

PG AND RESEARCH DEPARTMENT OF BOTANY

Programme: M.Sc., Botany

PO No.	Programme Outcomes Upon completion of the M.Sc. Degree Programme, the graduate will be able to
PO-1	focus perceptive in the subject of Botany and apply its principles and applications to become researchers / professionals / entrepreneurs
PO-2	acquire contextual knowledge on basics and modern concepts, principles of various plant science phenomena and skills in handling scientific instruments in current areas with contemporary technologies and multidisciplinary settings
PO-3	develop their abilities and efforts to generate ideas in research, concepts and knowledge for rewarding future career and educational goals

PSO No.	Programme Specific Outcomes Upon completion of these courses the student would
PSO-1	provide knowledge through various plant groups from primitive to highly evolved and to analyze the plant structures and function, plant evolutionary histories, diversity of plant kingdom and its conservation through laboratory skills as well as field studies
PSO-2	understand the applied sciences like Biotechnology, Agriculture, Horticulture, Forestry, Pharmacognosy, Pharmacology, Molecular Biology and Bioinformatics through the knowledge of plant science
PSO-3	encourage the research and internship opportunities through plant sciences with interdisciplinary perception and shaping a successful career

Course Title	PHYCOLOGY, BRYOLOGY AND LICHENOLOGY	
CODE	18BOPC101	
CO No.	Course Outcomes	Knowledge Level
CO-1	Evoke the information about various plant groups from primitive to highly evolved forms	K1,K2
CO-2	Acquire the knowledge of morphology and lifecycle of lower plants and update with affinities and evolutionary relationships to higher plants	K2,K3
CO-3	Analyse the knowledge and role of Algae, Bryophytes and Lichens in the environmental protection	K3, K4
CO-4	Develop inter-disciplinary research and to apply entrepreneurial skills in the commercial values of Algae and Lichens	K3
CO-5	Interpret the novel ideas and use of plant resources for food and medicine and support knowledge of algae production to the local farmers community	K5

Course Title	MYCOLOGY AND PHYTOPATHOLOGY	
CODE	18BOPC102	
CO No.	Course Outcomes	Knowledge Level
CO-1	Analyse the classification, physiology, ecology, pathogenesis, nutrition, reproduction and life cycle patterns and evolution within fungal biodiversity	K3, K4
CO-2	Analyze phylogeny and Interrelationships of Fungi and plant – pathogen interaction	K3, K4
CO-3	Interpret the interaction between the causal agent and the diseased plants in relation to environmental conditions	K3
CO-4	Apply the economic importance of Fungi for sustainable global development	K4
CO-5	Evaluate Fungi for making renewable substitutes for products to valuable food and feed ingredients and production of new biological drugs	K5

Course Title	PTERIDOPHYTES, GYMNOSPERMS AND PALAEOBOTANY	
CODE	18BOPC103	
CO No.	Course Outcomes	Knowledge Level
CO-1	Explain the phylogenetic relationships among Pteridophytes and Gymnosperms, their relationship to Angiospermic plants	K2
CO-2	Classify different fossil types based on the age of fossils and assess scientific perspective of significant fossils	K3, K4
CO-3	Analyze the medicinal and economical utility of many ferns and gymnosperm species	K4
CO-4	Recommend the in situ and ex situ conservation of Pteridophytes and Gymnosperms for future research needs	K3
CO-5	Plan a fernery and nursery production of Pteridophytes and Gymnosperms at small or large scale to uplift their economy	K5

Course Title	ANATOMY AND EMBRYOLOGY	
CODE	18BOPC104	
CO No.	Course Outcomes	Knowledge Level
CO-1	Understand the hierarchy of plant structure by learning the basic features of plant cells, tissues, and organs and function of various tissues and exposure to evolutionary interpretations of anatomical homology	K2, K3
CO-2	Interpret the basic pattern of plant growth from different kinds of meristems and analyse the relationships between primary growth and secondary growth of naturally occurring plant assemblages and compare structural differences among different taxa	K2, K3, K4
CO-3	Distinguish connections between plant anatomy and the other major disciplines of biology, including taxonomy, cell biology, physiology, genetics, biochemistry, and ecology and make sense in light of evolution	K4
CO-4	Attain knowledge and assess formation of developmental cycles, regulation of the flowering process and embryo formation	K5
CO-5	Apply technical and histochemical skills in the identification of plants	K3

Course Title	CELL BIOLOGY AND PLANT TISSUE CULTURE	
CODE	18BOPC205	
CO No.	Course Outcomes	Knowledge Level
CO-1	Understand and manipulate the structures and function of basic components of eukaryotic cells, especially macromolecules, membranes, and organelles	K2, K3
CO-2	Infer the cellular components underlying mitotic cell division	K4
CO-3	Describe the structure, composition and role of DNA and RNA. and evaluate role of fundamental processes of replication and repair mechanism	K2, K5
CO-4	Analyse the tasks relevant to cell culture (preparation of media, inoculation, recovery, and assessment of cell growth)	K4
CO-5	Acquire and focus the skills in tissue culture with requirements for different plants and recognize troubleshoot problems during culture	K4

Course Title	GENETICS, GERMPLASM CONSERVATION AND PLANT BREEDING	
CODE	18BOPC206	
CO No.	Course Outcomes	Knowledge Level
CO-1	Explain and compare the interaction of genes, sex linked inheritance and sex determination	K2 , K4
CO-2	Recall and interpret the modern concept of genes, gene frequency and genetic drift	K3
CO-3	Conclude the regulation of gene expression in prokaryotes, eukaryotes and synthesis of genes	K5
CO-4	Analyse the strategies and methods in germplasm conservation	K4
CO-5	Apply the breeding methods and techniques in crop plants to promote entrepreneurial skills	K3

Course Title	TAXONOMY AND BIOSYSTEMATICS	
CODE	18BOPC307	
CO No.	Course Outcomes	Knowledge Level
CO-1	Describe and classify plant diversity and understand the major features and evolutionary origins of vascular plants.	K1,K2
CO-2	Learn the vocabulary of plant description and identify the plants using dichotomous keys	K3
CO-3	Be aware of the importance of taxonomic relationships in plant systematics and to understand the causes for selection and variation in plant characteristics	K3, K4
CO-4	Recognize some important angiosperm families and gain knowledge of their diagnostic characters	K3
CO-5	Understand the systematics, diagnostic characters and to know where the food plants come from	K3

Course Title	PLANT PHYSIOLOGY AND PHYTOCHEMISTRY	
CODE	18BOPC308	
CO No.	Course Outcomes	Knowledge Level
CO-1	Acquire knowledge on physiological processes between plants and their environment	K1
CO-2	Understand and analyse the metabolic and physiological process unique to plants	K2,K3
CO-3	Understand physiological mechanisms of plants and to apply for crop improvement	K3, K4
CO-4	Develop entrepreneurial skills in using the hormones on plant propagation	K4
CO-5	Understand the functions of molecules and metabolites which serves as the foundation for advances in agriculture, horticulture and forestry	K3

Course Title	BIOINFORMATICS	
CODE	18BOPC309	
CO No.	Course Outcomes	Knowledge Level
CO-1	Acquire knowledge on different computational tools to find DNA sequences and to predict genes	K1,K2
CO-2	Understand and apply different approaches and models for phylogenetic analysis and tree construction	K2,K3
CO-3	Use appropriate knowledge and recognize problem-solving skill to develop new algorithms	K3,K4
CO-4	Analyse biological data using a variety of bioinformatics tools accessible on the network	K3
CO-5	Apply various visualization tools and techniques for visualizing biomolecular structures	K4
Course Title	GENETIC ENGINEERING AND BIOTECHNOLOGY	
CODE	18BOPC410	
CO No.	Course Outcomes	Knowledge Level
CO-1	Acquire knowledge on the molecular tools of gene cloning technique	K1,K2
CO-2	Understand and analyse the transgenic plants and to apply the technique in crop improvement	K2,K3
CO-3	Apply the techniques in genetics and molecular biology	K3, K4
CO-4	Develop entrepreneurial skill in mining and protect environment	K4
CO-5	Apply nanoparticles in the biological systems to create and use material structures, devices for potential benefits	K5

Course Title	ECOLOGY AND CONSERVATION BIOLOGY	
CODE		
CO No.	Course Outcomes	Knowledge Level
CO-1	Understand the various habitats and their vegetation	K2,K3
CO-2	Know the concept of succession and concepts of biogeochemical cycles	K2,K3
CO-3	Aware of different types of pollutions and recent problems concerning with global warming, ozone depletion and effect of green house	K2,K4
CO-4	Know-how the methods of environmental audits and environmental impact	K4
CO-5	Understand the conservation problems, analyze the causes behind the vulnerability and extinction risks of populations	K2,K3
Course Title	RESEARCH METHODOLOGY	
CODE	18BOPC412	
CO No.	Course Outcomes	Knowledge Level
CO-1	Evoke the information about various principles, methodology and uses of instruments.	K1,K2
CO-2	Acquire the knowledge of basic to advance microscopes.	K2,K3
CO-3	Attain the statistical knowledge and their role.	K3, K4
CO-4	Develop skill to select and define appropriate research problem and parameters	K3, K4
CO-5	Enhance the skill to write a research report, thesis and proposal	K3,K4