शहीद महेन्द्र कर्मा विश्वविद्यालय, बस्तर

धरमपुरा–2, जगदलपुर, जिला–बस्तर, छत्तीसगढ़, भारत पिनकोड 494001

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क्रमांक / 946 /अका./पाठ्यक्रम/2022 जगदलपुर, दिनांक ...../10/2022

21 OCT 2022

//अधिसूचना//

शहीद महेन्द्र कर्मा विश्वविद्यालय, बस्तर जगदलपुर के विद्यापरिषद की बैठक दिनांक 11.07.2022 एवं कार्यपरिषद की 40वीं बैठक दिनांक 14.07.2022 में लिये गये निर्णयानुसार विश्वविद्यालय शिक्षण विभाग के अन्तर्गत विभिन्न अध्ययनशाओं में एवं विश्वविद्यालय से संबद्ध महाविद्यालयों में संचालित निम्नलिखित स्नातकोत्तर पाठ्यक्रमों के संशोधित सिलेबस सत्र 2022–23 से लागू किया जाता है:–

क्रमांक	विषय/पाठ्यक्रम का नाम	परीक्षा प्रणाली
1	एम.ए. हिन्दी	सेमेस्टर परीक्षा प्रणाली
2	एम.कॉम. वाणिज्य	सेमेस्टर परीक्षा प्रणाली
3	एम.ए./एम.एस.सी. मानवविज्ञान एवं जनजातीय	सेमेस्टर परीक्षा प्रणाली
4	एम.एस.सी. वानिकी एवं वन्यजीव	सेमेस्टर परीक्षा प्रणाली
5	एम.एस.सी. ग्रामीण प्रौद्योगिकी	सेमेस्टर परीक्षा प्रणाली
6	एम.एस.सी. कम्प्यूटर साइंस	सेमेस्टर परीक्षा प्रणाली
7	एम.सी.ए. कम्प्यूटर अनुप्रयोग	सेमेस्टर परीक्षा प्रणाली
8	एम.एस.सी. रसायनशास्त्र	सेमेस्टर परीक्षा प्रणाली
9	एम.ए. राजनीति विज्ञान	सेमेस्टर परीक्षा प्रणाली

उपरोक्त पाठ्यक्रमों को छोड़कर अन्य स्नातकोत्तर पाठ्यक्रम पूर्ववत यथावत रहेंगे।

19/10/2022

कुलसचिव
शहीद महेन्द्र कर्मा विश्वविद्यालय, बस्तर
जगदलपुर, जिला–बस्तर (छ.ग.)

पृ. क्रमांक/ /अका./ पाठ्यक्रम/2022 जगदलपुर, दिनांक ...../10/2022

21 OCT 2022

प्रतिलिपिः–

1. माननीय राज्यपाल एवं कुलाधिपति के सचिव, राजभवन, रायपुर
2. सचिव छ.ग. शासन, उच्च शिक्षा विभाग, मंत्रालय, महानदी भवन, नवा रायपुर अटल नगर, जिला–रायपुर
3. आयुक्त, उच्च शिक्षा संचालनालय, इन्द्रावती भवन, नवा रायपुर अटल नगर, जिला–रायपुर
4. माननीय कुलपति महोदय, शहीद महेन्द्र कर्मा विश्वविद्यालय, बस्तर जगदलपुर
5. क्षेत्रीय अपर संचालक, उच्च शिक्षा, शासकीय काकतीय स्नातकोत्तर महाविद्यालय, जगदलपुर
6. समस्त प्राचार्य, संबद्ध समस्त शासकीय एवं अशासकीय महाविद्यालय, शहीद महेन्द्र कर्मा विश्वविद्यालय, बस्तर, जगदलपुर
7. समस्त विभाग प्रमुख/विभागाध्यक्ष, समस्त अध्ययनशाला, शहीद महेन्द्र कर्मा विश्वविद्यालय, बस्तर जगदलपुर

– को ओर सूचनार्थ एवं आवश्यक कार्यवाही हेतु प्रेषित।

सहायक कुलसचिव (अकादमिक)
शहीद महेन्द्र कर्मा विश्वविद्यालय, बस्तर
जगदलपुर, जिला–बस्तर (छ.ग.)

SHAHEED MAHENDRA KARMA VISHWAVIDYALAYA, BASTAR, JAGDALPUR
SESSION 2022-23

शहीद महेन्द्र कर्मा विश्वविद्यालय, बस्तर जगदलपुर (छ.ग.)

SHAHEED MAHENDRA KARMA VISHWAVIDYALAYA, BASTAR
JAGDALPUR, CHHATTISGARH

Syllabus

M.Sc. Forestry And Wildlife

(Semester Pattern)

Session 2022-23

SHAHEED MAHENDRA KARMA VISHWAVIDYALAYA, BASTAR, JAGDALPUR

SESSION 2022-23

04 JUL 2022

M.Sc. FORESTRY AND WILDLIFE

2 Year/4 Semester Course

Under the Faculty of Life Science

School of Studies in Forestry and Wildlife, University Teaching Department

Programme Code- MSLF

FIRST SEMESTER

	Paper No.	Title of Papers	Marks		Credit
			External*	Internal**	
FIRST SEMESTER	I	Forest Ecology and Introductory Wildlife	80	20	4
	II	Wasteland & Watershed Management	80	20	4
	III	Forest Mensuration & Forest Biometry	80	20	4
	IV	Forest Statistics & Computer Application	80	20	4
	LC-I	Lab Course I (Based on paper I & II)	80	20	2
	LC-II	Lab Course I (Based on paper III & IV)	80	20	2
		Seminar	50	-	2
		Total	530	120	22

SECOND SEMESTER

	Paper No.	Title of Papers	Marks		Credit
			External*	Internal**	
SECOND SEMESTER	I	Tree Propagation and Improvement	80	20	4
	II	Economic Forestry & NWFP	80	20	4
	III	Silviculture	80	20	4
	IV	Forest Classification and wood Technology	80	20	4
	LC-I	Lab Course I (Based on paper I & II)	80	20	2
	LC-II	Lab Course I (Based on paper III & IV)	80	20	2
		Seminar	50	-	2
		Total	530	120	22

THIRD SEMESTER

	Paper No.	Title of Papers	Marks		Credit
			External*	Internal**	
THIRD SEMESTER	I	Forest Protection	80	20	4
	II	Agroforestry & Forest Management	80	20	4
	III	Biodiversity & Conservation Biology	80	20	4
	IV	Wildlife Management	80	20	4
	LC-I	Lab Course I (Based on paper I & II)	80	20	2
	LC-II	Lab Course I (Based on paper III & IV)	80	20	2
		Seminar	50	-	2
		Total	530	120	22

FOURTH SEMESTER

	Paper No.	Title of Papers	Marks		Credit
			External*	Internal**	
FOURTH SEMESTER	I	Medicinal & Aromatic Plants	80	20	4
	II	Remote sensing & GIS, Air Pollution andEnvironmental Impact Assessment	80	20	4
	LC-I	Lab Course (Based on paper I & II)	80	20	2
		Dissertation & Viva-voce (External)***	200	-	8
		Seminar	50	-	2
		Total	490	60	20
		Grand Total Semester I+II+III+IV = 2500	2080	420	86

SHAHEED MAHENDRA KARMA VISHWAVIDYALAYA, BASTAR, JAGDALPUR
SESSION 2022-23

IMPORTANT NOTE

1. *Each theory paper will have 5 Questions of equal marks. First question (Multiple choice type or short answer type) will be based on all units (complete syllabus) with no internal choice, whereas remaining questions will be unit wise having internal choice within each unit.
2. **Each student will be evaluated continuously throughout the semester. 20 Internal Marks for each Theory Paper will be based on class test (10 marks) & presentation (10 Marks).
3. ***A student of IV semester will have to submit a Dissertation work. The valuation of the Dissertation work will be carried out by an external examiner and the faculty members of the department.

SHAHEED MAHENDRA KARMA VISHWAVIDYALAYA, BASTAR, JAGDALPUR
SESSION 2022-23

M.Sc. FORESTRY AND WILDLIFE
SEMESTER - I
PAPER-I

Course Code- MSLF 101

FOREST ECOLOGY AND INTRODUCTORY WILDLIFE

UNIT I

Forest Ecology: Definition Concept of ecosystem, structure and function of ecosystem, biotic and abiotic components, energy flow in the ecosystem, food chain, food web, trophic level. Succession: Definition, causes of succession, types of succession mechanism of succession of documentary succession, weed in succession, climax concept in succession, Biome.

UNIT II

Concept of community, attributes, physiognomy, species composition, species diversity, methods of sampling forest community. Community ecology: definition, characterization of community; composition, structure, origins and development of community, method of study of community, unit of vegetation classification. Population ecology, population characteristic, population growth, population interactions.

UNIT III

Definition of Wildlife, Important wildlife Sanctuary & National Park in India & Chhattisgarh. In-situ & Ex-situ conservation techniques of wildlife, Wildlife conservation projects- Tiger, Elephant, Lion and Crocodile.

UNIT IV

Introduction to wildlife, forest & wildlife, important of wildlife & value of wildlife, status of wildlife in India. IUCN revised red list categories, Red Data Book and listing, wildlife census, radio telemetry in wildlife studies. Captive wildlife: Zoo and safari parks, Captive breeding for conservation, Central Zoo Authority of India.

PRACTICAL

1. Vegetation survey to study forest composition.
2. Quantification of litter accumulation and decomposition.
3. Estimation of nutrients in soil, plant samples.
4. Herbarium preparation.
5. Identification of wildlife.
6. Exercise on the census methods, use of software for analysis of census data.

REFERENCES

1. Sharma, P.D. *Ecology and Environment.*
2. Odum, E. P. (1971). Fundamental of Ecology 3rd Edition Saunders Philadelphia, USA.
3. Introduction to Wildlife- SS Negi
4. Wildlife management and conservation- Rajesh Gopal
5. Wildlife conservation and management- D Kapil
6. Ecology, Environmental Science & Conservation by *Singh, Singh & Gupta, 2014* Published by S. Chand & Company Ltd. New Delhi.
7. Terrestrial Plant Ecology 3rd Edition by *Barbaur, Burk Pitts, Gillium and Schwartz,* 1999 Published by Wesley.

SHAHEED MAHENDRA KARMA VISHWAVIDYALAYA, BASTAR, JAGDALPUR
SESSION 2022-23

M.Sc. FORESTRY AND WILDLIFE
SEMESTER - I
PAPER - II
Course Code- MSLF 102
WASTELAND AND WATERSHED MANAGEMENT

UNIT I

Wasteland- Definition, distribution in India, types of wastelands, wasteland development and management, selection of tree species for wasteland development, development through aforestation and reforestation.

UNIT II

Reclamation & restoration of problematic land- Mined area, degraded land, saline & alkaline land, waterlogged area, desert & other lands, industrial plantation

UNIT III

Definition and concept of watershed, definition of watershed management, factor influencing watershed, identification of watershed problems, objective of watershed management, planning for watershed development, development of vegetative barriers for soil and water conservation.

UNIT IV

Wasteland and watershed management approaches: Biological approaches, community approaches. Mechanical engineering approaches, water harvesting techniques and recycling of rain water.

PRACTICAL

1. Determination of soil chemical properties of different wastelands.
2. Assessment of vegetation on wasteland.
3. Visit of watershed and wasteland area and report submission
4. Plantation techniques on wastelands.

REFERENCES

1. Abral, I. P. and Drruwa Narayan, V.V. (1990). Technologies for wasteland development ICAR, New Delhi.
2. Baumer (1989). Aroforestry for wasteland management. ICAR, Kenya.
3. Tideman, E.M. Wasteland management guidline for Indian condition.

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SESSION 2022-23

M.Sc. FORESTRY AND WILDLIFE
SEMESTER - I
PAPER - III
Course Code- MSLF 103
FOREST MENSURATION AND FOREST BIOMETRY

UNIT I

Definition & Introduction, object & scope of Forest Mensuration, Instrument & Methods use for measuring Tree diameter and girth, height, bark thickness, crown length & crown width, Tree form & Tree Factors.

UNIT II

Measurement of Volume of Felled & standing trees, Definition and type s of volume table, construction of volume table, stand table.

UNIT III

Types of increment and its estimation, determination of age of trees, stump and stem analysis. Yield and stand table, stand structure and growing stock, yield regulation.

UNIT IV

Forest Enumeration or inventory. Types of enumeration, factors effecting enumeration, sampling techniques, types of sampling. Fundamental concept of remote sensing, aerial photograph, satellite imageries for use in forest inventory.

PRACTICAL

- Measurement of tree diameter, height, clear bole, crown diameter, crown length.
- Estimation of tree volume, biomass of felled logs and standing tree.
- Stump and stem analysis, growing stock enumeration by sampling technique and sample plot survey.

REFERENCES

1. Chaturvedi, A.N. and Khanna, L.S. (1982). *Forest Mensuration*. International Book Distributers, Dehradun, India.
2. Philips, M. (1994). *Measuring tree and forests*. 1st edition CAB International, Cambridge, U.K.
3. Camebell, J.B. (1986). Introduction to remote sensing. The Guilford Press, London, UK.

SHAHEED MAHENDRA KARMA VISHWAVIDYALAYA, BASTAR, JAGDALPUR
SESSION 2022-23

M.Sc. FORESTRY AND WILDLIFE
SEMESTER - I
PAPER - IV
Course Code- MSLF 104
FOREST STATISTIC AND COMPUTER APPLICATION

UNIT I

Introduction to biostatistics. Types of biological data: data on different scales. Frequency distribution. Cumulative frequency distributions. Random sampling parameters and statistics. Measures of central tendency and dispersion: Mean, Median, Mode, Range, Variance and Standard Division. Coefficient of variation. Indices of Diversity. The effects of coding data. Data Transformation: Log-transformation, Square-root transformation and Arcsine transformation. Distribution: normal and binomial. Probability: Basic laws of probability, addition law, multiplication law. Probability and frequency.

UNIT II

Statistical error in hypotheses testing. Testing goodness of fit: Chi-square goodness of fit. Heterogeneity Chi-square. The 2x2 contingency table. One sample hypothesis. Two-sample hypothesis. Testing for different between two means (t-test). Testing for different between two variance (f-test). The paired sample T-test. Multiple-sample hypothesis (ANOVA): Single factor and two factor ANOVA. Multiple Computation: Duncan's multiple-rang tests, Simple linear regression. Regression Vs. Correlation. Regression equation. Interpretation of regression function. Simple linear correlation. The correlation coefficient. Comparing two correlation coefficients.

UNIT III

History and developments of computers. Basic knowledge of hardware and software. CPU, input/output device, Auxiliary storage devices. Operating system, Low and high-level language. Binary number system. Flow chart and programming techniques, Introduction to computer oriented statistical techniques, Graphical Presentation of data. Frequency analysis.

UNIT IV

Introduction to MS office software: Word processing; Creating new document, Editing Documents, Adding Graphics to documents, Word tables. Management of Workbook & worksheets. Presentation software: Working in Power Point, creating new presentation, working with slides. Introduction to Internet and Applications.

PRACTICAL:

- Calculate mean, median, standard deviation of variance, standard error and coefficientfor variance different biological data, "t" and chi square tests.
- Perform one and two wayANOVA.
- Study of different components of a computer system.
- Graphical presentationof data by a suitable package.
- Statistical analysis of a data by suitable package.
- Study of flowchart symbols and construction of a flowchart.

SHAHEED MAHENDRA KARMA VISHWAVIDYALAYA, BASTAR, JAGDALPUR
SESSION 2022-23

M.Sc. FORESTRY AND WILDLIFE
SEMESTER –I

LAB COURSE - I (BASED ON PAPER I AND II)
(External - 80 Marks & Internal - 20 Marks, Credit - 2)

LAB COURSE - II (BASED ON PAPER III AND IV)
(External - 80 Marks & Internal - 20 Marks, Credit - 2)

SEMINAR
(50 Marks, Credit - 2)

SHAHEED MAHENDRA KARMA VISHWAVIDYALAYA, BASTAR, JAGDALPUR
SESSION 2022-23

M.Sc. FORESTRY AND WILDLIFE
SEMESTER - II
PAPER - I
Course Code- MSLF 201
TREE PROPAGATION AND IMPROVEMENT

UNIT I

Vegetative propagation: Definition, object in forestry, importance, advantages and limitation of vegetative propagation in forestry, propagation by cutting importance and advantages of stem cutting, root cutting treatment with growth regulators and fungicides, factor affecting regeneration of plants by layering

UNIT II

Tree Improvement: General principles of tree improvement, nature and extent of variation in natural population of tree species. Concept of seed stand and provenance test, selection and superior tree grading system.

UNIT III

Seed orchard establishment, seedling seed orchard and clonal seed orchard and progeny test, breeding methods, advanced generation breeding and hybridization, breeding for diseases and Insect resistance.

UNIT IV

Tissue Culture: Historical resume and general techniques for plants tissue culture, culture media, maintenance of callus, batch and continuous cell suspension culture, Isolation and culture of protoplast fusion, cryopreservation.

PRACTICAL

1. Vegetative propagation techniques: Layering, Grafting, Stem cutting and budding etc.
2. Media preparation and tissue culture of stem, leaf and anther etc.
3. Preparation of artificial seed
4. Hardening of tissue culture plants in polyhouse and field transfer.

REFERENCE

Applied Forest Tree Improvement	Bruce Zobel and John Talbert
Tree Breeding and Improvement	Shahgal *et al*
Fundamental of Genetics	B. D. Singh
Plant Breeding Principles and methods	B. D. Singh
Plant Biotechnology	B. D. Singh

SHAHEED MAHENDRA KARMA VISHWAVIDYALAYA, BASTAR, JAGDALPUR
SESSION 2022-23

M.Sc. FORESTRY AND WILDLIFE
SEMESTER - II
PAPER - II
ECONOMIC FORESTRY AND NWFP

Course Code- MSLF 202

UNIT I

Families of Forestry Importance: Distribution, floral characteristics and economic importance structure of the following families: Dipterocarpaceae, Malvaceae, Sterculiaceae, Meliaceae, Anacardiaceae, Combretaceae, Leguminosae.

UNIT II

Families of Forestry Importance: Bignoniaceae, Myrtaceae, Lythraceae, Rubiaceae, Verbenaceae, Lauraceae, Euphorbiaceae, Fabaceae, Ulmaceae, Moraceae, Palmaceae, Graminae, Coniferae.

UNIT III

Non-wood Forest Produce: Definition, classification, importance and present status in India and world, technologies and advancement for conserving resources. Sources of Minor forest products : lac, silk, gum & resin, food, paper, pulp, honey, flosses, fiber, dyes, tannin, medicines, edible colors, fruits, edible oils, essential oils, industrial oil, tendu leaves, katha and other minor forest produce.

UNIT IV

Collection, storage and preservation of forest produce, processing and marketing of NWFP and implements used in collection and processing.

PRACTICALS

1. Description of the part of typical plant.
2. Description and identification of plants from different families, as prescribed in the syllabus.
3. Non wood forest produce: Collection, description as to the part of the plant and use

REFERENCE

A Handbook of Forest Utilization -Dr. Tribhawan Mehta

A Handbook of forestry- Dr. S.S. Negi

SHAHEED MAHENDRA KARMA VISHWAVIDYALAYA, BASTAR, JAGDALPUR
SESSION 2022-23

M.Sc. FORESTRY AND WILDLIFE

SEMESTER - II
PAPER - III
SILVICULTURE

Course Code- MSLF 203

UNIT I

Introduction: Definition and scope of silviculture. Objects of study of silviculture, Relation of silviculture with forestry and its branches. Distinguishing features of trees: crown, stem, root, growth and development. Silviculture system: coppice system, selection system, clear felling system, regular and irregular system.

UNIT II

Natural Regeneration: Definition and method of regeneration. Natural regeneration from seed: seed production, seed dispersal, seed germination and seedling establishment. Dying back of seedlings. Natural regeneration under clear felling, shelter wood and selection system. Artificial regeneration: Definition and objects, objects of reforestation, factor affecting regeneration, choice between artificial and natural regeneration. Objects of afforestation of different types of lands, denuded hill slopes, abandoned cultivated land, grasslands, drylands with or without irrigation, saline, alkaline and lateritic soils.

UNIT III

Nursery: Definition, importance and object, classification, selection of sites, area fencing layout, preparation of beds, introduction of mycorrhiza, sowing of seed in beds, quantity of seeds, time of sowing, irrigation, weeding, transplanting, maintenance of fertility.

UNIT IV

Factor of locality: Definition and classification, climatic factors, topographic factors, edaphic factors, biotic factors, improvement felling, pruning and climber control.

PRACTICALS

1. Site selection. Layout, spacing and fencing techniques for nursery establishment.
2. Preparation of bed.
3. Sowing of seed in bed and calculation of germination percentage of seeds.
4. Isolation and observation of VAM fungi.
5. Visit of site with improvement felling.
6. Regeneration study and growing stock survey of given forest.
7. Record exotic species at different places.
8. Visit the Agroforestry site of wasteland in nearby area and make observation about the technique used, calendar operation and species used in afforestation

REFERENCES

1. Principles and practices of Silviculture — L.S. Khanna
2. A Text Book of Silviculture — Dr. S.S. Sagwal
3. A Text Book of Silviculture — A.P. Dwivedi
4. Elements of General Silviculture — Dr. Sharad Singh Negi
5. Plantation Trees — R.K. Luna
6. Indian tree and their Silviculture — Dr. S.S. Negi
7. Forest Tree Seed and Nursery Management — Virendra Singh, S.K. Lavania

SHAHEED MAHENDRA KARMA VISHWAVIDYALAYA, BASTAR, JAGDALPUR
SESSION 2022-23

M.Sc. FORESTRY AND WILDLIFE
SEMESTER - II
PAPER - IV

Course Code- MSLF 204

FOREST CLASSIFICATION AND WOOD TECHNOLOGY

UNIT I

The forests, classification of forest, growth of forest. Forest types: Definition, objects and bases of classification, system of classification, revised classification, brief description of groups, subgroups and types

UNIT II

Geographical and climatic (ecological) classification, Functional classification, Territorial classification, Administrative (Organizational) classification, Management (Silvicultural) classification, working circle, felling series: coupe, cuttings section, Periodic Block : Felling series in Selection forest. Felling series in Coppice-with-standard system.

UNIT III

Identification of wood. Scientific basis, finger print of wood, timber logging, wood seasoning, wood preservation, composite wood, improved wood. Implements used in collection and processing of forest products, purposes. Equipments and their uses, Keys for identification of timbers.

UNIT IV

Wood technology: Development in wood science technology, formation of wood and bark in trees, meristematic tissues, permanent tissues, primary, secondary and anomalous growth. Gross feature of wood-pith, laburnum. Duramen. Early wood, late wood, compression wood, tension wood, annual rings double and multiple rings, cell types and their arrangement in softwood and hardwoods, trachieds, ray trachieds, parenchyma vessels fiber and inter-cellular canals resins, ducts of conifers.

PRACTICALS

1. Record the vegetation (tree, shrub and herbs) after each 500mt. altitude, with the help of an altimeter.
2. Measurement of tree; clear bole, crown length and crown diameter.
3. To study the anatomy of wood; sapwood, heartwood and annual ring.
4. To study suitable methods for preservation seasoning of wood.

SHAHEED MAHENDRA KARMA VISHWAVIDYALAYA, BASTAR, JAGDALPUR
SESSION 2022-23

M.Sc. FORESTRY AND WILDLIFE
SEMESTER –II

LAB COURSE - I (BASED ON PAPER I AND II)
(External - 80 Marks & Internal - 20 Marks, Credit - 2)

LAB COURSE - II (BASED ON PAPER III AND IV)
(External - 80 Marks & Internal - 20 Marks, Credit - 2)

SEMINAR
(50 Marks, Credit - 2)

SHAHEED MAHENDRA KARMA VISHWAVIDYALAYA, BASTAR, JAGDALPUR
SESSION 2022-23

M.Sc. FORESTRY AND WILDLIFE
SEMESTER - III
PAPER - I
FOREST PROTECTION

Course Code- MSLF 301

UNIT I

Importance of pathology, disease symptoms, nursery disease and heart rot disease, Disease management. Seed pathology: seed treatment seed certification.

UNIT II

Disease of important tree species: Teak, Sal, Sissoo, Khair, Neem, Bamboo, Eucalyptus, Terminalia, Gmelina and Casuarina. Physiological disorder and protection (fire, drought, frost, soil moisture, snow, wind).

UNIT III

Forest Entomology: Insect and pest responsible for damaging important plant species (Teak, Sissoo, Eucalyptus), insect pest of nursery, principles and methods of insect pest control and integrated pest management. Weed characteristics: Effect of weed and weed controlling measures, biological and artificial measures.

UNIT IV

Fire Management: Causes of forest fire; Socio economic, natural and man-made causes (unintentional or accidental fire, fire due to collection of minor forest produce, fire due to logging operations, fire due to management reasons) Incendiary causes. Effects of fire, importance of fire prevention and fire prevention methods.

PRACTICALS

1. Seed treatment of given tree seeds for preservation and germination.
2. To study different nursery disease with symptoms and effect on any particular nursery.
3. Diseases of trees; Collection and identification of root, stem, leaf and fruit diseases.
4. Survey, collection and identification of local species of weeds,
5. Collection and preservation of insects from: Soil, Litter, stem, Leaf and fruit.
6. collection of important pathological insects like: Teak defoliator, Teak skeletonizeretc
7. Fire control measures in forests.

SHAHEED MAHENDRA KARMA VISHWAVIDYALAYA, BASTAR, JAGDALPUR
SESSION 2022-23

M.Sc. FORESTRY AND WILDLIFE
SEMESTER - III
PAPER - II
Course Code- MSLF 302
AGROFORESTRY AND FOREST MANAGEMENT

UNITI

Agroforestry: definition, agroforestry systems, importance, benefits and limitations; components and significance of agroforestry: structural, functional, productive, protective, physiognomic, floristic, ecological, socio-economical: Farming system: monoculture and multiple cropping, agro and farm forestry. Components and their interaction in agroforestry: choice of species and management practice for live fencing hedgerow, alley cropping, windbreak, shelterbelt, hill slopes and terraces cultivation.

UNIT II

Agroforestry: Management of biotic and abiotic components for complimentary, supplementary, competitiveness and sustainability of systems. Tree crown, root architecture and their management for agroforestry system. Criteria for selection and screening of tree and agriculture systems. Designing and geometry of agroforestry systems, silvipastoral, systems. fodder tree species, grass, legume and pasture species. carrying capacity and grazing systems.

UNIT III

Forest Management: Definition and scope; Special objects and choice. Management of Private Forests vis-a-vis Public Forests, principles of Forest Management - Forest Policy of 1894, National Forest Policy – 1952 and 1988. Forest on concurrent list, Peculiars features of forestry enterprise. Social forestry: definition, objectives and social role of Forestry.

UINIT IV

Rotation and Production Period: Introduction, Definition, Concept of Rotation in Regular and Irregular Forest. Type of Rotation, soil (Land) Expectation Value, Length of Rotation, Rotation of some Important Indian Species, choice of the type/ kind of Rotation, Rotation and conversion period. Yield regulation: Principles, objects and definition, type of yield- Intermediate and final, Silviculture systems in relation to yield, Methods or yield regulation in regular and irregular forests.

PRACTICALS

1. To estimate the nutritive value of different fodder grasses.
2. Visit to the site of apiculture, sericulture and lac culture.
3. To study the grazing system in a given range.
4. Collection and identification of agroforestry, species with special reference to C.G.
5. Study of agro forestry practices on hilly region.
6. Nursery cultivation of fodder grass spp.

REFERENCES

1.	Agroforestry	Dr. D.N. Tewari
2.	An Introduction to Agroforestry	Dr. P.K.R. Nair
3.	Agroforestry-potentials & Opportunities	Dr. P.S. Pathak & Dr. Ram Newaj
4.	Agroforestry - Natural Resource sustainability, livelihood and Climate Change	O.P. Chaturvedi, A. Venkatesh, R.S. Yadav, B. Alam, R.P. Dwivedi, R. Singh & S.K. Dhyani
5.	Forest Management	Ram Prakash
6.	Joint Forest Management	Hemant K. Gupta
7.	Forest Fire Control	R.K. Luna
8.	Handbook of Social Forestry	Dr. Sharad Singh Negi
9.	Forestry for People	Dr. S.A. Shah
10.	Forests & Forestry	K.P. Sagreiya

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SESSION 2022-23

M.Sc. FORESTRY AND WILDLIFE
SEMESTER - III
PAPER - III

Course Code- MSLF 303

BIODIVERSITY AND CONSERVATION BIOLOGY

UNIT I

Definition of biodiversity, Biodiversity profile of India. Conservation of biodiversity in Indian scenario, future strategies for conservation of Indian biodiversity. Biodiversity conservation and its benefits. Concepts and levels of biodiversity: genetic diversity, species richness, ecosystem diversity. Biodiversity zones, biodiversity hot spots.

UNIT II

Concept of endangered, threatened and rare species. Pattern of losses; causes and factors of mass extinctions and critical hot spots extinctions, conservation of rare species, keystone species and mutualistic species, conservation movement in India.

UNIT III

Protected area of India and Chhattisgarh: Action plan for protecting biosphere reserves in India; biodiversity status versus development of high dam, power plants and mining activities, case studies, role of biotechnology in conservation of biodiversity.

UNIT IV

Forest Genetic Resources- Types of diversity, Ecosystem, Species & Genetic, Forests Resources, Medicinal Plants, NWFPs, Timber, Fodder & Fuel etc.

PRACTICALS:

1. Visit *to In-situ* conservation site and study about conservation methods of Wild Buffalo, Hill Maina and Tiger.
2. Visit to any National Parks/ Wildlife Sanctuaries/ Biosphere reserves and record the flora and fauna.
3. Phytosociology studies of forest site, separately at Top storey and Middle storey.
4. To make a list of endangered, threatened and rare wild flora and fauna in Chhattisgarh

REFERENCES:

1. R. Bawa. Biodiversity of Forest Species
2. Sharma, P. D. (2001). Ecology and Environment. *Rastogi publications, Meerut.*
3. Singh *et al.,*. Ecology Environment and Resource Conservation
4. Singh, B.K. (2004). Biodiversity Conservation and management. *Mangal Deep publications Jaipur.*
5. Singh, M. P. Day Soma and Singh B. S. (2004). Conservation of Biodiversity and Natural Resources. *Daya publishing house Delhi.*

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SESSION 2022-23

M.Sc. FORESTRY AND WILDLIFE
SEMESTER - III
PAPER - IV
WILDLIFE MANAGEMENT

Course Code- MSLF 304

UNIT I

Wildlife health: basic concepts of disease and health condition. Measure disease of Indian wild mammals and birds. Epidemiology of disease. Disease and population dynamics. Disease transmission between domestic and wild population. Malnutrition, starvation, dehydration as syndromes. Management of wildlife health programme.

UNIT II

Population management: capture and handling of animals. Purpose, live traps, snares, pits, nets, spotlighting, animal barriers and its use; trenches, walls, mechanical fence, electric fence, replant. Drug immobilization: job stick, blowpipe, pistel, refiels cross bow, radio darts. Drug action: doses, responses, side effect, safety measures and complication. Handling and transport: sledge, crate and holding enclosure.

UNIT III

Individuals, location and identification: purpose, identification by natural markings and behavioral, idiosyncrasies. Passive marking: collars, tags, banding, rings etc. dynamics marking; beta light, radio tracking harness, telemetering of physiological parameters.

UNIT IV

Basic principles of wildlife management and its need. Components of wildlife management; Tiger, Lion, Rhino, Wild buffalo, Black buck, Vultures, Hill Myna and Turtles. Indian Wildlife Protection Act, 1972.

PRACTICAL

1. Study of drug immobilization equipment.
2. Studies of habitat management of some Indian Herbivores.
3. Record of wildlife in Bastar.
4. Studies of animals behaviours.
5. Study of animal pug mark.
6. Survey of wild animals with the help of modern technology i. e., telemetry, GIS, GPS etc.

EDUCATIONAL VISIT/FIELD EXPOSURE:

1. Education Visit/ Field Exposure of National Park/ Sanctuaries/ Research and Education institute, University etc. is compulsory for all the students of M.Sc. Forestry & Wildlife III semester.

SHAHEED MAHENDRA KARMA VISHWAVIDYALAYA, BASTAR, JAGDALPUR
SESSION 2022-23

M.Sc. FORESTRY AND WILDLIFE
SEMESTER –III

LAB COURSE - I (BASED ON PAPER I AND II)
(External - 80 Marks & Internal - 20 Marks, Credit - 2)

LAB COURSE - II (BASED ON PAPER III AND IV)
(External - 80 Marks & Internal - 20 Marks, Credit - 2)

SEMINAR
(50 Marks, Credit - 2)

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SESSION 2022-23

M.Sc. FORESTRY AND WILDLIFE
SEMESTER - IV
PAPER - I
Course Code- MSLF 401
MEDICINAL AND AROMATIC PLANT

UNIT I

Ethnobiology: History of ethnobiology, Medicinal and aromatic plant spp., cultivation, processing and preservation: *Abelmoschus moschatus, Acorus calamus, Aloe vera, Acacia catechu, Asparagus racemosus, Azadirachta indica, Bacopa monnieri, Cassia angustifolia, Centella asiatica, Chlorophytum borivilianum, Curcuma aromatica, Cymbopogon citratus, C. flexuosus, C. martinii, Emblica officinalis, Mentha arvensis, Nardostachys jatamansi, Ocimum sanctum, Papaver somniferum, Pogostemon patchouli, Platago ovata and Withania somnifera.*

UNIT II

Medicinal plants of Chhattisgarh, their distribution, sources and status. Drug sources: root, tubers, leaves, bark, stem, flower, fruit and seeds.

UNIT III

Conservation of medicinal plants: In-situ and ex-situ conservation. Edible plants: *Emblica officinalis, Eugenia jambolana, Eagle marmelos, Dyospyros melanoxylon, Dioscorea bulbifera, Buchnania lanzan, Sterculia urens, Anogeissus latifolia* their cultivation practices and conservation.

UNIT IV

Medicobotany and biochemistry of some medicinal plants used by the traditional healers of India. Bioactive compounds of *Catheranthus roseus, Rauwolfia serpentina, Andrographis paniculata, Gloriosa superba, Withania somnifera, Cannabis sativa*. Biopiracy in medicinal plants, Role of different institutions for promoting herbal medicines like NMPB, WHO, WWF, etc.

PRACTICAL

1. Cultivation of some important medicinal plants.
2. Collection, identification and herbarium preparation of medicinal and aromatic plants.
3. Ethnobotanical survey of a village.
4. Processing of Medicinal & Aromatic plants.

REFERENCES

1. Medicinal Plants — Dr. S.K. Jain
2. Medicinal Plants — Dr D. N. Tiwari
3. Cultivation Practices of some Commercially Important Medicinal plants — NMPB, GOI, New Delhi
4. A Handbook of Forest Utilization — Dr. Tribhawan Mehta

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SESSION 2022-23

M.Sc. FORESTRY AND WILDLIFE
SEMESTER - IV
PAPER - II

Course Code- MSLF 402

REMOTE SENSING AND GIS, AIR POLLUTION AND ENVIRONMENT IMPACT ASSESMENT

UNIT I

Remote Sensing: Basic of remote sensing and its application. Aerial photography and satellite imagery. Types of photography, optimum season for photography. Measurement on aerial photography, Height measurement- displace image, object shadows, trees and stand: tree crown diameter, crown closer or density, tree count, volume of individual trees, volume of stands, land use classes recognize on aerial photographs, Forest type identification on aerial photographs.

UNIT II

Satellite Photography: Application of satellite photography, image interpretation. Digital analysis of imagery and application of GIS. Uses and values of GIS. Approaches to wildlife ecology and management.

UNIT III

Environmental Impact Assessment (EIA): Development of EIA as a management tool- Implications of land use change, guideline for EIA, environment, ecological restoration; criteria and indicators for sustainable forest management, feasibility and baseline studies.

UNIT I:

Air Pollution: Definition, kinds of pollutants and their impacts. Assessment of environment in the world; Normal environmental standards for toxic/lethal substance/pollutants of physical, chemical and biological nature; Air pollution - abatement; Abiotic and biotic indicators of polluted and healthy environment.

PRACTICAL

1. To study of aerial photographs with stereo microscopes.
2. To study the EIA, in the form of species composition in any Industrial area.
3. Sulfur content of leaf of any plant species from polluted and non-polluted area.
4. Chlorophyll concentration of the leaf of any plant species from polluted and non-polluted area.
5. Dust content on the leaf of plants from polluted and non-polluted area.
6. Record the impact of pollution on plants e.g. Death of leaf, plant; presence /absence of any common, plant/animal/insect species, colour of the bark of trees etc.

SHAHEED MAHENDRA KARMA VISHWAVIDYALAYA, BASTAR, JAGDALPUR
SESSION 2022-23

M.Sc. FORESTRY AND WILDLIFE
SEMESTER –IV

LAB COURSE (BASED ON PAPER I AND II)
(External - 80 Marks & Internal - 20 Marks, Credit - 2)

DISSERTATION AND VIVA VOCE
(External - 200 marks, Credit - 8)

SEMINAR
(50 Marks, Credit - 2)