Multidisciplinary Course from the department for pool of the Courses in the University

(These courses are to be offered to students of different discipline/Subject)

Semester 1

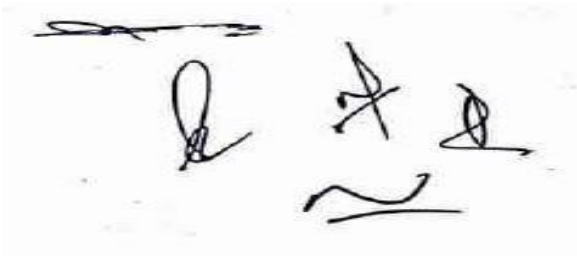
Course Code	Course Title	Course ID	L	T	P	L	T	P	Credits	MARKS				
			(Hrs)			Credits				TI	TE	PI	PE	Total
MDC-01	Principles of Plant Pathology	261/BOT/MD101	02	00	02	02	00	01	03	15	35	05	20	**75**

Semester 2

Course Code	Course Title	Course ID	L	T	P	L	T	P	Credits	MARKS				
			(Hrs)			Credits				TI	TE	PI	PE	Total
MDC-02	Conservation Biology	261/BOT/MD202	02	00	02	02	00	01	03	15	35	05	20	**75**

Semester 3

Course Code	Course Title	Course ID	L	T	P	L	T	P	Credits	MARKS				
			(Hrs)			Credits				TI	TE	PI	PE	Total
MDC-03	Biophysical & biochemical techniques	261/BOT/MD303	02	00	02	02	00	01	03	15	35	05	20	**75**



Multidisciplinary Course

BOTANY: SEMESTER-I								
Course Code	**Course ID**	**Course Title**	**Credit**	**Contact Hours/Week**	**Internal Assessment marks**	**End Term Marks**	**Max. Marks**	**Exam Duration**
MDC-01 3 credit	**261/BOT/MD101**	**Principles of Plant Pathology**	2	2	15	35	50	3
			1	2	5	20	25	2

Course Learning Outcomes (CLO)

1. Imparts knowledge regarding the various mechanisms involved during pathogenesis.
2. Students will be able to understand plant disease epidemiology, forecasting and management
3. Students gets familiar with applications of biotechnology in plant pathology
4. Students will form concepts about host-pathogen interactions and mycotoxins

Instructions for Paper-Setter

1. Seven questions will be set in all.
2. Question No. 1, which will be short answer type (14marks) covering the entire syllabus, will be compulsory. The remaining six questions will be set unit wise selecting two questions from each Unit I to III. The candidate will be required to attempt question No. 1 and three more questions selecting one question from each unit.

UNIT	TOPICS	CONTACT HOURS
I	How pathogens attack plants : chemical weapons of pathogens (enzymes and toxins) How plants defend themselves against pathogens: structural defense and biochemical defense.	10
II	Plant disease epidemiology and plant disease forecasting: Importance of disease forecasting services, methods used in plant disease forecasting. Management of plant pathogens: cultural, chemical and biological methods.	10
III	Applications of biotechnology in Plant Pathology: The use of tissue culture techniques (callus culture, apical meristem culture and protoplast fusion), Recombinant DNA technology, use of monoclonal antibodies in plant pathology. Effect of environmental factors on disease development.	10
	Practical List: A) To study the symptoms and diagnostic features of causal organisms of the following plant diseases. 1. Downy mildew of grapes 2. Karnal bunt of wheat 3. Smut of bajra 4. Late and early blight of potato 5. Yellow vein mosaic of Bhindi 6. Tikka disease of groundnut 7. Bacterial blight of paddy 8. Black rust of wheat B). Collection and submission of plant diseases samples.	30

Learning Resources

Agrios, G.N. (2005): Plant Pathology, Acad. Press, Inc. California.
Alexopoulos, C.J. Mins, C.W. & Blackwell, M. (1995): Introductory Mycology, John Willy and Sons. Inc.
Biswas, S.P. & Biswas, A. (1984): An Introduction to Viruses, Vani Education Books, New Delhi.
Clifton, A. (1958): Introduction to the Bacteria. McGraw Hill Books Co. New York.
Mehrotra, R.S. & Aneja, K.R. (1990): An introduction of Mycology, New Age International Press, New Delhi.
Mehrotra, R.S. and Ashok Aggarwal (2003): Plant Pathology, Tata Mc Graw Hill Publ. Ltd., New Delhi.
Michael J. Pelezar, E.C.S. Shan & N.R. Krieg (1993): Microbiology. Tata Mc Graw Hill Publ. New Delhi.
Ronald M. Atlas (1995): Principles of Microbiology. Mosby-Year Book, Inc. St. Louis, Missouri, USA.
Singh, R.S. (1990): Plant Disease, 6th Edition, Oxford, IBH Publ., New Delhi.
Sumbali, G. (2005): The Fungi, Narosa Publ. House, New Delhi.
Webster, J. (1985): Introduction of Fungi. Cambridge University, Press.

BOTANY: SEMESTER-II								
Course Code	**Course ID**	**Course Title**	**Credit**	**Contact Hours/Week**	**Internal Assessment marks**	**End Term Marks**	**Max. Marks**	**Exam Duration**
MDC-02	**261/BOT/MD202**	**Conservation Biology**	**2**	**2**	**15**	**35**	**50**	**3 hrs.**
3 credit			1	2	5	20	25	2

Course Learning Outcomes (CLO)

1. Students will become aware and understand the concept and significance of different conventions and Protected Area Networks in relation to conservation of Biodiversity.
2. Students will be able to develop own conservation values and ethics and appreciate the importance of biodiversity services.
3. Student will be able to develop the skills necessary to work efficiently in areas like conservation, EIA, environment management and monitoring.
4. After completion of the course, the student be able to formulate one's own scientific and realistic approach towards Conservation Biology.

Instructions for Paper-Setter

1. Seven questions will be set in all.
2. Question No. 1, which will be short answer type (14marks) covering the entire syllabus, will be compulsory. The remaining six questions will be set unit wise selecting two questions from each Unit I to III. The candidate will be required to attempt question No. 1 and three more questions selecting one question from each unit.

UNIT	TOPICS	CONTACT HOURS
I	Principles, characteristics and importance of conservation biology Conservation values and ethics, Role of species in conservation	10
II	Global biodiversity I: Patterns and Processes Global biodiversity II: Losses, Pattern of species vulnerability, Habitat fragmentation and degradation, Synergistic interactions; Biodiversity and ecosystem services	10
III	Biodiversity of wetlands, mangroves and coral reefs- A general account Biosphere reserves and RAMSAR sites in India, The Design of Conservation Reserves Major approaches to management, Indian case studies on conservation/management strategy (Project Tiger, Biosphere Reserves)	10
IV	1. Calculation of different biodiversity Indices (Shannon-Wiener Diversity Index, Simpson's Diversity Index). 2. Visit to National parks. 3. Visit to natural/biological museums. 4. Study of Ramsar convention sites in Haryana 5. To interpret the Annual Forest report with reference to Haryana. 6. To study the Biosphere reserves of India - National park, 7. To study the wildlife sanctuaries in Haryana	30

Learning Resources

1. Chape, S., Fish, L., Fox, P. And Spalding, M. 2003. United Nations list of protected areas. IUCN/UNEP/World Conservation Monitoring Centre, Gland, Switzerland/Cambridge
2. Gopal, B. (ed.) 1987. Ecology and Management of Aquatic Vegetation of the Indian Subcontinent. W. Junk bv. The Hague.
3. Heywood, V.(Ed.) (1995). Global Biodiversity Assessment. United Nations Environment Programme, Cambridge University Press,
4. Hunter (Jr.) M.L. (1996); Fundamentals of Conservation Biology, Blackwell Science. Meffe G.K. and C. Ronals Corroll (1994) Principles of Conservation Biology, Sinaur Associates, Inc., Sunderland. Massachusetts.
5. Huston, M.A. 1994. Biological Diversity: The Coexistence of Species on Changing Landscapes. Cambridge University Press, Cambridge.
6. Peter H. Raven, P.H. and Berg , L. R. Berg. 2005. Environment, 5th Edition. John Wiley & Sons Inc., New York.
7. Singh,J.S., Singh,S.P. and Gupta, S.R. 2006. Ecology, Environment and Resource Conservation, Anamaya Publishers, New Delhi.
8. Soule, M.E. (ed.) (1986) : Conservation Biology. The Science of Scarcity and Diversity. Sinaur Associates, Inc., Sunderland, Massachusetts.
9. Turner, M.G., Gadner,R.H. and O,Neill, R.V. 2001. Landscape Ecology: In theory and Practice, Pattern and Processes. New York.

BOTANY: SEMESTER-III

Course Code	Course ID	Course Title	Credit	Contact Hours/Week	Internal Assessment marks	End Term Marks	Max. Marks	Exam Duration
MDC-03	261/BOT/MD303	Biophysical & Biochemical techniques	2	2	15	35	50	3
			1	2	5	20	**25**	2

Course Learning Outcomes (CLO)

1. **Students will be able to demonstrate an understanding of fundamental biochemical concepts,**
2. **Students will be proficient in various laboratory techniques for analyzing biological samples,**
3. **Students will be able to apply biophysical principles to biological systems.**
4. **Students will be able to collect, analyze, and interpret data from various experimental techniques.**

Instructions for Paper-Setter

1. Seven questions will be set in all.
2. Question No. 1, which will be short answer type (14marks) covering the entire syllabus, will be compulsory. The remaining six questions will be set unit wise selecting two questions from each Unit I-III. The candidate will be required to attempt question No. 1 and three more questions selecting one question from each unit.

UNIT	TOPICS	CONTACT HOURS
I	**Microscopy:** Principles and applications of light, phase contrast, fluorescence microscopes, scanning and transmission electron microscopes. **Centrifugation:** Principles of sedimentation; Types, care and safety aspects of centrifuges; Differential centrifugation; Density gradient centrifugation and their applications.	10
II	**Chromatographic techniques:** Chromatography: Principles and applications of gel filtration, ion-exchange chromatography, affinity chromatography, thin layer chromatography, gas chromatography and high-pressure liquid chromatography (HPLC). **Electrophoresis:** Principles and applications of agarose and polyacrylamide gel electrophoresis.	10
III	**Molecular biology techniques:** southern, northern and western blotting techniques, polymerase chain reaction (PCR), ELISA. **Spectrometry:** Introduction and theory of Mass spectrometer; Ionization of molecules; Mass analyzers- MALDI; Detectors and Applications **Spectroscopy**: Introduction and theory of Fluorescence and UV- visible spectroscopy	10
	1. Demonstration of working of different types of microscopes. 2. Demonstration of Chromatography i.e. TLC, HPLC, GC. 3. To demonstrate the separation of proteins with the help of electrophoresis. 4. To study various molecular biology techniques i.e. PCR 5. To demonstrate the use of spectrophotometer. 6. Purification of protein by column chromatography. 7. Visit of various laboratories in the university, preparation and submission of report.	30

Learning Resources

Hegyi, G., Kardos, J., Kovacs, M., Csizmadia, A.M., Nyitray, L., Pal, G., Radnai, L., Remenyi, A.,Venekei, I., 2013,Introduction to Practical Biochemistry, Eotvos Lorand University, Hungary.

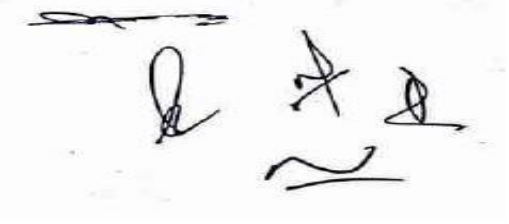
Plummer, D.T., 1990, An Introduction to Practical Biochemistry, Tata Mc-Graw-Hill Publishing Company Ltd., New Delhi.

Prescott, L., Harley, J., Klein, D., 2005, Microbiology (6th Ed) Mc Graw-Hill.

Ranade, R. and Deshmukh, S., 2013, Handbook of Techniques in Biotechnology, StudiumPress (India) Pvt. Ltd. New Delhi.

Sawhney, S.K. and Singh, R., 2000, Introductory Practical Biochemistry (Ed.), NarosaPublishing House Pvt. Ltd., New Delhi.

Wilson, K., and Walker, J., 2010, Principles and Techniques of Biochemistry and Molecular Biology (7th Ed.), Cambridge University Press, New Delhi.



Value Added Course (VAC) from the department for pool of the Courses in the University

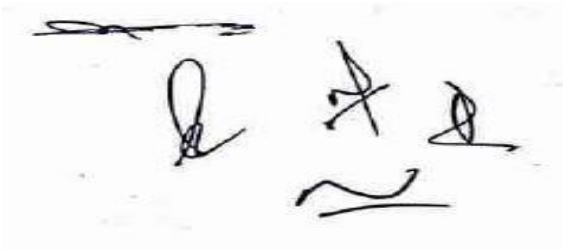
(These courses are to be offered to students of different discipline/Subject)

Semester 1

Course Code	Course Title	Course ID	L	T	P	L	T	P	Credits	MARKS				
			(Hrs)			Credits				TI	TE	PI	PE	Total
VAC-01	Plants For Human Welfare	261/BOT/VA101	02	00	00	02	00	00	02	15	35	00	00	**50**

Semester 3

Course Code	Course Title	Course ID	L	T	P	L	T	P	Credits	MARKS				
			(Hrs)			Credits				TI	TE	PI	PE	Total
VAC-02	Mushroom Cultivation Technology	261/BOT/VA302	02	00	00	02	00	00	02	15	35	00	00	**50**



Value Added Course (VAC)

BOTANY: SEMESTER-I								
Course Code	**Course ID**	**Course Title**	**Credit**	**Contact Hours/Week**	**Internal Assessment marks**	**End Term Marks**	**Max. Marks**	**Exam Duration**
VAC-01 **2 credits**	**261/BOT/VA101**	**Plants for human welfare**	**2**	**2**	**15**	**35**	**50**	**2hrs**

Course Learning Outcomes (CLO)

1. Explain the origin of agriculture and centres of origin of various crops.
2. Identify the plant sources of foods, modern and traditional medicines, spices, oil, fibres, dyes, gum and timbers.
3. Learn about plant sources of psychoactive compounds, ornamental plants and identification of common food adulterants.

Instructions for Paper-Setter

1. Five questions will be set in all.
2. Question No. 1, which will be short answer type (15marks) covering the entire syllabus, will be compulsory. The remaining four questions will be set unit wise selecting two questions from each Unit I. The candidate will be required to attempt question No. 1 and Two more questions selecting one question from each unit.

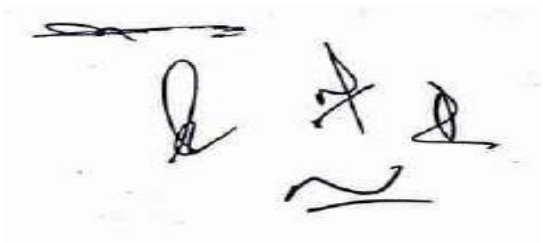
UNIT	TOPICS	CONTACT HOURS
I	**Plants and Civilization:** Origin of agriculture **Origin crop plants:** Idea about centre of origin of common crop plants **Minor Cereals, Major cereals Pseudocereals and pulses** **Spices and condiments** (Saffron, Clove, Cardamom, Ginger, Turmeric, Cinnamon, Capsicums, Asafetida, Coriander, Fennel, Fenugreek). **Medicinal plants:** Importance of medicinal plants - role in human health care. **Traditional knowledge and utility of some common medicinal plants-***Sarpgandha, Isabgol,Vasaka, Neem, Bhiringraj, Amla, Harrad, Bahera, Arjun ,Punarnava , Brahmi, Kasondi, Ghritkumari, Quinine and Eucalyptus.* **Psychoactive plants - general account and classification.**	11
II	**Nutritive and medicinal value of some fruits and vegetables** (Guava, Sapota, Orange, Mango, Banana, Lemon, Pomegranate, Moringa, Cabbage). **Beverages** (Coffee, Tea, Chocolate, Cola). **Common ornamental plants.** **Common food adultrants.** **Common timber yielding plants and minor forest products.** **General account of Fibers, dyes, tannins, gums and resins.** **Insecticides from plants** Pyrethrum and Rotenone.	12

Learning Resources

1. Economic Botany by B. P. Pandey (1999, S. Chand, New Delhi)

2. A Text Book of Botany (Angiosperms) by Singh, Pandey, and Jai (Rastogi Publication).

3. Economic Botany: A Comprehensive Study by A. F. Hill (1952, Tata-McGraw Hill)



BOTANY: SEMESTER-III								
Course Code	**Course ID**	**Course Title**	**Credit**	**Contact Hours/Week**	**Internal Assessment marks**	**End Term Marks**	**Max. Marks**	**Exam Duration**
VAC-02 2 credits	261/BOT/VA302	Mushroom cultivation technology	2	2	15	35	**50**	2hrs

Course Learning Outcomes (CLO)

1. To impart knowledge about mushroom farming to the students.
2. To be knowledgeable of the preparations for culture.
3. To comprehend technology used in mushroom growing

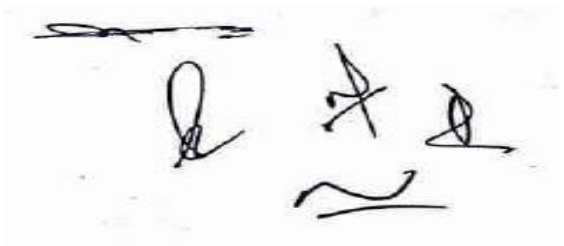
Instructions for Paper-Setter

1. Five questions will be set in all.
2. Question No. 1, which will be short answer type (15marks) covering the entire syllabus, will be compulsory. The remaining four questions will be set unit wise selecting two questions from each Unit I. The candidate will be required to attempt question No. 1 and Two more questions selecting one question from each unit.

UNIT	TOPICS	CONTACT HOURS
I	**Introduction to Mushroom:** History and Scope of Mushroom Cultivation; Types of edible mushrooms in India ***Agaricus bisporus*, *Pleurotus citrinopileatus and Volvariella volvacea.*** **Pure culture:** preparation of medium (PDA and Oatmeal agar medium) sterilization - preparation of test tube slants to store mother culture - culturing of Pleurotus mycelium on petriplates, preparation of mother spawn in saline bottle and polypropylene bag and their multiplication.	12
II	**Cultivation technology:** Infrastructure: Substrates (locally available), Polythene bag, vessels, Inoculation hook, inoculation loop, low-cost stove, sieves, culture rack mushroom unit (Thatched house) water sprayer, tray, small polythene bag, Mushroom bed preparation paddy straw, sugarcane trash, maize straw, banana leaves. **Storage and nutrition:** Short-term storage (Refrigeration-up to 24 hours), Long term Storage (Canning, pickles, papads), drying, storage in salt solutions. Nutrition -Proteins, amino acids, mineral elements, Carbohydrates, Crude fibre content, Vitamins. **Diseases of mushroom.**	11

Learning Resources

1.Pandey, R.K. and Ghosh, S.K. (1996). A handbook of Mushroom Cultivation. Emkey Publication.
2. Pathak, V.N. and Yadav, N. (1998). Mushroom Production and Processing Technology. Agrobios, Jodhpur.
3. Nita, B. (2000). Handbook of Mushrooms. Vol 1 & 2. Oxford and IBH Publishing Co. Pvt. Ltd., New Delhi.
4. Tewari, P. and Kapoor S.C. (1998). Mushroom Cultivation, Mittal Publication, New Delhi.



Skill Enhancement Course from the department for pool of the Courses in the University

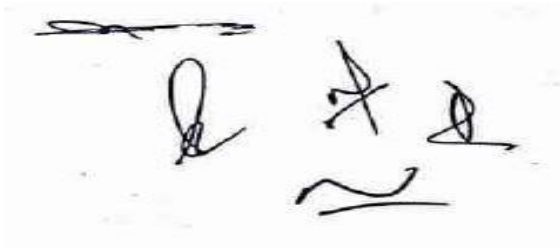
(These courses are offered by each department for students of other departments/same department and is designed to provide value-based and/or skill-based knowledge and should contain both theory and lab/hands-on/training/field work.)

Semester 2

Course Code	Course Title	Course ID	L	T	P	L	T	P	Credits	MARKS				
			(Hrs)			Credits				TI	TE	PI	PE	Total
SEC-1	Genomics	261/BOT/SEC201	02	00	00	02	00	00	02	15	35	00	00	50

Semester 3

Course Code	Course Title	Course ID	L	T	P	L	T	P	Credits	MARKS				
			(Hrs)			Credits				TI	TE	PI	PE	Total
SEC-2	Restoration Ecology	261/BOT/SEC302	02	00	00	02	00	00	02	15	35	00	00	50



Skill Enhancement Course

BOTANY: SEMESTER-II								
Course Code	**Course ID**	**Course Title**	**Credit**	**Contact Hours/Week**	**Internal Assessment marks**	**End Term Marks**	**Max. Marks**	**Exam Duration**
SEC-01 **2 credit**	**261/BOT/SEC201**	**Genomics**	**2**	**2**	**15**	**35**	**50**	**2 hrs.**

Course Learning Outcomes (CLO)

1. The students get acquainted about the basic principles of DNA sequencing and evolution of DNA sequencing techniques.
2. Help the students to understand methods/techniques employed in proteome and genome analysis.
3. This course will enable the students to learn about the various databases utilize for the storage and analysis of proteome/genome information.
4. The students will learn about the various computational tools used for analysis of genome sequence data.

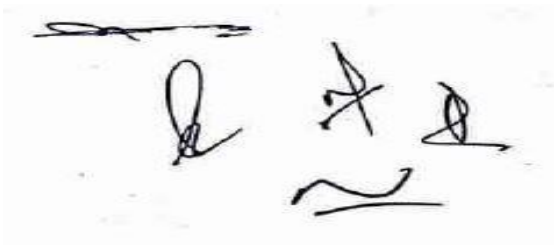
Instructions for Paper-Setter

1. Five questions will be set in all.
2. Question No. 1, which will be short answer type (15marks) covering the entire syllabus, will be compulsory. The remaining four questions will be set unit wise selecting two questions from each Unit I. The candidate will be required to attempt question No. 1 and Two more questions selecting one question from each unit.

UNIT	TOPICS	CONTACT HOURS
I	**Genome**: Completely sequenced prokaryotic and eukaryotic genomes; Mitochondrial and Chloroplast genomes. **Mapping of Genome**: Genetic mapping- using DNA markers and Linkage analysis; Physical mapping- restriction mapping, Fluorescent *in-situ* hybridization and Sequence Tagged Sites (STSs) mapping. **Understanding a Genome Sequence**: Gene location using 1.) ORF scanning, Automatic annotation, 2.) Experimental techniques- northern hybridization, cDNA sequencing and RACE.	11
II	**Identification of a Gene Function**: Using computer analysis; Experimental analysis- gene inactivation and overexpression; Directed mutagenesis; Reporter genes. **Analysis of the Transcriptome**: Expressed Sequence Tags (ESTs); Serial analysis of gene expression (SAGE); Differential Display (DD); Representational Difference Analysis (RDA) and DNA Microarrays. **Proteome Analysis:** Using 2-D; Protein identification; Protein-DNA and Protein- Protein interactions.	12

Learning Resources

1. Birren B, Green ED, Klapholz S, Myers RM and Roskams J (1997) Genome Analysis, CSHL Press.
2. Brown TA (2007) Genomes 3, Garland Science Publishing New York, London.
3. Chawla HS (2009) Introduction to Plant Biotechnology (3rd Ed.). Oxford & IBH Publishing Co. Pvt. Ltd., New Delhi.
4. Dale JW, Schantz MV and Plant N (2012) From Genes to Genomes (3rd Ed.), John Wiley and Sons, Ltd. UK.
5. Dawson, MT, Powell R and L Gannon F (1996) Gene Technology, BIOS Sci. Pub. Ltd., Oxford, UK. DNA Amplification, Stockton Press, New York, USA.
6. Glick B and Pasternak JJ (2003), Molecular Biotechnology (3rd Ed), ASM Press, Washington.
7. Hartl DL and Ruvolo M (2011) Genetics- Analysis of Genes and Genomes (8th Ed.), Jones and Bartlett Publishers, Inc., USA.
8. Hunt SP and Livesey FJ (2000) Functional Genomics, Oxford University Press, New York. London.
9. Lewin B (2005) Genes VIII, Oxford University Press, Oxford, UK.



BOTANY: SEMESTER-III								
Course Code	**Course ID**	**Course Title**	**Credit**	**Contact Hours/Week**	**Internal Assessment marks**	**End Term Marks**	**Max. Marks**	**Exam Duration**
SEC-02 **2 credit**	**261/BOT/SEC302**	**Restoration Ecology**	**2**	**2**	**15**	**35**	**50**	**2 hrs.**

Course Learning Outcomes (CLO)

1. Describe the ecological, economic and social factors that lead to ecosystem degradation
2. Evaluate and select appropriate ecological restoration techniques for different types of ecosystems
3. Design ecological restoration projects and identify appropriate methods to monitor and evaluate the restoration practices
4. Undertake collaborative programs to understand and solve ecological restoration problems

Instructions for Paper-Setter

1. Five questions will be set in all.
2. Question No. 1, which will be short answer type (15marks) covering the entire syllabus, will be compulsory. The remaining four questions will be set unit wise selecting two questions from each Unit I. The candidate will be required to attempt question No. 1 and Two more questions selecting one question from each unit.

UNIT	TOPICS	CONTACT HOURS
I	**Fundamentals of Restoration Ecology:** Definition and history of restoration ecology, Principles of restoration ecology, Restoration process: planning, implementation, and monitoring; Ecosystem services and the importance of restoration ecology; Challenges and limitations of restoration ecology; Case studies in restoration ecology; Ethics and values in restoration ecology; Restoration ecology and environmental policy. **Ecological Foundations for Restoration Ecology:** Role of ecological concepts in restoration ecology: ecological succession. Biodiversity, ecological interactions, and habitat fragmentation and ecosystems; Climate change and its impact on restoration ecology, Invasive species and their role in ecosystem degradation and restoration, Ecological thresholds, and their relevance to restoration ecology.	12
II	**Techniques and Tools for Restoration Ecology:** Ecological site assessment and inventory, Restoration planning and design, Techniques for soil and water conservation in restoration ecology, Seed collection, propagation, and planting techniques for restoration, Wildlife management in restoration ecology, Restoring aquatic ecosystems: techniques and challenges, Biomimicry and ecological engineering in restoration ecology. Evaluating and monitoring restoration outcomes. **Ecosystem Restoration:** Restoration of: grasslands, forests, wetlands, agricultural and urban landscapes, mining and industrial sites; Restoration of ecosystem services in aquatic ecosystems.	11

Learning Resources

Clewell, A. F., & Aronson, J. (Eds.). (2013). Ecological restoration: Principles, values, and structure of an emerging profession (2nd ed.). Island Press.

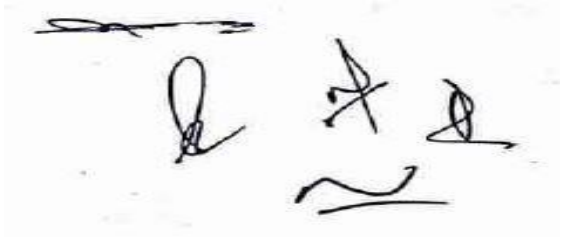
Erickson, A. L., Ryan, C. M., & Jones, T. A. (Eds.). (2021). The science of ecological restoration: Creating resilience in a changing world. Island Press.

Hobbs, R. J., & Suding, K. N. (2018). New models for ecosystem dynamics and restoration. CRC Press.

Palmer, M. A. (2016). Restoration: The science of restoring ecosystems and the human spirit. Island Press.

Temperton, V. M., Hobbs, R. J., Nuttle, T., Halle, S., & Tonev, C. (Eds.). (2020). Novel ecosystems: Intervening in the new ecological world order. John Wiley & Sons.

Yaffee, S. L., & Wondolleck, J. M. (2019). Ecosystem management in the United States: An assessment of current experience. Routledge.



Manuscript writing

BOTANY: SEMESTER-IV								
Course type	**Course Code**	**Name of theCourse**	**Credit**	**Contact Hours/ Week**	**Internal Assessment marks**	**End Term Marks**	**Max. Marks**	**Exam Duration**
AEC-03 2 credit	**261/BOT/AE403**	**Manuscript writing**	**2**	**2**	**15**	**35**	**50**	**2 hrs.**
		Practical	**0**	**0**	**0**	**0**	**0**	**0hrs.**

COURSE OUTCOMES:

At the completion of this course, the learner will be able to:

CO1: Understand the fundamental principles and components of manuscript writing.

CO2: Develop knowledge of the stages and processes involved in effective writing.

CO3: Apply appropriate techniques and strategies for manuscript preparation.

CO4: Demonstrate proper use of citation and referencing methods in academic writing.

Instructions for Paper-Setter

1. Five questions will be set in all.

2. Question No. 1, which will be short answer type (15marks) covering the entire syllabus, will be compulsory. The remaining four questions will be set unit wise selecting two questions from each Unit. The candidate will be required to attempt question No. 1 and two more questions selecting one question from each unit.

UNIT	TOPICS	CONTACT HOURS
I	Fundamentals of Manuscript Writing Manuscript Writing: Definition, purpose, and significance in academic and research contexts. Types of Manuscripts: Original research articles, case studies, review articles, reflective essays, and brief reports. Writing Process: Pre-writing, drafting, revising, editing, and proofreading. Ethical Considerations: Academic integrity, plagiarism, proper citation practices, and avoiding misconduct in writing.	12
II	Writing Techniques and Final Presentation Principles of Effective Writing: Clarity, coherence, conciseness, and precision. Writing Techniques: Developing thesis statements, structuring arguments, and use of evidence. Revision and Editing: Techniques for improving organization, clarity, and logical flow. Proofreading: Common proofreading symbols and error correction. Drafting and Revising: Outlining, drafting, and refining manuscripts. Final Manuscript Preparation: Formatting, preparing final drafts, and effective presentation of key arguments.	11

Learning Resources

Belcher, W. L. Writing Your Journal Article in 12 Weeks. University of Chicago Press.

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