper FOSE-11P and FOSE-11P)	P	I	2	100	40	30	70
				Total	**20**	**700**			

टीप :–परीक्षा योजना एवं प्रश्नपत्र के प्रारूप को भी यथावत् लागू करने की अनुशंसा की जाती है।

दिनांक 28.08.2024 एवं दिनांक 19.09.2024 (online) को वानिकी एवं वन्यजीव अध्ययन मंडल की बैठक में निम्नलिखित अध्यक्ष/सदस्य उपस्थित हुये।

क्र.	नाम	पदनाम	अध्यक्ष/सदस्य	हस्ताक्षर
1.	डा. इंदु नेमा	प्राध्यापक	अध्यक्ष	
2.	डा. विनोद कुमार सोनी	सह-प्राध्यापक	सदस्य	
3.	डा. सजीवन कुमार	सह-प्राध्यापक	सदस्य	
4.	श्री विमल कुमार राय	सहा-प्राध्यापक	सदस्य	

TWO YEAR POST-GRADUATE PROGRAM
(2024-25)
DEPARTMENT OF FORESTRY & WILDLIFE
COURSE CURRICULUM

TWO YEAR POST-GRADUATE PROGRAM (2024-25)
DEPARTMENT OF FORESTRY & WILDLIFE
COURSE CURRICULUM

PART-A: Introduction			
Program: M. Sc. Forestry & Wildlife		**Semester: I**	**Session:2024-2025**
1	Course Code	**FOSC-7 T**	
2	Course Title	**Principles of Agroforestry and Management**	
3	Course Type	**Discipline Specific Course (Theory)**	
4	Pre-requisite (if any)	As per Programme requirement	
5	Course Learning Outcomes (CLO)	The graduates should be able to demonstrate the acquisition of: • Understand concept and principles of agroforestry as sustainable land use system. • Understand agroforestry components, and able to identify suitable tree species for agroforestry tree species. • Analyze different agroforestry systems and their classification. • Develop skills in designing and managing agroforestry systems for sustainable land use.	
6	Credit Value	3 Credits	(Credit=15 hours-learning & observation)
7	Total Marks	Max. Marks: 100	Min Passing Marks : 40

Part B: Content of the Course		
Total No. of Teaching- learning Periods (01 hr. per period) – 45 Periods (45 Hours)		
Course Code - FOSC-7		**Credit - 3**
Module/ Unit	**Topics (Course Contents)**	**No. of Period**
I	**Agroforestry:** Introduction, definition, principles, objectives, scope and importance of agroforestry, History of agroforestry, Components of Agroforestry, Choice and characteristics of species for agroforestry; Concept and objectives: Agroforestry, Farm forestry and Social forestry. Farming systems: monoculture, multiple cropping, mixed farming.	10

II	**Agroforestry system:** Traditional agroforestry, forest based traditional agroforestry-Shifting cultivation, Taungya system; Agroforestry in present perspective; Classification of Agroforestry: Structural basis, Functional basis, Socio-economic basis, agro-ecological basis. Agroforestry systems in India, Agrisilvicultural system, Silvipastoral systems, Agrisilvipastoral systems, Selection of agroforestry tree species, Multipurpose tree (MPTs) in Agroforestry; Potential and constrains of agroforestry systems.	15
III	**Diagnosis and design in agroforestry:** Definition, key features, procedures of D & D-Micro & Macro D & D and objectives; Criteria for good agroforestry design; Socio-economic aspect of Agroforestry; Soil fertility and Productivity aspect; Soil and water conservation aspects in Agroforestry.	10
IV	**Agroforestry management:** Tree, canopy and root architecture, canopy and root management, pruning, lopping, pollarding and topping, Soil working & Intercultural operation. Important tree species of agroforestry systems: leguminous and non-leguminous species, fuelwood trees, fodder trees, fruit trees; Farm crops-Cereals, Pulses; Medicinal and aromatic plants; Spices; Vegetables and Grasses. Role of agroforestry in climate change mitigation.	10
Keywords: Agroforestry, Agroforestry systems, D & D, Agroforestry management, Agroforestry tree		

Part - C

Learning Resource: Text Books, Reference Books, Others

Text Books Recommended-

1. Nair, P.K.R. (1993). An Introduction to Agroforestry. Kluwer Academic Publishers, Dordrecht, The Netherlands.
2. Nair, P.K.R. Agroforestry Systems in the Tropics. Springer. 680p.
3. Negi, S.S. (1990). A Handbook of Forestry, International Book Distributors, Dehradun, 690p.
4. Huxley, P.A. (1983) (eds). Plant Research and Agroforestry, ICRAF, Nairobi, Kenya.
5. Pathak P.S. and Ram Newaj (eds.) (2003). Agroforestry: Potentials and Opportunities. Agrobios, Jodhpur.

Online Resources-

1. e-Krishi Shiksha- http://ecoursesonline.iasri.res.in/course/view.php?id=157

2. Aagroforestry theory and practices | Antony Joseph Raj - Academia.edu

PART -D: Assessment and Evaluation -Theory		
Suggested Continuous Evaluation Methods: Maximum Marks: 100 Marks Continuous Internal Assessment (CIA): 30 Marks End Semester Exam(ESE): 70 Marks		
Continuous Internal Assessment (CIA): (By Course Teacher)	Internal Test / Quiz-(2): 20 / 20 Assignment / Seminar - 10 Total Marks - 30	Better marks out of the two Test / Quiz + obtained marks in Assignment shall be considered against **30** Marks
End Semester Exam(ESE):	**Two section – A & B** Section A: **Q1**. Objective – **10 x1= 10** Mark; **Q2**. Short answer type- **5x4 =20 Marks** Section B: Descriptive answer type qts.,**1out of 2** from each unit-**4x10=40 Marks**	

TWO YEAR POST-GRADUATE PROGRAM (2024-25)
DEPARTMENT OF FORESTRY & WILDLIFE
COURSE CURRICULUM

PART-A: Introduction			
Program: **M. Sc. Forestry & Wildlife**		**Semester: I**	**Session:2024-2025**
1	Course Code	**FOSE-5 T**	
2	Course Title	**Medicinal & Aromatic Plants**	
3	Course Type	**Discipline Specific Elective (Theory)**	
4	Pre-requisite (if any)	As per Programme requirement	
5	Course Learning Outcomes (CLO)	The graduates should be able to demonstrate the acquisition of: • Understand medicinal plants' significance in the Indian economy. • Identify and describe valuable medicinal plants and their cultivation. • Gain insights into aromatic plants and their cultivation practices. • Explore traditional health care systems and the use of plants in medicine and familiarize with medicinal plant families.	
6	Credit Value	3 Credits	(Credit=15 hours-learning & observation)
7	Total Marks	Max. Marks: 100	Min Passing Marks : 40

Part B: Content of the Course		
Total No. of Teaching- learning Periods (01 hr. per period) – 45 Periods (45 Hours)		
Course Code - FOSE-5 T		**Credit - 3**
Module/ Unit	**Topics (Course Contents)**	**No. of Period**
I	**Medicinal Plants:** Definition, Importance and role of medicinal plants in Indian economy, Valuable Medicinal Plants of India and their uses & Chhattisgarh, Cultivation, origin, area and distribution, description, active principles and their uses - *Acorus, Ashwagandha, Gudmar, Atropa, Cinchona, Rauvolfia, Opium, Cannabis, Aconitum, Neem, Dioscorea, Costus, Solanum, Adhathoda zylanica, Plumbago zylanica, Tinospora cordifolia, Indigofera tinctoria.Gloriosa superba,*	15

II	**Aromatic plants:** Definition, Importance and role of aromatic plants in Indian economy, Cultivation practices, description, climate and soil requirements, planting practices, harvesting, curing and extraction of essential oils of important aromatic plants- lemon grass, Palmarosa, Citronella, Vetiver, Mint, Eucalyptus and Patchouli.	10
III	**Ethno-medicine and Ethno-botany:** Important plants and their folk uses for medicines and food, Ethno-medicine and Ethno-botany importance and role traditional health care system. Traditional medicinal plant based system - concepts and systems.	10
IV	**Medicinal plants families:** Guttiferae (Clusiaceae), Malvaceae, Fabaceae, Mimosaceae, Caesalpinaceae, Combretaceae, Umbelliferae (Apiaceae), Rubiaceae, Asteraceae, Ebenaceae, Apocynaceae, Asclepiadaceae, Euphorbiaceae, Lauraceae, Palmaceae, Poaceae, Liliaceae, Coniferae, Santalaceae, Thymeliaceae.	10

Keywords: Medicinal Plants, Aromatic plants, Morphology, Cultivation, Medicinal properties, Uses, Ethno-medicine and Ethno-botany etc.

Part - C

Learning Resource: Text Books, Reference Books, Others

Text Books Recommended-

1. Beazley, M. (1981). The International Book of Forest. Mitchell Beazly Publishers, London.
2. Atul, C.K. and Kapur, B.K. (1982). Cultivation and utilization of medicinal plants. RRL., CSIR, Jammu-Tawi.
3. Chopra, R.N., Nayar, S.L. and Chopra, I.C. (1956). Glossary of Indian medicinal plants. CSIR, New Delhi.
4. Cunningham, A. (2014). Applied Ethnobotany: "People, Wild Plant Use and Conservation". Taylor & Francis,
5. EIRI Board. (2007). Handbook of Medicinal and Aromatic Plants: Cultivation, Utilisation and Extraction
6. Ethnobotany. Principles and applications. (1997). C. M. Cotton. John Wiley and Sons Ltd. 424p.
7. Gunther, E. (1975). The essential oils. Robert, K Krieger Pub. Co., New York.
8. Jain, S.K. (2010). Manual of Ethnobotany (2nd Ed). Scientific Publishers, India, 242p.
9. Maheshwari, J.K. (2000). Ethnobotany and medicinal plants of Indian subcontinent. Scientific Publishers, Jodhpur, India, 672p

Online Resources-

1. Course: Medicinal and Aromatic crops (2+1) (iasri.res.in)

2. Textbook of Medicinal and Aromatic Plants | ICAR

PART -D: Assessment and Evaluation -Theory		
Suggested Continuous Evaluation Methods: Maximum Marks: 100 Marks Continuous Internal Assessment (CIA): 30 Marks End Semester Exam(ESE): 70 Marks		
Continuous Internal Assessment (CIA): (By Course Teacher)	Internal Test / Quiz-(2): 20 / 20 Assignment / Seminar - 10 Total Marks - 30	Better marks out of the two Test / Quiz + obtained marks in Assignment shall be considered against **30** Marks
End Semester Exam(ESE):	**Two section – A & B** Section A: **Q1**. Objective – **10 x1= 10** Mark; **Q2**. Short answer type- **5x4 =20 Marks** Section B: Descriptive answer type qts.,**1out of 2** from each unit-**4x10=40 Marks**	

TWO YEAR POST-GRADUATE PROGRAM (2024-25)
DEPARTMENT OF FORESTRY & WILDLIFE
COURSE CURRICULUM

PART-A: Introduction			
Program: M. Sc. Forestry & Wildlife		**Semester- I**	**Session: 2024-2025**
1	Course Code	**FOSE-6 T**	
2	Course Title	**NTFPs and Forest based industries**	
3	Course Type	**Discipline Specific Elective (Theory)**	
4	Pre-requisite (if any)	As per Programme requirement	
5	Course Learning Outcome (CLO)	The graduates/postgraduates students able to demonstrate the acquisition of: • The graduate able to know the course is meant for exposing the students to importance and use of non-timber forest products such as medicinal plants, oil, bio-fuels, resin, tannin drugs, lac and shellac including their importance in rural, tribal and national economy. • The course is aimed to provide knowledge on national and international demand and trade in timber and non-timber forest products. • To promot forest products based industries. • To know the manufacturing process of composite wood.	
6	Credit Value	3 Credits	(Credit=15 hours-learning & observation)
7	Total Marks	Maximum Marks: 100	Minimum passing Marks: 40

PART- B: Content of the Course		
Total No. of Teaching- learning Periods (01 hr. per period) – 45 Periods (45 Hours)		
Unit	**Topics (Course Contents)**	**No. of Period**
I	**Introduction to NTFPs & Forest Based Industries:** Timber Introduction, methods of collection, management and importance of	10

	Non Timber Forest Products (NTFP). Uses of wood and growth of wood based industry in India. Importance of forest based industries in relation to Indian economy. Introduction to wood modification, its need and scope.	
II	**National and International Trade:** National and International demand and trade in timber and non-timber forest products. Market inefficiencies in timber, non-timber forest produce and measures to check in efficiencies, role of MFP cooperative societies in marketing of timber and non-timber forest produce. Definition - role of medicinal and aromatic plants in Indian economy - Important essential oil yielding plants in India.	10
III	**Forest based Industries:** Wood as raw material, kinds of woods– hardwood, softwood; bamboos and canes. Merits and demerits of wood as raw material. Manufacture of Charcoal, Resin and Turpentine, Cultch & Kattha, Paper & Pulp, Lac & Shellac. Extraction of Deodar oil, Pine oil, grasses oils. Distillation of Camphor, Gum, Resins and Oleo – Resins. General Account of Rubber Yielding trees.	15
IV	**Composite wood:** Manufacture, properties and uses of plywood, fiberboard, particleboard and hard board, Pulp and paper industry. Introduction and raw material; pulping-mechanical, chemical, semi chemical and semi-mechanical; pulp bleaching; stock preparation and sheet formation; types of paper. Rubber Industry, NWFPs based Drugs & Pharmaceuticals Industry etc.	10

Keywords- NWFPs, Wood industry, IPulp & Paper, Composite wood Medicinal & aromatic plants etc.

PART- C

Learning Resources: Text Book, Reference Book, Others

Text BooksRecommended-

1. FRI. [Forest Research Institute]. 1976. Indian forest utilization. Volume I and II. Forest Research Institute, Dehradun.
2. Tewari, D. N. 1995. Marketing and trade of forest produce; International Book Distributors

(Book Sellers & Publishers), Dehradun, India.
3. Mehta, T. 1981. A Hand Book of Forest Utilization; International Book Distributors (Book Sellers & Publishers), Dehradun, India.
4. Rawat, S.P.2008. Non – Timber Forest Products of India; Gene – Tech Books, New Delhi.
5. Dwivedi, A.P. 2007. Forest: The Non – Wood Resources; International Book Distributors (Book Sellers & Publishers), Dehradun, India.

OnlineResources-

1. https://link.springer.com/book/10.1007/978-3-030-73077-2

PART -D: Assessment and Evaluation -Theory

Suggested Continuous Evaluation Methods:

Maximum Marks: 100 Marks
Continuous Internal Assessment (CIA): 30 Marks
End Semester Exam(ESE): 70 Marks

Continuous Internal Assessment (CIA): (By Course Teacher)	Internal Test / Quiz-(2): 20 / 20 Assignment / Seminar - 10 Total Marks - 30	Better marks out of the two Test / Quiz + obtained marks in Assignment shall be considered against **30** Marks
End Semester Exam(ESE):	**Two section – A & B** Section A: **Q1**. Objective – **10 x1= 10** Mark; **Q2**. Short answer type- **5x4 =20 Marks** Section B: Descriptive answer type qts.,**1out of 2** from each unit-**4x10=40 Marks**	

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DEPARTMENT OF FORESTRY & WILDLIFE
COURSE CURRICULUM

PART-A: Introduction			
Program: M. Sc. Forestry & Wildlife		**Semester: I**	**Session:2024-2025**
1	Course Code	**FOSE- 7 T**	
2	Course Title	**Forest Management**	
3	Course Type	**Discipline Specific Elective Course (Theory)**	
4	Pre-requisite (if any)	As per Programme requirement	
5	Course Learning Outcomes (CLO)	The graduates able to know • The course is designed to explain the role and application of economics in management of forest, wildlife and environment • To learn the rotation and its important in proper forest management. • To aware the preparation of working plant • To provide the complete knowledge on yield regulation of forest.	
6	Credit Value	4 Credits	(Credit=15 hours-learning & observation)
7	Total Marks	Max. Marks: 100	Min Passing Marks : 40

Part B: Content of the Course		
Total No. of Teaching- learning Periods (01 hr. per period) – 45 Periods (45 Hours)		
Course Code - FOSE- 07		**Credit - 3+1**
Module/ Unit	**Topics (Course Contents)**	**No. of Period**
I	**Forest Management**: Introduction, definition and scope. Peculiarities of forest management. Principles of forest management and their applications. Objects of management, purpose and policy. Sustained and progressive yield concept and meaning. General definitions – management and administrative units, felling cycle, cutting section. Management Classification- Working Circle, Felling series, Coupe, Cutting Section, Periodic Block, Felling cycle; Felling series in Selection Forest and Coppice with Standards system.	15
II	**Rotations:** definition, kinds of rotations, choice of rotations, length of rotations and conversion period. Normal forest: definition and concept. Even aged and uneven aged models. Estimation of growing stock, density, quantity and increment. Yield regulation – general principles of even aged and uneven aged forest crop. Yield regulation based on area, volume, area and volume, increment and number of trees. *Rotation of Some Important Indian Species. Rotation and Conversion period.*	15

III	**Working Plan** – definition objects and Scope. Working plan period, Unit of Working plan, Preparation of working plan Report - compartment description, Stock Mapping, Regeneration Surveys and Maps, Management and Regeneration Maps .	15
IV	**Yield Regulation** – Principles, objects, definition, Types of Yield, Yield regulation and silvicultue, Silviculture systems in Relation to yield, Basis of Yield Regulation, Yield regulation in *Regular* forests and *Irregular* forests. Classification of Silviculture system.	15
Keywords: Forest Management, Felling cycle, Working circle, Rotation, Regeneration, Working plan, Yield Regulation		

Part - C

Learning Resource: Text Books, Reference Books, Others

Text Books Recommended-

1. Desai, V. (1991). Forest Management in India–Issues and Problems. Himalaya Pub. House, Bombay. Edmunds, Dand Wollenberg, E (2003). Essentials of Forest Management, Natraj Publishers, DehraDun
2. RamPrakash, (1986). Forest Management, IBD, Dehradun.
3. Jerram,M.R.K. (1983). A Text-Book on Forest Management, IBD, Dehradun
4. Lal, J.B., (2007). Forest Management, Natraj Publisher, Dehradun.
5. RamPrakash and L.S. Khanna (1991). Theory and Practices of Silvicultural Systems, IBD, Dehradun.
6. Osmaston, F.C. (1984). Management of Forests, IBD, Publication Dehradun.

Online Resources-

PART -D: Assessment and Evaluation -Theory

Suggested Continuous Evaluation Methods:

Maximum Marks: 100 Marks
Continuous Internal Assessment (CIA): 30 Marks
End Semester Exam(ESE): 70 Marks

Continuous Internal Assessment (CIA): (By Course Teacher)	Internal Test / Quiz-(2): 20 / 20 Assignment / Seminar - 10 Total Marks - 30	Better marks out of the two Test / Quiz + obtained marks in Assignment shall be considered against **30** Marks
End Semester Exam(ESE):	**Two section – A & B** Section A: **Q1**. Objective – **10 x1= 10** Mark; **Q2**. Short answer type- **5x4 =20 Marks** Section B: Descriptive answer type qts.,**1out of 2** from each unit-**4x10=40 Marks**	

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DEPARTMENT OF FORESTRY & WILDLIFE
COURSE CURRICULUM

PART-A: Introduction				
Program: M. Sc. Forestry & Wildlife		**Semester: I**	**Year: 2024**	**Session:2024-2025**
1	Course Code	**FOSE- 8 T**		
2	Course Title	**Plantation Forestry**		
3	Course Type	**Discipline Specific Elective Course (Theory)**		
4	Pre-requisite (if any)	As per Programme requirement		
5	Course Learning Outcomes (CLO)	The graduates able to know • Learn the plantation techniques and plantation's management. • Wastelands development techniques for rapid plantation. • The reforestation of degraded forest lands and approaches. • Students able to know energy and industrial plantation for economic growth and energy consumption of country.		
6	Credit Value	3 Credits	(Credit=15 hours-learning & observation)	
7	Total Marks	Max. Marks: 100	Min Passing Marks : 40	

Part B: Content of the Course		
Total No. of Teaching- learning Periods (01 hr. per period) – 45 Periods (45 Hours)		
Course Code - FOSE- 8 T		**Credit - 3+1**
Module/ Unit	**Topics (Course Contents)**	**No. of Period**
I	**Plantations**-definition and scope. History of plantations, Development of plantation forestry, Plantation organization and structure, Plantation forests - planting plan, , site selection. Site preparation - purpose and methods. Planting - layout, time of planting, planting pattern, spacing, gap filling, planting methods, direct seedling. Choice of species on ecological aspects. Plantation maintenance - weed control, climber cutting, staking, Thinning - definition, objectives. Effects of thinning - physiological and mensurational.	10

II	**Wastelands/ Degraded lands**: Definition, Concept, classification, status, extent and causes of degraded lands/wastelands, Technology for Wasteland development. Afforestation and Reforestation – Definition , Objective Afforestation of Wastelands ; Abandoned cultivated land , grass lands eroded site, ravine and sand dune, coastal area, waterlogged area, denuded hill slopes, land slips and landslides, cold desert, Saline alkaline soils ,Lateritic soils , Mined out, Dry areas with or without irrigation , rocky and murramy areas .	15
III	**Reforestation** of degraded forests lands and its management, Soil and water conservation in degraded forest lands, Wasteland Management Approaches; Biological, approaches, Mechanical approaches and Community approaches.	10
IV	**Energy and industrial plantation:** definition, scope, species, establishment, management and impact on environment. Plantation economics. Energy plantation- high density short rotation plantations- petro crops- avenue plantations- Plantations as potential carbon sinks, Energy consumption pattern, properties of fuel wood, choice of species, energy from biomass. Industrial plantations- paper and pulp wood- match wood, plywood plantations , Plantations yielding NTFPs.	10
Keywords: Plantation , Wastelands/ Degraded lands, Wasteland , Reforestation , Energy and Industrial plantation , NTFPs.		

Part - C

Learning Resource: Text Books, Reference Books, Others

Text Books Recommended-

1. Khanna, L.S. (1989). Principles and Practice of Silviculture. Khanna Bandhu, New Delhi,
2. Dwivedi. A.P. (1993). Text book of Silviculture. International Book Distributors.
3. Evans, JE. (1982). Plantation Forestry in the Tropics. The English Language Book Society and Clarendon Press–Oxford.
4. Pathak P.S. and Ram Newaj (eds.) (2003). Agroforestry: Potentials and Opportunities. Agrobios, Jodhpur.
5. Evans, J. (1992). Plantation Forestry in the Tropics, 2nd edition. Oxford, UK, Clarendon Press.
6. Abral, I.P.and Drruwa, Narayan, V.V.(1990). Technologies for wasteland development , ICAR, New Delhi.
7. Tideman,E.M. Wasteland management guideline for Indian condition.

Online Resources-

PART -D: Assessment and Evaluation -Theory		
Suggested Continuous Evaluation Methods: Maximum Marks: 100 Marks Continuous Internal Assessment (CIA): 30 Marks End Semester Exam(ESE): 70 Marks		
Continuous Internal Assessment (CIA): (By Course Teacher)	Internal Test / Quiz-(2): 20 / 20 Assignment / Seminar - 10 Total Marks - 30	Better marks out of the two Test / Quiz + obtained marks in Assignment shall be considered against **30** Marks
End Semester Exam(ESE):	**Two section – A & B** Section A: **Q1**. Objective – **10 x1= 10** Mark; **Q2**. Short answer type- **5x4 =20 Marks** Section B: Descriptive answer type qts.,**1out of 2** from each unit-**4x10=40 Marks**	

TWO YEAR POST-GRADUATE PROGRAM (2024-25)
DEPARTMENT OF FORESTRY & WILDLIFE
COURSE CURRICULUM

PART-A: Introduction			
Program: M. Sc. Forestry & Wildlife		**Semester: I**	**Session:2024-2025**
1	Course Code	**Lab Course I- FOSC-7 P**	
2	Course Title	**Principles of Agroforestry and Management**	
3	Course Type	**Discipline Specific Course (Practical)**	
4	Pre-requisite (if any)	As per Programme requirement	
5	Course Learning Outcomes (CLO)	On completion of this course, the students will be able to demonstrate the acquisition of: • Document and analyze regional agroforestry systems. • Identify key tree species and their characteristics. • Implement management practices for trees and crops. • Conduct experiments on soil fertility and water conservation. • Design agroforestry systems and analyze their climate change role.	
6	Credit Value	1 Credit	(Credit=30 hours laboratory or field learning/ training)

Part B: Content of the Course

Total No. of learning-Training/performance Periods: 30 Periods (30 Hours)

Module	Topics (Course contents)	No. of Period
Lab./Field Training/ Experiment Contents of Course	1. Documentation of various agroforestry systems prevailing in the region. 2. Field visits to study diverse agroforestry systems. 3. Identification of major tree species under agroforestry practices. 4. Characteristics of multipurpose tree species used in agroforestry. 5. Agroforestry systems in different agro-ecological regions of India. 6. Management practices under agroforestry for trees and crops. 7. Experiments on soil fertility and water conservation. 8. Demonstrations of management techniques. 9. Design exercises for planning agroforestry systems and D&D techniques of agroforestry. 10. Case studies on agroforestry's role in climate change. 11. Group projects on agroforestry system analysis.	30

Part - C

Learning Resource: Text Books, Reference Books, Others

Text Books Recommended-

1. Nair, P.K.R. (1993). An Introduction to Agroforestry. Kluwer Academic Publishers, Dordrecht, The Netherlands.
2. Nair, P.K.R. Agroforestry Systems in the Tropics. Springer. 680p.
3. Negi, S.S. (1990). A Handbook of Forestry, International Book Distributors, Dehradun, 690p.
4. Huxley, P.A. (1983) (eds). Plant Research and Agroforestry, ICRAF, Nairobi, Kenya.
5. Pathak P.S. and Ram Newaj (eds.) (2003). Agroforestry: Potentials and Opportunities. Agrobios, Jodhpur.

Online Resources-

1. e-Krishi Shiksha- http://ecoursesonline.iasri.res.in/course/view.php?id=157

2. Agroforestry theory and practices | Antony Joseph Raj - Academia.edu

PART-A: Introduction			
Program: M. Sc. Forestry & Wildlife		**Semester: I**	**Session:2024-2025**
1	Course Code	**Lab Course I- FOSE-8 P**	
2	Course Title	**Plantation Forestry**	
3	Course Type	**Discipline Specific Elective Course (Practical)**	
4	Pre-requisite (if any)	As per Programme requirement	
5	Course Learning Outcomes (CLO)	On completion of this course, the students will be able to demonstrate the acquisition of: • Tree species identification. • Identify the different types of forests. • Technique of Plant nursery preparation. • Techniques of plantation.	
6	Credit Value	1 Credit	(Credit=30 hours laboratory or field learning/ training)

Part B: Content of the Course

Total No. of learning-Training/performance Periods: 30 Periods (30 Hours)

Module	Topics (Course contents)	No. of Period
Lab./Field Training/ Experiment Contents of Course	1. Study of tools, materials and operations for establishment of plantations. 2. Exercises on Plantation layout and plantation management. 3. Visit to plantation sites. 4. Exercises on study of plantation techniques & tree species suitable	30

	for different problematic lands /Wastelands. 5. Planting methods and techniques of different types of plantations including energy plantations, Urban plantations & Industrial plantations. 6. Study of the special techniques for difficult sites	

Part - C

Learning Resource: Text Books, Reference Books, Others

Text Books Recommended-

1. Khanna, L.S. (1989). Principles and Practice of Silviculture. Khanna Bandhu, New Delhi,
2. Dwivedi. A.P. (1993). Text book of Silviculture. International Book Distributors.
3. Evans, JE. (1982). Plantation Forestry in the Tropics. The English Language Book Society and Clarendon Press–Oxford.
4. Pathak P.S. and Ram Newaj (eds.) (2003). Agroforestry: Potentials and Opportunities. Agrobios, Jodhpur.
5. Evans, J. (1992). Plantation Forestry in the Tropics, 2nd edition. Oxford, UK, Clarendon Press.
6. Abral, I.P.and Drruwa, Narayan, V.V.(1990). Technologies for wasteland development, ICAR, New Delhi.
7. Tideman,E.M. Wasteland management guideline for Indian condition.

Online Resources-

PART -D: Assessment and Evaluation -Practical

Suggested Continuous Evaluation Methods:

Maximum Marks	: 100 Marks
Continuous Internal Assessment (CIA)	: 30 Marks
End Semester Exam (ESE)	: 70 Marks

Continuous Internal Assessment (CIA): (By Course Teacher)	Total Marks – 30	
	A. Assignment-	10 Marks
	B. Seminar-	10 Marks
	C. Field/Lab performance/attendance -	10 Marks

TWO YEAR POST-GRADUATE PROGRAM (2024-25)
DEPARTMENT OF FORESTRY & WILDLIFE
COURSE CURRICULUM

PART-A: Introduction			
Program: M. Sc. Forestry & Wildlife		**Semester: I**	**Session:2024-2025**
1	Course Code	**Lab Course II- FOSE-5 P**	
2	Course Title	**Medicinal and Aromatic Plants**	
3	Course Type	**Discipline Specific Course (Practical)**	
4	Pre-requisite (if any)	As per Programme requirement	
5	Course Learning Outcomes (CLO)	On completion of this course, the students will be able to demonstrate the acquisition of: • Identify medicinal and aromatic plants effectively. • Collect and prepare herbarium specimens proficiently. • Learn cultivation practices for important medicinal plants. • Propagation techniques and oil extraction for aromatic plants. • Enhance field knowledge and identification skills. • Understand the relationship between plants and people through ethno-botanical studies.	
6	Credit Value	1 Credit	(Credit=30 hours laboratory or field learning/ training)

Part B: Content of the Course

Total No. of learning-Training/performance Periods: 30 Periods (30 Hours)

Module	**Topics (Course contents)**	**No. of Period**
Lab./Field Training/ Experiment Contents of Course	1. Identification of medicinal and aromatic plants. 2. Collection and preparation of herbarium of medicinal & aromatic plants. 3. Cultivation practices of important and prioritize medicinal plants of Chhattisgarh. 4. Propagation techniques – Harvesting and oil extraction of aromatic plants. 5. Field visits for field knowledge and identification of medicinal & aromatic plants, 6. Field visit ethno-botanical study and the inter-relation between plant and people. 7. Survey and identification of plants used by the tribals for traditional medicine.	30

Part - C

Learning Resource: Text Books, Reference Books, Others

Text Books Recommended-

1. Beazley, M. (1981). The International Book of Forest. Mitchell Beazly Publishers, London.
2. Atul, C.K. and Kapur, B.K. (1982). Cultivation and utilization of medicinal plants. RRL., CSIR, Jammu-Tawi.
3. Chopra, R.N., Nayar, S.L. and Chopra, I.C. (1956). Glossary of Indian medicinal plants. CSIR, New Delhi.
4. Cunningham, A. (2014). Applied Ethnobotany: "People, Wild Plant Use and Conservation". Taylor & Francis,
5. EIRI Board. (2007). Handbook of Medicinal and Aromatic Plants: Cultivation, Utilisation and Extraction
6. Ethnobotany. Principles and applications. (1997). C. M. Cotton. John Wiley and Sons Ltd. 424p.
7. Gunther, E. (1975). The essential oils. Robert, K Krieger Pub. Co., New York.
8. Jain, S.K. (2010). Manual of Ethnobotany (2nd Ed). Scientific Publishers, India, 242p.
9. Maheshwari, J.K. (2000). Ethnobotany and medicinal plants of Indian subcontinent. Scientific Publishers, Jodhpur, India, 672p

Online Resources-

1. Course: MEDICINAL AND AROMATIC CROPS (2+1) (iasri.res.in)

2. Textbook of Medicinal and Aromatic Plants | ICAR

PART- A: introduction

Program: M. Sc. Forestry & Wildlife		**Semester- I**	**Session: 2024-2025**
1	Course Code	**Lab Course II- FOSE-6 P**	
2	Course Title	**NTFPs and Forest based industries**	
3	Course Type	Discipline Specific Elective (Practical)	
4	Pre-requisite (if any)	As per Programme requirement	
5	Course Learning Outcome (CLO)	On completion of this course, the students will able to demonstrate the acquisition of: • Learn about NTFPs and Timber produce • Understand scientific harvesting and conversion of timber produce. • To know about the manufacturing of composite wood.	

		• Learn about pulp & paper manufacturing industries.	
6	Credit Value	1 Credit	(Credit=30 hours laboratory or field learning/ training)

Part B: Content of Course

Total No. of learning- Training/performance Periods: 30 Periods (30 Hours)

Module	Topics (Course contents)	No. of Period
Lab./Field training/Experiment Contents of Course	1. Study of marketing channels and price spread for important non-timber forestry products. 2. Visits to timber produce and NTFP markets to collect pric data and quantity sold. 3. Field visit, collection and preparation of herbarium – Visiting commercial units of major NTFPs. 4. Visit to plywood industry to study the manufacturing processes. 5. Study of Extraction and distillation of fattyoil and essential oil. 6. Study of collection and processing of gum & resins.	**30**

PART- C

Learning Resources: Text Book, Reference Book, Others

Text BooksRecommended-

1. FRI. [Forest Research Institute]. 1976. Indian forest utilization. Volume I and II. Forest Research Institute, Dehradun.
2. Tewari, D. N. 1995. Marketing and trade of forest produce; International Book Distributors (Book Sellers & Publishers), Dehradun, India.
3. Mehta, T. 1981. A Hand Book of Forest Utilization; International Book Distributors (Book Sellers & Publishers), Dehradun, India.
4. Rawat, S.P.2008. Non – Timber Forest Products of India; Gene – Tech Books, New Delhi.
5. Dwivedi, A.P. 2007. Forest: The Non – Wood Resources; International Book Distributors (Book Sellers & Publishers), Dehradun, India.

OnlineResources-

1. https://link.springer.com/book/10.1007/978-3-030-73077-2

PART -D: Assessment and Evaluation -Practical		
Suggested Continuous Evaluation Methods: Maximum Marks : 100 Marks Continuous Internal Assessment (CIA) : 30 Marks End Semester Exam (ESE) : 70 Marks		
Continuous Internal Assessment (CIA): (By Course Teacher)	Total Marks – 30 A. Assignment- B. Seminar- C. Field/Lab performance/attendance -	 10 Marks 10 Marks 10 Marks

Name and Signature of Convener & Members :

Dr Sharad Nema-Chairman

Dr Vinod Kumar Soni- Member **Dr Sajiwan Kumar- Member**

Shri Vimal Kumar Ratre- Member **Mrs Reshma Ekka- Member**

FOUR YEAR UNDERGRADUATE PROGRAM (2024-25)
DEPARTMENT OF FORESTRY & WILDLIFE
COURSE CURRICULUM

PART-A: Introduction			
Program: M. Sc. Forestry & Wildlife		**Semester: II**	**Session:2024-2025**
1	Course Code	**FOSC- 8 T**	
2	Course Title	**Wasteland and Watershed Management**	
3	Course Type	**Discipline Specific Course (Theory)**	
4	Pre-requisite (if any)	As per Programme requirement	
5	Course Learning Outcomes (CLO)	The graduates able to know • Understand the concept of Wasteland and watershed and aware regarding soil and water conservation and their management practices. • To now the watershed management techniques and soil and water conservation. • Gain knowledge on forestry and Afforestation techniques of raising trees and seedlings. • The reclamation work of wastelands/ ploblematic lands in India.	
6	Credit Value	3 Credits	(Credit=15 hours-learning & observation)
7	Total Marks	Max. Marks: 100	Min Passing Marks : 40

Part B: Content of the Course		
Total No. of Teaching- learning Periods (01 hr. per period) – 45 Periods (45 Hours)		
Course Code - FOSC- 8 T		**Credit - 3+1**
Module/ Unit	**Topics (Course Contents)**	**No. of Period**
I	**Concept of Watershed**: Definition and concept of watershed, Classification of Watershed, Causes of Watershed Deteriration, Watershed Characteristics, Watershed Management, Benefits of Watershed Development, Watershed development Plan, Agronomical/ Vegetative Measures for Soil & Water Conservation,	10
II	**Watershed Management:** Definition, objectives, Watershed Problem, Watershed management- an approach for sustainable productivity- principles and practices- Methods for water conservation- water harvesting techniques. Role of trees in water conservation- natural terracing- species suitability- Recharging of water springs. Forest treatment and water yield. Application of GIS in watershed delineation	10

III	**Wasteland:** Definition, Causes of development of Wasteland, Distribution in India, Classification of Wastelands Wasteland development technique – Afforestation & Reforestation. Reclamation of Wastelands/Problematic land in India.	10
IV	**Causative factors of wasteland development** ; Salt affected soils, lateritic, marsh and swampy and rocky hills, rocky plains, murrammy and sandy soils, their characteristics and reclamation. Sites with superficial impervious hard pan. Eroded ravines and gullies, various techniques of afforestation of adverse sites, trees suitable for adverse sites. And Plantation technique. Approaches to development Planning for Wastelands	15
Keywords: Watershed, Soil, Forest, Ravines, Reclamation, Wastelands.		

Part - C

Learning Resource: Text Books, Reference Books, Others

Text Books Recommended-

1. Hamilton L. S. (1983). Tropical Forested Watersheds: hydrologic and soils response to major uses or conversions. International Book Distributors, Dehra Dun Hamilton,
2. L.S. (ed.). (1983). Forest and Watershed Development and Conservation in Asia and the Pacific. International Book Distributors, Dehra Dun.
3. Abrol, I.P. and Dhruva Narayana, V.V. (1990).Technologies for Wasteland Development, ICAR , New Delhi.
4. Tidemen, E.M. Wasteland Management guidelines for Indian Condition.

Online Resources-

PART -D: Assessment and Evaluation -Theory

Suggested Continuous Evaluation Methods:

Maximum Marks: 100 Marks

Continuous Internal Assessment (CIA): 30 Marks

End Semester Exam(ESE): 70 Marks

Continuous Internal Assessment (CIA): (By Course Teacher)	Internal Test / Quiz-(2): 20 / 20 Assignment / Seminar - 10 Total Marks - 30	Better marks out of the two Test / Quiz + obtained marks in Assignment shall be considered against **30** Marks
End Semester Exam(ESE):	**Two section – A & B** Section A: **Q1**. Objective – **10 x1= 10** Mark; **Q2**. Short answer type- **5x4 =20 Marks** Section B: Descriptive answer type qts.,**1out of 2** from each unit-**4x10=40 Marks**	

TWO YEAR POST-GRADUATE PROGRAM (2024-25)
DEPARTMENT OF FORESTRY & WILDLIFE
COURSE CURRICULUM

PART-A: Introduction			
Program: **M. Sc. Forestry & Wildlife**		**Semester: II**	**Session:2024-2025**
1	Course Code	**FOSE-9 T**	
2	Course Title	**Forest Protection**	
3	Course Type	**Discipline Specific Elective (Theory)**	
4	Pre-requisite (if any)	As per Programme requirement	
5	Course Learning Outcomes (CLO)	On successful completion of the course, the students will be able to: • Understand the causes of forest fires and their control methods. • Discuss the human activities causing damage to forests. • Weed and disease management in forestry. • Identify and classify the diseases of forest and their control methods.	
6	Credit Value	3 Credits	(Credit=15 hours-learning & observation)
7	Total Marks	Max. Marks: 100	Min Passing Marks : 40

Part B: Content of the Course		
Total No. of Teaching- learning Periods (01 hr. per period) – 45 Periods (45 Hours)		
Course Code - FOSE-9 T		**Credit - 3+1**
Module/ Unit	**Topics (Course Contents)**	**No. of Period**
I	Introduction, definition and importance of forest protection, factors affecting forest Protection. Principles of forest Protection. Injuries caused to forest crop by man, animal, plants and adverse climatic factors. Forest protection measures; Preventive Measures and Remedial Measures	10
II	Definition of and classification of forest fire, Causes and effect on forest, Methods of forest fire prevention and control, Forest fire monitoring and	10

	alert system, use of remote sensing in forest fire management.	
III	Definition scope and Importance of forest Pathology, classification of diseases, Symptoms of plant disease, classification of tree disease, dissemination and survival of plant pathogens, Common diseases of selected forest trees, nursery diseases, types of wood decay. Principles and methods of Disease Management	15
IV	Definition Scope and importance of forest entomology. Importance of insects in forestry, Basic Structure and classification of insects, development and growth of insects, types of injuries caused by insects classification. Insect pests of selected forest trees, nursery pests. Insects of timber. Principles and methods of insect pest management.	10

Keywords: Forest Protection, Forest Pathology, Forest Entomology, Forest Fire

Part - C

Learning Resource: Text Books, Reference Books, Others

Text Books Recommended-

1. Khanna L.S. (1986). Forest Protection Khanna Bandhu Dheradun
2. Negi S.S. HandBook of Forest Protection IBD Dheradun
3. Singh R.S. Plant Diseases
4. Bakshi B.K. (1976). Forest Pathology Controller of Publication New Delhi
5. Singh R.S. Introduction to Principles of Plant Pathology
6. Awasthi V.B. Introduction to general and applied entomology
7. Mani M.S. General entomology
8. Sathe T.V. (2009). A textbook of Forest Entomology Today and Tomorrow Publishers

Online Resources-

1. http://www.westbengalforest.gov.in/upload/development/cm10.pdf
2. https://www.uou.ac.in/sites/default/files/slm/FR-03.pdf

PART -D: Assessment and Evaluation -Theory

Suggested Continuous Evaluation Methods:

Maximum Marks: 100 Marks
Continuous Internal Assessment (CIA): 30 Marks
End Semester Exam(ESE): 70 Marks

Continuous Internal Assessment (CIA): (By Course Teacher)	Internal Test / Quiz-(2): 20 / 20 Assignment / Seminar - 10 Total Marks - 30	Better marks out of the two Test / Quiz + obtained marks in Assignment shall be considered against **30** Marks

End Semester Exam(ESE):	**Two section – A & B** Section A: **Q1**. Objective – **10 x1= 10** Mark; **Q2**. Short answer type- **5x4 =20 Marks** Section B: Descriptive answer type qts.,**1out of 2** from each unit-**4x10=40 Marks**

TWO YEAR POST-GRADUATE PROGRAM (2024-25)
DEPARTMENT OF FORESTRY & WILDLIFE
COURSE CURRICULUM

PART-A: Introduction			
Program: M. Sc. Forestry & Wildlife		**Semester: II**	**Session:2024-2025**
1	Course Code	**FOSE- 10 T**	
2	Course Title	**Remote Sensing & GIS**	
3	Course Type	**Discipline Specific Elective Course (Theory)**	
4	Pre-requisite (if any)	As per Programme requirement	
5	Course Learning Outcomes (CLO)	On completion of this course, the students will be able to Understand the fallowing latest technologies • To expose the students as well as practicing foresters to the latest trends & techniques in the forest measurement. • The applications of remote sensing in the Forestry sector and conservation of Forest & Wildlife. • Equip forestry graduates with satellite technology & tools and requirements of forestry. • To aware the GIS tools and their application in forestry.	
6	Credit Value	4 Credits	(Credit=15 hours-learning & observation)
7	Total Marks	Max. Marks: 100	Min Passing Marks : 40

PART- B: Content of the Course		
Total No. of Teaching-learning Periods (01 hr per period)- 45 Periods (45 Hours)		
Unit	**Topics (Course Contents)**	**No. of Period**
I	**Fundamentals of Remote Sensing** ; Introduction, Principles,, Classification of Remote Sensing, History of Remote Sensing , Advantages of Remote Sensing, Application of Remote sensing in Forest Mensuration, Aerial Photography – Development of Sensors, aerial platform, development of mensuration techniques, Photo Interpretation for Forestry applications. Space Imaging; space platforms. Aerial Photographic Systems- Camera, Films, Types of Photography, scale of photography, Season & Time of photography.	15
II	**Measurements on Aerial Photographs**: Measurement of heights - methods, Stereoscopic measurement of pair photographs Measurement Characteristics of a Tree and a Stand: Tree height, Tree crown diameter, Crown closure, Tree count .Measurement of Aerial volume: volume of individual tree, volume of a stand. Forest types identification of aerial photographs.	15

III	**Satellite systems**: Indian Remote Sensing satellite; Visual and digital image processing; Application of satellite based remote sensing techniques in forestry - vegetation mapping using satellite imagery-NDVI; Forest cover monitoring and damage assessment. Satellite data products and Spectral Pattern Recognition: Digital Analysis of Landsat - Multispectral Scanner (MSS) data.	15
IV	**Introduction to GIS:** Uses & values of GIS, Differences between GIS and conventional cartography. Spatial and non-spatial data- Integration of attribute data with spatial data. Spatial data - Raster and Vector data- Thematic over lays in GIS- topology building and calculation of area and length etc. Application of GIS in forestry – using imageries and integration with GIS data. Maps-its projection-Toposheet and Map readings. Global Positioning System (GPS) applications in resource inventory	15
Keywords: Remote sensing, Forest , Satellite, GIS, Maps , Multispectral Scanner, Landset.		

Part - C

Learning Resource: Text Books, Reference Books, Others

Text Books Recommended-

1. Khanna, L.S. and A.N. Chaturvedi (1988). Forest Mensuration and Biometry. Khanna Bandhu, New Delhi,
2. Sharma , M.K.. (1986). Remote Sensing and Forest Survey . International Book Distributors. Dehradun.
3. Patel, A.N.and S. Singh. (2013). Remote Sensing : Principles and Applications. Scientific Publishers , Jodhpur .
4. Obi Reddy, G.P. and Sarkar, D. (2012). RS and GIS in Digital Terrain Analysis and Soil Landscape Modelling. NBSS & LUP, Nagpur.

Online Resources-

1. https://onlinecourses.nptel.ac.in/noc22_ce84/preview
2. https://www.nrsc.gov.in/Knowledge_EBooks?language_content_entity=en
3. https://easyengineering.net/text-book-of-remote-sensing-and-geographical-information-systems-by-anji-reddy/
4. https://www.researchgate.net/publication/312577535_Remote_Sensing_and_Geographical_Information_System_GIS_and_Its_Applicationn_in_Various_Fields/link
5. https://annamalaiuniversity.ac.in/studport/download/engg/civil/resources/Remote%20Sensing%20and%20GIS.pdf

PART -D: Assessment and Evaluation -Theory		
Suggested Continuous Evaluation Methods: Maximum Marks: 100 Marks Continuous Internal Assessment (CIA): 30 Marks End Semester Exam(ESE): 70 Marks		
Continuous Internal Assessment (CIA): (By Course Teacher)	Internal Test / Quiz-(2): 20 / 20 Assignment / Seminar - 10 Total Marks - 30	Better marks out of the two Test / Quiz + obtained marks in Assignment shall be considered against **30** Marks
End Semester Exam(ESE):	**Two section – A & B** Section A: **Q1**. Objective – **10 x1= 10** Mark; **Q2**. Short answer type- **5x4 =20 Marks** Section B: Descriptive answer type qts.,**1out of 2** from each unit-**4x10=40 Marks**	

TWO YEAR POST-GRADUATE PROGRAM (2024-25)
DEPARTMENT OF FORESTRY & WILDLIFE
COURSE CURRICULUM

PART-A: Introduction			
Program: M. Sc. Forestry & Wildlife		**Semester: II**	**Session:2024-2025**
1	Course Code	**FOSE – 11 T**	
2	Course Title	**Wildlife Management**	
3	Course Type	**Discipline Specific Elective Course (Theory)**	
4	Pre-requisite (if any)	As per Programme requirement	
5	Course Learning Outcomes (CLO)	On completion of this course, the students will be able to demonstrate the acquisition of: • The graduates able to know - To develop the understanding of concept and importance of wildlife and their management. • To know the scope and importance of avian fauna. • Aims to provide a comprehensive understanding of wildlife and their conservation strategies with ecosystem development. • Graduates learns and able to know chemical restraint techniques.	
6	Credit Value	3 Credits	(Credit=15 hours-learning & observation)
7	Total Marks	Max. Marks: 100	Min Passing Marks : 40

PART- B: Content of the Course

Total No. of Teaching-learning Periods (01 hr per period)- 45 Periods (45 Hours)

Unit	**Topics (Course Contents)**	**No. of Period**
I	**Wildlife Habitat:** Habitat – Major habitats; Biomes, types of biomes, tropical and temperate habitats, Component of a wildlife habitat, The niche :pinch period, Qualifiers , Ecological equivalents , concept of home range & territory. Evolution of Territoriality, Point habitats and coverts & Biotic Succession. Habitat analysis and evaluation, Habitat evaluation procedure.	10
II	**Avian fauna / Ornithology:** Introduction. History of ornithology in India. Origin and ancestry of birds. A brief knowledge of bird anatomy, morphology and physiology, digestive, skeletal, respiratory, excretory systems of birds. Skeleton, feathers, skin, beak and taxidermy.. Bird ecology and behaviour; migration and territorial behaviour, feeding, song and nests, Bird watching, Bird conservation and management in India. Red Data Book birds of India.	10

III	**Wildlife Management:** Basic principles and Conservation of Indian wild animals / Individual species ; Big cats – important features of Tiger, Lion, Leopard , Black buck, Wild buffalo , Deer family ,Rhinoceroses, Indian Bison and Wild Elephants and Hill myana . Wildlife conservation projects and Captive wildlife: Zoos and Safari Parks, Captive breeding for conservation, Cental Zoo Authority of India.	10
IV	**Chemical Restraint or immobilization of wild animals:** Definition, purposes, advantages & disadvantages, safety chemical capture measures, Equipments and drug delivery. Drug action - drug classes & their doses, Chemical restraint of herbivores and Carnivores. Post captures medical care and treatment. Planning operation in the field.	15
Keywords : Habitat ,Biotic, Avian, Taxidermy, Captive, Restraint, Drug Wildlife Habitat/Avian fauna / Ornithology /Wildlife Management /Chemical Restraint /immobilization of wild animals		

Part - C

Learning Resource: Text Books, Reference Books, Others

Text Books Recommended-

1. Dwivedi , A.P. (2009). Managing Wildlife of India. International Book Distributors , Dehra Dun.
2. Rajesh, G. (1995). Fundamentals of Wildlife Management, Justice Home, Allahabad.
3. Singh ,S.K. (2009). Text book of Wildlife Management. Today and Tomorrow Publisher.
4. Negi ,S.S (1993). Manual for Wildlife Management. International Book Distributors , Dehar Dun.
5. Ali, S. and Ripley, D.S.(1990). A compact Handbook of Birds of Indian subcontinent. Oxford University press, Bombay
6. Grimmet, R. Inskipp T and Inskipp, I. (2003). Handbook of Birds of Indian subcontinent. Oxford University press

Online Resources-

1. https://search.worldcat.org/title/Rajesh-Gopal's-fundamentals-of-wildlife-management/oclc/689910173.
2. http://www.jnkvv.org/PDF/06042020101735WILDLIFE%20BIOLOGY.pdf
3. https://download.e-bookshelf.de/download/0002/6026/90/L-G-0002602690-0003940192.pdf
4. https://natrajbooks.in/product/fundamentals-of-wildlife-management-2/
5. https://www.wiley.com/en-in/Fundamentals+of+Conservation+Biology,+4th+Edition-p-9781119144168.

PART -D: Assessment and Evaluation -Theory		
Suggested Continuous Evaluation Methods: Maximum Marks: 100 Marks Continuous Internal Assessment (CIA): 30 Marks End Semester Exam(ESE): 70 Marks		
Continuous Internal Assessment (CIA): (By Course Teacher)	Internal Test / Quiz-(2): 20 / 20 Assignment / Seminar - 10 Total Marks - 30	Better marks out of the two Test / Quiz + obtained marks in Assignment shall be considered against **30** Marks
End Semester Exam(ESE):	**Two section – A & B** Section A: **Q1**. Objective – **10 x1= 10** Mark; **Q2**. Short answer type- **5x4 =20 Marks** Section B: Descriptive answer type qts.,**1out of 2** from each unit-**4x10=40 Marks**	

TWO YEAR POST-GRADUATE PROGRAM (2024-25)
DEPARTMENT OF FORESTRY & WILDLIFE
COURSE CURRICULUM

PART-A: Introduction			
Program: M. Sc. Forestry & Wildlife		**Semester- II**	**Session: 2024-2025**
1	Course Code	**FOSE-12 T**	
2	Course Title	**Forest Statistics & Research Methodology**	
3	Course Type	**Discipline Specific Elective (Theory)**	
4	Pre-requisite (if any)	As per Programme requirement	
5	Course Learning Outcome (CLO)	The graduates/postgraduates students able to demonstrate the acquisition of: • Understand the knowledge on statistics & Research methodology. • Able to know about how to plan and conduct the research study. • Able to contribute and share in research bases critical analysis & interpretation of results on national and local issues. • Able to know applications of computer in research study.	
6	Credit Value	3 Credits	(Credit=15 hours-learning & observation)
7	Total Marks	Maximum Marks: 100	Minimum passing Marks: 40

PART- B: Content of the Course		
Total No. of Teaching- learning Periods (01 hr. per period) – 45 Periods (45 Hours)		
Unit	**Topics (Course Contents)**	**No. of Period**
I	**Introduction Statistics:** Construction of frequency distribution, tables–graphic representation of data, simple, multiple components and percentage, bar diagram, pie diagram, histogram,	10

	frequency polygon and frequency curve average and measures of location for raw and grouped data. Measures of dispersion: for raw and grouped data. Probability: additive and multiplicative laws.	
II	**Tests of significance:** Sampling, basic concepts, sampling vs. Complete enumeration parameter and static, sampling methods, simple random sampling and stratified random sampling. Tests of significance: Basic concepts, tests for equality mean, an independent and paired t-test, chi square tests for application of attributes and test for goodness to fit of mendalian ratios. Correlation co-efficient and its properties, regression, fitting of sample linear regression, tests of significance of correlation and regression co-efficient.	10
III	**Design of Experiment:** Introduction to design of experiment-Basic principles of experimental design-replication, randomization and local control. Analysis of variance, ANOVA table-conclusions based on ANOVA. Comparisons based on meanscritical difference. Completely randomized design-Layout, analysis, advantages and limitations, Randomized block design-layout, analysis, choice of no. of blocks, advantages and limitations. Latin square designs- layout, analysis, applications, advantages and limitations & other experimental designs.	15
IV	**Computer Application:** Basic knowledge of hardware and software. CPU, input/output device, Auxiliary storage devices. Binary number system. Introduction to computer, Graphical Presentation of data; Frequency analysis. Introduction to MS office software: Word processing; Creating new document, Editing Documents, Word tables. Working in Power Point, Creating new presentation, working with slides. Introduction to Internet and Applications.	10
Keywords- Biological data, Frequency distribution, Measures of central Tendency & Dispersion, Correlation & regression, Test of Significance, Analysis of Variance, MS- Office, Internet etc		

PART- C

Learning Resources: Text Book, Reference Book, Others

Text BooksRecommended-

1. Kapoor, V. K. and Gupta, S. C. (2012). Fundamentals of Mathamatical Statistics. Sultan Chand & Sons Educational Publishers, New Delhi, India.
2. Chandel, S. R.S. (2004). A Handbook of Agricultural Statistics. Anchal Prakashan Mandir, Kanpur, India.
3. Shukla, S. M. and Sahay, S. P. (2012).Principles of Statistics. Shahitaya Bhawan Publication, Agra, India.
4. Nigam A.K. and Gupta, V.K.(1979). Hand book on Analysis of Agricultural Experiments. IASRI Publication, New Delhi.
5. Panse, V. G.and P. V. Sukhatme. (1967). Statistical Methods for Agricultural Workers. Indian Council of Agricultural Research, New Delhi, India.
6. Gomez, K.A. and Gomez, A.A. (1984). Statistical Procedures for Agricultural Research. John Wiley and Sons. New York.680p.

OnlineResources-

- teresas.ac.in/wp-content/uploads/2018,
- tripurauniv.ac.in/page/subjectwiseonline-ebook-statistics,
- kvknorthgoa.icar.gov.in/litpub/technical bulletin,
- researchgate.net/publication/328638618

PART -D: Assessment and Evaluation -Theory

Suggested Continuous Evaluation Methods:

Maximum Marks: 100 Marks
Continuous Internal Assessment (CIA): 30 Marks
End Semester Exam(ESE): 70 Marks

Continuous Internal Assessment (CIA): (By Course Teacher)	Internal Test / Quiz-(2): 20 / 20 Assignment / Seminar - 10 Total Marks - 30	Better marks out of the two Test / Quiz + obtained marks in Assignment shall be considered against **30** Marks
End Semester Exam(ESE):	**Two section – A & B** Section A: **Q1**. Objective – **10 x1= 10** Mark; **Q2**. Short answer type- **5x4 =20 Marks** Section B: Descriptive answer type qts.,**1out of 2** from each unit-**4x10=40 Marks**	

FOUR YEAR UNDERGRADUATE PROGRAM (2024-25)
DEPARTMENT OF FORESTRY & WILDLIFE
COURSE CURRICULUM

PART-A: Introduction			
Program: M. Sc. Forestry & Wildlife		**Semester: II**	**Session:2024-2025**
1	Course Code	**Lab Course I -FOSC- 8 P**	
2	Course Title	**Wasteland and Watershed Management**	
3	Course Type	**Discipline Specific Course (Practical)**	
4	Pre-requisite (if any)	As per Programme requirement	
5	Course Learning Outcomes (CLO)	On completion of this course, the students will be able to demonstrate the acquisition of: • Impact of watershed treatments. • Restocking of Degraded forest lands. • Technique of afforestation. • Techniques of plantation.	
6	Credit Value	1 Credit	(Credit=30 hours laboratory or field learning/ training)

Part B: Content of the Course

Total No. of learning-Training/performance Periods: 30 Periods (30 Hours)

Module	**Topics (Course contents)**	**No. of Period**
Lab./Field Training/ Experiment Contents of Course	1. Visit to watersheds area and study the effect of treatment on hydrological properties. 2. Assessment of the impact of watershed treatments such as afforestation /restocking assisted regeneration etc. 3. Measurement and analysis of rainfall data. 4. Economic analysis of wasteland development Project.	30

Part - C

Learning Resource: Text Books, Reference Books, Others

Text Books Recommended-

1. Hamilton L. S. (1983). Tropical Forested Watersheds: hydrologic and soils response to major uses or conversions. International Book Distributors, Dehra Dun Hamilton,
2. L.S. (ed.). (1983). Forest and Watershed Development and Conservation in Asia and the Pacific. International Book Distributors, Dehra Dun.
3. Abrol, I.P. and Dhruva Narayana , V.V.91990).Technologies for Wasteland Development, ICAR ,New Delhi.
4. Tidemen, E.M. Wasteland Management guidelines for Indian Condition.

Online Resources-

PART-A: Introduction			
Program: M. Sc. Forestry & Wildlife		**Semester: II**	**Session:2024-2025**
1	Course Code	**Lab Course I- FOSE-9 P**	
2	Course Title	**Forest Protection**	
3	Course Type	~~**Discipline Specific Elective Course (Practical)**~~	
4	Pre-requisite (if any)	As per Programme requirement	
5	Course Learning Outcomes (CLO)	On completion of this course, the students will be able to demonstrate the acquisition of: • Identification of forest trees insects and diseases. • Evaluation of damaging impact of forest trees insects and diseases. • Able to diagnosis symptoms of wood decay. • Techniques of control of insects and diseases in the forest.	
6	Credit Value	1 Credit	(Credit=30 hours laboratory or field learning/ traning)

Part B: Content of the Course		
Total No. of learning-Training/performance Periods: 30 Periods (30 Hours)		
Module	**Topics (Course contents)**	**No. of Period**
Lab./Field Training/ Experiment Contents of Course	1. Collection and identification of insect. 2. Collection and identification of disease symptoms. 3. Identification and use of plant protection equipments 4. Visit to forest area with fire damage 5. Studing fire registers as record of forest department 6. Study of pesticide formulations and their method of application 7. Management of nursery diseases 8. Visit to forest nursery 9. Study diagnosis symptoms of wood decay	30

Part - C
Learning Resource: Text Books, Reference Books, Others

Text Books Recommended-

1. Khanna L.S. (1986). Forest Protection Khanna Bandhu Dheradun
2. Negi S.S. HandBook of Forest Protection IBD Dheradun
3. Singh R.S. Plant Diseases
4. Bakshi B.K. (1976). Forest Pathology Controller of Publication New Delhi
5. Singh R.S. Introduction to Principles of Plant Pathology
6. Awasthi V.B. Introduction to general and applied entomology
7. Mani M.S. General entomology
8. Sathe T.V. (2009). A textbook of Forest Entomology Today and Tomorrow Publishers

Online Resources-

1. http://www.westbengalforest.gov.in/upload/development/cm10.pdf
2. https://www.uou.ac.in/sites/default/files/slm/FR-03.pdf

PART -D: Assessment and Evaluation -Practical		
Suggested Continuous Evaluation Methods:		
Maximum Marks	: 100 Marks	
Continuous Internal Assessment (CIA)	: 30 Marks	
End Semester Exam (ESE)	: 70 Marks	
Continuous Internal Assessment (CIA): (By Course Teacher)	Total Marks – 30	
	A. Assignment-	10 Marks
	B. Seminar-	10 Marks
	C. Field/Lab performance/attendance -	10 Marks

FOUR YEAR UNDERGRADUATE PROGRAM (2024-28)
DEPARTMENT OF FORESTRY & WILDLIFE
COURSE CURRICULUM

PART-A: Introduction			
Program: M. Sc. Forestry & Wildlife		**Semester: II**	**Session:2024-2025**
1	Course Code	**Lab Course II- FOSE- 11 P**	
2	Course Title	**Wildlife Management**	
3	Course Type	**Discipline Specific Elective Course (Practical)**	
4	Pre-requisite (if any)	As per Programme requirement	
5	Course Learning Outcomes (CLO)	On completion of this course, the students will be able to demonstrate the acquisition of: • Study of Wildlife Behavior. • Identify the Birds (watching and drawings) • Technique of Chemical restraint operation. • Protected Areas Network.	
6	Credit Value	1 Credit	(Credit=30 hours laboratory or field learning/ training)

Part B: Content of the Course

Total No. of learning-Training/performance Periods: 30 Periods (30 Hours)

Module	**Topics (Course contents)**	**No. of Period**
Lab./Field Training/ Experiment Contents of Course	1. Visit to various protected areas and record the morphological, behavioral, feeding and reproductive activities of different species of wild animals 2. Field identification of major birds of India. Bird watching and drawings. Study of feathers, beak and leg types of different groups of birds 3. To participate the Chemical restraint operation in the field & submit the report.	30

Part - C

Learning Resource: Text Books, Reference Books, Others

Text Books Recommended-

1. Dwivedi , A.P. (2009). Managing Wildlife of India . International Book Distributors , Dehra Dun.
2. Rajesh, G. (1995). Fundamentals of Wildlife Management, Justice Home, Allahabad.
3. Singh ,S.K. (2009). Text book of Wildlife Management. Today and Tomorrow Publisher.
4. Negi ,S.S (1993). Manual for Wildlife Management. International Book Distributors , Dehar Dun.

5. Ali, S. and Ripley, D.S.(1990). A compact Handbook of Birds of Indian subcontinent. Oxford University press, Bombay
6. Grimmet, R. Inskipp T and Inskipp, I. (2003). Handbook of Birds of Indian subcontinent. Oxford University press

Online Resources-

1. https://search.worldcat.org/title/Rajesh-Gopal's-fundamentals-of-wildlife-management/oclc/689910173.
2. http://www.jnkvv.org/PDF/06042020101735WILDLIFE%20BIOLOGY.pdf
3. https://download.e-bookshelf.de/download/0002/6026/90/L-G-0002602690-0003940192.pdf
4. https://natrajbooks.in/product/fundamentals-of-wildlife-management-2/
5. https://www.wiley.com/en-in/Fundamentals+of+Conservation+Biology,+4th+Edition-p-9781119144168.

PART- A: introduction			
Program: M. Sc. Forestry & Wildlife		**Semester- II**	**Session: 2024-2025**
1	Course Code	**Lab Course II- FOSE-12 P**	
2	Course Title	**Forest Statistics & Research Methodology**	
3	Course Type	**Discipline Specific Elective (Practical)**	
4	Pre-requisite (if any)	As per Programme requirement	
5	Course Learning Outcome (CLO)	On completion of this course, the students will able to demonstrate the acquisition of: • Able to conduct research experiment on field. • Learn the Sampling techniques for data collection. • Understand the use and Application of computer in analysis of research data. • To know the construction of ANOVA table of one & two way data. Layout and analysis of different data of various research design • To handle the Statistical package for data analysis.	
6	Credit Value	1 Credit	(Credit=30 hours laboratory or field learning/ training)
Part B: Content of Course			
Total No. of learning- Training/performance Periods: 30 Periods (30 Hours)			

Module	Topics (Course contents)	No. of Period
Lab./Field training/ Experiment Contents of Course	1. Construction of frequency distribution table. 2. Calculate Central tendency of different biological data. 3. Calculate dispersion of different biological data. 4. Study of histogram, frequency polygon and frequency curve 5. Graphical presentation of data by a suitable package. 6. Study of sampling techniques for data collection. 7. Test of significance Student's t- test, pair t- test, two mean t-test. 8. Study of correlation and regression co-efficient. 9. Chi-square test, goodness of fit. 10. Analysis of variance (ANOVA). 11. Analysis of variance- construction of ANOVA table of twoway classified data. 12. Layout and analysis of CRD, Layout and analysis of RBD. Analysis of data from 2n factorial experiments in RBD. 13. Formation of Yate's table-calculation of main effects and interaction effects. Layout and analysis of split-plot design. 14. Application of Statistical package for data analysis.	**30**

PART- C

Learning Resources: Text Book, Reference Book, Others

Text BooksRecommended-

1. Kapoor, V. K. and Gupta, S. C. (2012). Fundamentals of Mathamatical Statistics. Sultan Chand & Sons Educational Publishers, New Delhi, India.
2. Chandel, S. R.S. (2004). A Handbook of Agricultural Statistics. Anchal Prakashan Mandir, Kanpur, India.
3. Shukla, S. M. and Sahay, S. P. (2012).Principles of Statistics. Shahitaya Bhawan Publication, Agra, India.
4. Nigam A.K. and Gupta, V.K.(1979). Hand book on Analysis of Agricultural Experiments. IASRI Publication, New Delhi.
5. Panse, V. G.and P. V. Sukhatme. (1967). Statistical Methods for Agricultural Workers. Indian Council of Agricultural Research, New Delhi, India.
6. Gomez, K.A. and Gomez, A.A. (1984). Statistical Procedures for Agricultural Research. John Wiley and Sons. New York.680p.

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- teresas.ac.in/wp-content/uploads/2018,
- tripurauniv.ac.in/page/subjectwiseonline-ebook-statistics,

• kvknorthgoa.icar.gov.in/litpub/technical bulletin, • researchgate.net/publication/328638618

PART -D: Assessment and Evaluation -Practical		
Suggested Continuous Evaluation Methods: Maximum Marks : 100 Marks Continuous Internal Assessment (CIA) : 30 Marks End Semester Exam (ESE) : 70 Marks		
Continuous Internal Assessment (CIA): (By Course Teacher)	Total Marks – 30 A. Assignment- B. Seminar- C. Field/Lab performance/attendance -	 10 Marks 10 Marks 10 Marks

Name and Signature of Convener & Members :

Dr Sharad Nema-Chairman

Dr Vinod Kumar Soni- Member

Dr Sajiwan Kumar- Member

Shri Vimal Kumar Ratre- Member

Mrs Reshma Ekka- Member