

BACHELOR OF SCIENCE PLANT BIOLOGY AND PLANT BIOTECHNOLOGY (Shift – DAY)

COURSE OUTCOMES (COs)

On completion of the course students will be able to

COURSE COMPONENT	COURSE	COURSE OUTCOME
CORE PAPER I	PHYCOLOGY	<p>CO1: Classify algae based on their characteristics and structures</p> <p>CO2: Outline the structure, pigmentation, food reserves and methods of reproduction of</p> <p>CO3: Develop critical understanding of some algal genera and their reproduction.</p> <p>CO4: Apply the skill of isolation and cultivation of beneficial algae for mass cultivation</p> <p>CO5: Increase the awareness and appreciation of algae and their economic importance</p>
CORE PAPER II	MYCOLOGY AND LICHENS	<p>CO1: Develop an understanding about the classification of fungi.</p> <p>CO2: Develop critical understanding of some fungal genera and their reproduction</p> <p>CO3: Analyze the various aspects of the fermentation technology and apply for Fermentative production</p> <p>CO4: Demonstrate skills in laboratory, field and glasshouse work related to mycology and plant pathology.</p> <p>CO5: Develop an understanding of lichens and appreciate their adaptive strategies.</p>
CORE PAPER III	GENERAL MICROBIOLOGY AND PLANT PATHOLOGY	<p>CO1: Learn about classification, characteristics, ultra structure of Prokaryotic and Eukaryotic microbes.</p> <p>CO2: Develop understanding on the concept of microbial nutrition and respiration</p> <p>CO3: Develop critical understanding of Bacteria and their reproduction.</p>

		<p>CO4: Increase the awareness and appreciation of algae and their economic importance</p> <p>CO5: Know about organisms and causal factor responsible for plant diseases & methods of studying plant diseases</p>
CORE PAPER IV	BRYOPHYTES AND PTERIDOPHYTES	<p>CO1: Learn about the general characters and economic importance of Bryophytes which make to understand Reimer's classification.</p> <p>CO2: Develop critical understanding on morphology, anatomy and reproduction of Bryophytes.</p> <p>CO3: Analyze the the general characters and economic importance of Pteridophytes.</p> <p>CO4: Know about the stelar evolution in Pteridophytes, heterospory and origin of seed habit.</p> <p>CO5: Develop critical understanding on morphology, anatomy and reproduction of Pteridophytes.</p>
CORE PRACTICAL I	ALGOLOGY, MYCOLOGY AND LICHEN, GENERAL MICROBIOLOGY AND PLANT PATHOLOGY, BRYOPHYTES AND PTERIDOPHYTES	<p>CO1: Develop the technical skill to observe the internal structure of algae</p> <p>CO2: Create skill to identify the Gram positive and Gram negative bacteria</p> <p>CO3: Develop the technical skill to observe and classify the internal structure of Bryophytes</p> <p>CO4: Develop the technical skill to observe and classify the internal structure of Pteridophytes</p> <p>CO5: Understand the structure of disease causing organism</p>
CORE PAPER V	CELL BIOLOGY AND MOLECULAR BIOLOGY	<p>CO1: Study the structure and function of basic components of prokaryotic and eukaryotic cells, cell membranes and cell wall</p> <p>CO2: Study the structure and function of cell organelles</p>

		<p>CO3: Understand the cellular components underlying mitotic cell division.</p> <p>CO4: To study the structure and function of DNA, RNA.</p> <p>CO5: To analyse the concept of genetic code with protein synthesis and mutation</p>
CORE PAPER VI	ANATOMY OF ANGIOSPERM AND EMBRYOLOGY	<p>CO1: Describes the structure of root, shoot and nodal types of dicot plants.</p> <p>CO2: Discuss the types of leaves and explains various kinds of stomata in Dicot and Monocot</p> <p>CO3: Illustrates the structure of anther. Discuss the various types of microsporogenesis</p> <p>CO4: Illustrates the structural types of Ovule and discuss the development of megaspore.</p> <p>CO5: Explains the development of Monocot and Dicot embryo</p>
CORE PAPER VII	GYMNOSPERMS, PALEOBOTANY AND EVOLUTION	<p>CO1: Understand the characteristics of Gymnosperms and their classification</p> <p>CO2: Illustrate the reproductive characters of important genus of gymnosperm</p> <p>CO3: Describe the types of fossils</p> <p>CO4: Interpret the evolutionary sequence with the knowledge of the geological time scale</p> <p>CO5: Analysis of evolution, variation and chemosynthetic theory</p>
CORE PAPER VIII	PLANT ECOLOGY AND ENVIRONMENTAL BIOTECHNOLOGY	<p>CO1: Understand the environmental factors that influence vegetations</p> <p>CO2: Analyze the plant adaptations and succession types</p> <p>CO3: Discuss the principles of Phytogeography</p> <p>CO4: Recognize the importance of soil erosion and forest conservation</p> <p>CO5: Explain the Biofuel, bioremediation and Biosorption</p>

<p>CORE PRACTICAL II</p>	<p>CELL BIOLOGY AND MOLECULAR BIOLOGY, ANATOMY OF ANGIOSPERMS, PALEOBOTANY AND EVOLUTION, GYMNASPERMS, PALEOBOTANY AND EVOLUTION AND ECOLOGY AND ENVIRONMENTAL BIOTECHNOLOGY</p>	<p>CO1: Discuss the structure and functions of the meristematic, primary & complex tissues. CO2: Distinguish between normal and anomalous secondary growth. Discuss the development of the endosperm and embryo CO3: To understand the internal structure of Gymnosperms CO4: To understand about internal structure of fossils CO5: Understand the cell organelles through electron micrographs and Identify the cellular components underlying cell division and phytogeographical region</p>
<p>CORE PAPER IX</p>	<p>GENETICS AND PLANT BREEDING</p>	<p>CO1: Understand, apply and evaluate the laws of Mendel in classical genetics, deviations from Mendelian ratios and the different types of gene interactions. CO2: Understand sex determination in plants and apply the concepts of cytoplasmic, nuclear and sex-linked inheritance CO3: Understand and analyse linkage, crossing over, chromosome mapping, mutations and syndromes CO4: Evaluate the significance and applications of DNA fingerprinting, gene therapy, DNA library and Hardy Weinberg law. CO5: Remember, analyse and apply the principle involved in conventional methods of plant breeding, polyploidy, and the organizations involved in plant improvement.</p>
<p>CORE PAPER X</p>	<p>TAXONOMY OF ANGIOSPERMS & ECONOMIC BOTANY</p>	<p>CO1: Interpret the Nomenclature systems and to identify the plants CO2: Understand the Principle and classification of angiosperms CO3: Understand the Technical terms used in morphology of plants CO4: Understand and analyze the</p>

		Floral taxonomy of angiosperms CO5: Understand the Economic uses of plants
CORE PAPER XI	BIOINSTRUMENTATION, BIOINFORMATICS AND BIOSTATISTICS	CO1: Remember, understand and apply the instrumentation of microscopy and micrometry CO2: Apply the skill of the botanical techniques, microtomy, Fixative and staining for preparing permanent and temporary slides. CO3: Understand and apply the working principles, Dialysis and applications of Colorimeter, pH meter centrifuge and chromatography CO4: Describe the bio informatics basics and it's application in biology CO5: Calculate the mean, median, mode, standard deviation and Chi-Square Test.
CORE ELECTIVE I	HERBAL MEDICINE	CO1: Understand, apply and analyze the importance of Indian system of medicine and Explain the alternate herbal remedies for common ailments. CO2: Understand and discuss the Classification of natural drugs CO3: Understand, apply and evaluate the herbal preparations CO4: Describe the systematic position & medicinal value of plants CO5: Understand , discuss and Detect the adulteration of the crude drug from medicinal value of plants
CORE PAPER XII	PLANT PHYSIOLOGY, BIOCHEMISTRY AND BIOPHYSICS	CO1: Enable the students to learn the fundamentals of photosynthesis and photorespiration in plants. CO2: Understand the physiology of respiration in plants. CO3: Create the knowledge on the processes involved in cycling of nitrogen in plants and atmosphere. CO4: Understand the significance of enzymes and coenzymes in

		<p>plants.</p> <p>CO5: Impart knowledge on laws of Thermodynamics, bioenergetics and bioluminescence.</p>
CORE PAPER XIII	PLANT BIOTECHNOLOGY	<p>CO1: Understand preparation of tissue culture medium and basics of tissue culture techniques.</p> <p>CO2: Understand plant protoplast isolation and fusion for the generation of hybrid varieties.</p> <p>CO3: Analyse the intricacies of techniques involved in the culture of various plant organs.</p> <p>CO4: Evaluate the significance and applications of fermentation technology and mass cultivation of biofertilizers.</p> <p>CO5: Know the principle involved in generating custom made plants producing secondary metabolites and to understand the significance in converting C3 plants to C4 transgenics</p>
CORE ELECTIVE II	HORTICULTURE	<p>CO1: Acquire knowledge about the fundamental aspects of horticulture and To learn the principles of garden design</p> <p>CO2: To understand the garden components and importance of green house and its construction.</p> <p>CO3: Understand the basic techniques involved in gardening Apply the techniques in bonsai production and cut flower cultivation . Skilled in various flower arrangement techniques . Employ the techniques terrace gardening</p> <p>CO4: Promote the cultivation of horticultural plants through various propagation methods</p> <p>CO5: To learn the hybridisation techniques and methods of crop improvement</p>

<p>CORE PRACTICAL II</p>	<p>GENETICS AND PLANT BREEDING, TAXONOMY OF ANGIOSPERMS AND ECONOMIC BOTANY, BIOINSTRUMENTATION, BIOINFORMATICS AND BIOSTATISTICS</p>	<p>CO1: Identify the plants using Taxonomically CO2: To observe Economic importance CO3: Interpret the Genetic problems CO4: Apply common statistical tools to derive inference CO5: Analyze Bio-instruments and hybridization techniques involved in plants</p>
<p>CORE PRACTICAL VI</p>	<p>PLANT PHYSIOLOGY, BIOCHEMISTRY, BIOPHYSICS AND PLANT BIOTECHNOLOGY</p>	<p>CO1: Understand the photosynthetic system of plants CO2: Learn the respiratory process of plants CO3: Understand the techniques involved in plant tissue culture CO4: Learn the mass cultivation of Biofertilizers CO5: Learn the sterilization techniques</p>