DEPARTMENT OF BOTANY

SYLLABUS

Programme Outcome

Upon completion of the B. Sc. Degree Programme in Botany,

Sl. No.	PO Number	Programme Outcome
1	PO 1	Students will acquire core competency in the subject Botany, and in allied subject areas.
2	PO 2	Students will have an increased understanding of fundamental concepts of botany and their applications of scientific principles.
3	PO 3	Students have exposure to cutting-edge technologies that are currently used in the subject
4	PO 4	Students will be able to identify the major groups of organisms with an emphasis on plants and be able to classify them within a phylogenetic framework.
5	PO 5	Students will be able to compare and contrast the characteristics of plants, algae, and fungi that differentiate them from each other and from other forms of life.
6	PO 6	Students will be aware of the social and environmental issues, significance of plants and their relevance to the national economy.
7	PO 7	Students will be able to demonstrate procedural knowledge that creates different types of professionals in the field of Botany i.e. research and development, teaching, government and public services.
8	PO 8	Students will be able to prepare for state as well as national competitive examinations, like UGC-CSIR NET and UPSC Civil Services Examination.

Course Outcomes

At the end of the course, the student will be able to:

S No.	Course Outcome No.	Course Outcome	Taxonomic Level
Semester 1 **Core Course- Angiosperm anatomy, Reproductive Botany and Palynology**			
1.	CO 1	▪ Develop skills for identification of microscopic structures	Un, Re, Ap
2.	CO 2	▪ Distinguish various tissue systems and internal structure	Un, Re, Ap
3.	CO 3	▪ Recognize the different aspects of flower development	Re, Un,
4.	CO 4	▪ Acquire basic knowledge about embryo development and pollen grain	Re, Un,

5.	CO 5	▪ Identify and classify different plant fossil records	Un, Re, Ap
Complementary for Zoology **Microtechnique, Angiosperm Anatomy and Reproductive Botany**			
6.	CO 1	▪ Expertise in taking micro-sections of the plant materials	Un, Re
7.	CO 2	▪ Acquire proficiency in preserving and collected plant materials	Re, Un, Ap
8.	CO 3	▪ Develop skills for identification of microscopic structures	Re, Un, Ap
9.	CO 4	▪ Distinguish various tissue systems and internal structure	Un, Re
10.	CO 5	▪ Understand the morphology and development of plant reproductive Parts.	Re, Un, Ap
Semester II **Core Course- Methodology and perspectives in plant sciences**			
11.	CO 1	▪ Understand different scientific methods, culture and work habits	Re, Un, Ap
12.	CO 2	▪ Acquire awareness on role of research in science	Un, Re
13.	CO 3	▪ Familiarize with the basic tools and techniques of scientific study with emphasis on biological sciences	Re, Un, Ap
14.	CO 4	▪ Apply scientific methods independently and familiarize instruments in biological labs	Re, Un, Ap
15.	CO 5	▪ Acquaint with the different bio statistics techniques and their use in different purposes	Un, Re, Ap
Complementary for Zoology **Phycology, Mycology, Lichenology, Bryology, Pteridology, Gymnosperms and Plant Pathology**			
16.	CO 1	▪ Understand about the diverse group of plants	Re, Un,
17.	CO 2	▪ Familiarize characteristic features of algae, fungi, Lichens, bryophytes, Pteridophytes, Gymnosperms and their significance.	Un, Re
18.	CO 3	▪ Acquire knowledge about types of algae, fungi, lichen and their economic as well as evolutionary significance	Re, Un, Ap
19.	CO 4	▪ Acquire awareness about the plant diseases, affecting agriculture, its causative organisms and symptoms	Re, Un, Ap
20.	CO 5	▪ Familiarize with the various measures adopted to control plant diseases	Un, Re, Ap

Semester III **Core Course - Microbiology, Phycology, Mycology, Lichenology and Plant pathology**			
21.	CO 1	▪ Identify the diverse world of microbes	Re, Un
22.	CO 2	▪ Discuss the different group of lower plants and its significance	Un, Re
23.	CO 3	▪ Understand about the lichen world and its significance.	Re, Un
24.	CO 4	▪ Acquire awareness about the plant diseases, affecting agriculture, its causative organisms and symptoms	Re, Un, Ap
25.	CO 5	▪ Familiarize with the various measures adopted to control plant diseases	Re, Un, Ap
Complementary for Zoology **Systematic Botany, Economic Botany, Ethnobotany, Plant Breeding**			
26.	CO 1	▪ State out the significance of plant taxonomy.	Re, Un
27.	CO 2	▪ Understand the importance of morphological characters in plant identification and classification	Re, Un, Ap
28.	CO 3	▪ Classify different plants according to its economic importance	Re, Un, Ap
29.	CO 4	▪ Develop knowledge about economic, ethno botanical significance and pharmacognosy of plants.	Re, Un, Ap
30.	CO 5	▪ Design different methods for crop improvement	Re, Un, Ap
Semester IV **Core Course -Bryology, Pteridology, Gymnosperms and Paleobotany**			
31.	CO 1	▪ Understand plant evolution and their transition to land habitat.	Re, Un
32.	CO 2	▪ Analyze and recognize taxonomic position, occurrence, thallus structure, reproduction and evolutionary significance of Bryophytes, Pteridophytes and Gymnosperms	Re, Un
33.	CO 3	▪ Demonstrate experimental techniques and methods of appropriate analysis of Bryophytes, Pteridophytes, Gymnosperms	Re, Un, Ap
34.	CO 4	▪ Identify and classify different plant fossil records	Re, Un, Ap
35.	CO 5	▪ Impart knowledge about fossil formation and its significance.	Re, Un, Ap
Complementary for Zoology			

Plant Physiology, Plant Ecology, Horticulture and Plant Biotechnology			
36.	CO 1	▪ Explain the significance of Photosynthesis and respiration	Re, Un
37.	CO 2	▪ Explain chemical properties and deficiency symptoms in plants	Re, Un, Ap
38.	CO 3	▪ Understand the core concepts of biotic and abiotic components of life	Re, Un
39.	CO 4	▪ Classify the different classifications of horticultural crops, nursery management, and evaluate the use of technology in horticulture.	Re, Un, Ap
40.	CO 5	▪ Discuss the role of plant tissue culture in improving the quality and yield of crops	Re, Un, Ap
Semester V **Core Course- Angiosperm Morphology, Systematic Botany, Economic Botany, Ethnobotany and Pharmaconosy**			
41.	CO 1	▪ Examine the different morphological characters in plant identification and classification	Re, Un
42.	CO 2	▪ Evaluate the important herbaria and botanical gardens	Re, Un
43.	CO 3	▪ Interpret the rules of IUCN in botanical nomenclature	Re, Un,Ap
44.	CO 4	▪ Appreciate the diversity of plants and the plant products in human use	Re, Un, Ap
45.	CO 5	▪ Operate screening of adulteration in herbal extracts and formulations	Re, Un, Ap
Core Course- Environmental Studies and Phytogeography			
46.	CO 1	▪ Create awareness about ecosystem and natural resources	Re, Un, Ap
47.	CO 2	▪ Discuss the importance of Biodiversity conservation.	Re, Un, Ap
48.	CO 3	▪ Understand the need to mitigate pollution strategies for disaster management	Re, Un, Ap
49.	CO 4	▪ Analyze the phytogeography or phytogeographical division of India	Re, Un, Ap
50.	CO 5	▪ Support the importance of conservation of vegetation in India	Re, Un, Ap
Core Course- Cell biology, Genetics and Evolutionary Biology			
51.	CO 1	▪ Compare the structure and function of cells & explain the development of cells	Re, Un, Ap

52.	CO 2	▪ Create awareness about cellular organelles.	Re, Un, Ap
53.	CO 3	▪ Learns about the fine structure and molecular aspects of genetic material	Re, Un, Ap
54.	CO 4	▪ Have conceptual understanding of laws of inheritance, genetic basis of loci and alleles and their linkage.	Re, Un, Ap
55.	CO 5	▪ Able to solve and workout problems in classical genetics	Re, Un, Ap
56.	CO 6	▪ Understand evolutionary trends and evidences of evolution organisms	Re, Un, Ap
Open Course- Horticulture			
57.	CO 1	▪ Understand the importance of horticulture in human welfare	Re, Un, Ap
58.	CO 2	▪ Understand the different classifications of horticultural crops, nursery management, and use of technology in horticulture.	Re, Un, Ap
59.	CO 3	▪ Understands the types of gardens and flower arrangements	Re, Un, Ap
60.	CO 4	▪ Familiarize propagation methods in plants	Re, Un, Ap
61.	CO 5	▪ Understands and applies various harvesting and preservation methods of fruits and vegetables	Re, Un, Ap
Semester VI **Core Course- Plant Physiology and Biochemistry**			
62.	CO 1	▪ Understand the basic principles related to various physiological functions in plant life	Re, Un
63.	CO 2	▪ Acquire a detailed knowledge about photosynthesis and respiration taking place in plants	Re, Un
64.	CO 3	▪ Identifies different hormonal responses of plants and its practical applications	Re, Un, Ap
65.	CO 4	▪ Understand the role, structure and importance of the bio molecules associated with plant life.	Re, Un, Ap
66.	CO 5	▪ Analyse biochemical processes occurring in plants by experimentation	Re, Un, Ap
Molecular Biology, General Informatics & Bioinformatics			
67.	CO 1	▪ Know about the genomic organization or living organisms	Re, Un
68.	CO 2	▪ Apply cell based methods in experimentation mode	Re, Un, Ap
69.	CO 3	▪ Gain an understanding of various steps in transcription, protein synthesis and protein modification.	Re, Un

70.	CO 4	▪ Get an overview of information technology	Re, Un, Ap
71.	CO 5	▪ Develop skill for using internet, biological databases and molecular visualization tools.	Re, Un, Ap
Horticulture, Plant Breeding & Research Methodology			
72.	CO 1	▪ Understand the importance of horticulture in human welfare	Re, Un, Ap
73.	CO 2	▪ Understand the different classifications of horticultural crops, nursery management, and use of technology in horticulture.	Re, Un, Ap
74.	CO 3	▪ Gain knowledge on the techniques of production of new superior crop verities	Re, Un, Ap
75.	CO 4	▪ Design different methods for crop improvement	Re, Un, Ap
76.	CO 5	▪ Get knowledge about research methodology and preparation of projects	Re, Un, Ap
Open course Elective- Biotechnology and Nanobiotechnology			
77.	CO 1	▪ Understand the core concepts and fundamentals of plant biotechnology	Re, Un, Ap
78.	CO 2	▪ Develop their competency on different types of plant tissue culture	Re, Un, Ap
79.	CO 3	▪ Critically analyze the major concerns and applications of transgenic technology	Re, Un, Ap
80.	CO 4	▪ Gain basic knowledge about nanoscience involved in Nanobiotechnology.	Re, Un, Ap
81.	CO 5	▪ Know about the applications of nanotechnology	Re, Un, Ap