

BHANUPRATAPDEO GOVERNMENT P G COLLEGE, KANKER
CHHATTISGARH

Program Specific Outcomes (PSOs) and Course Outcomes (COs) 2021-22
Department of Botany
Programme: M.Sc. Botany

PSO No.	Program Specific Outcomes (PSOs) Upon completion of this programme the student will be able to
PSO1	Academic competence: (i) The students will be able to understand the nature and the basic concepts of various plant groups their metabolism, structure, biochemistry, taxonomy and ecology. (ii) The course will make them aware of natural resources, environment and the importance of conserving.
PSO2	Personal and Professional Competence: (i) The students will have essential professional plant sciences skill that will make them confident and competent to apply their knowledge in different fields. (ii) They will become competent enough in various technical and analytical skills.
PSO3	Research Competence: (i) The students will be able to qualify competitive exam like NET SET GATE and UPSC. (ii) The students will be able to excel in the research field. (iii) To produce highly qualified postgraduate in the field of plant Sciences that can serve in educational and Research institutions.
PSO4	Entrepreneurial and Social competence: (i) Employ the applied knowledge of Botany for self-employment. (ii) Apply knowledge of Botany in the many fields like Horticulture, agriculture, Forestry and medicine. (iii) The students will be able to perform leading and influential role in the society and in their organization.

	M Sc SEM -I
Title of the Course and paper	Cytology PAPER I

On completion of the course, the students will be able to:

CO1	Describe structural organisation of plant cell and bio energetics
CO2	Support the crucial role of plant specific cell organelles using ultrastructure, genome organisation and bio energetic pathway. Explain gene expression and RNA editing.
CO 3	Explain molecular and functional aspects of various processes in cell life cycle, apoptosis, cell senescence.
CO4	Explain techniques of cell biology: immuno techniques.

Title of the Course and Paper	Genetics PAPER II
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On completion of the course, the students will be able to:

CO1	Describe chromatin organisation and special types of chromosome
CO2	Describe mapping of bacteriophage genome.
CO3	Illustrate the genetic recombination and genetic mapping.
CO4	Determine use of different genetic engineering tools for better understanding molecular biology.

Title of the Course and Paper	Microbiology phycology and mycology paper III
On completion of the course, the students will be able to:	
CO1	Outline the position of archaebacteria ,eubacteria and cyanobacteria in latest classification system. List the morphological and anatomical characters of the each division. Identify the economic importance.
CO2	Outline the characteristics and ultra structure f viruses and phytoplasma. Identify the economic importance.
CO3	Outline the position of algae in latest classification system. List the morphological and anatomical characters of the each division. Identify the economic importance.
CO4	Outline the position of fungi in latest classification system. List the morphological and anatomical characters of the each division. Identify the economic importance.

Title of the Course and Paper	Bryophyta pteridophyta and Gymnosperm paper IV
On completion of the course, the students will be able to:	
CO1	Outline the position of bryophytes latest classification system. List the morphological and anatomical characters of the each class. Identify the economic importance.
CO2	Outline the position of pteridophytes in latest classification system. List the morphological and anatomical characters of the each class. Identify the economic importance.
CO3	Outline the position of gymnosperms in latest classification system. List the morphological and anatomical characters of the each division. Origin and evolution of gymnosperm stele. Identify the economic importance.
CO4	List the morphological and anatomical features of extinct and extant gymnosperms
Title of the Course	Botany Practical I
On completion of the course, the students will be able to:	
CO1	Identify different stages of mitosis from suitable plant material (onion root tips)
CO2	Identification of meiosis from suitable plant material (onion floral bud)
CO3	Isolation of DNA and RNA and its quantification by UV – spectrophotometric method.
CO4	Isolation of DNA by Agarose gel electrophoresis
CO5	Classify the specimens and materials of algae fungi bryophytes pteridophytes and gymnosperms and associate them with salient features, distribution, morphology, anatomy and reproductive structures of their respective orders.

M Sc SEM -II

Title of the Course and Paper	Taxonomy and Diversity of plants paper I
On completion of the course, the students will be able to:	

CO1	Outline the position of different taxa using different classification systems. Define the basic concepts of Developmental Botany and Systematics. GIF and plant nomenclature.
CO2	Outline pre Darwinian and post Darwinian classification.
CO3	Study of different angiospermic dicot families their systematic position, phylogeny and evolutionary trends and economic importance.
CO4	Study of different angiospermic monocot families their systematic position, phylogeny and evolutionary trends and economic importance.

Title of the Course and Paper	Molecular biology paper II
On completion of the course, the students will be able to:	
CO1	Describe structure of DNA and RNA replication protein synthesis
CO2	Concepts of molecular cytogenetics
CO3	Concepts of gene expression and protein sorting
CO4	Explain mutation and DNA repair
Title of the Course and Paper	Plant physiology paper III
On completion of the course, the students will be able to:	
CO1	Illustrate membrane transport and translocation of water and solutes.
CO2	Overview of signal transduction .
CO3	Describe biotic and abiotic stress .
CO4	Fundamentals of enzymology and sensory photobiology.
Title of the Course and Paper	Plant metabolism paper IV
On completion of the course, the students will be able to:	
CO1	Describe the concept of photosynthesis

CO2	Describe the concept of respiration and lipid metabolism.
CO3	Overview of Nitrogen and sulphur metabolism.
CO4	Describe the physiological effects and mechanism of action plant growth regulators and elicitors.

Title of the Course	Botany Practical III
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On completion of the course, the students will be able to:

CO1	Recall and identify types of Inflorescence, Aestivation, adhesion and cohesion of Floral whorls.
CO2	Assess the morphology of reproductive parts of angiosperms to study families.
CO3	Describe the procedures of physiology experiments.
CO4	Describe the procedures of biochemistry experiments.

M Sc SEM -III

Title of the Course and paper	Plant development and plant resources paper I
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On completion of the course, the students will be able to:

CO1	Describe unique features of plant development mainly root development.
CO2	Describe unique features of shoot development.
CO3	Describe unique features of leaf and flower development.
CO4	Overview of plant resources and their economic importance.

Title of the Course and Paper	Plant ecology- I paper II Ecosystem and vegetative ecology
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CO1	Overview of ecosystem organization.
CO2	Describe ecosystem stability and management.

CO3	Describe vegetation organisation and concept of community.
CO4	Describe vegetation development and succession.
Title of the course and paper	Biotechnology and genetic engineering of plants and microbes Paper III
On completion of the course the students will be able to:	
CO1	Summarize the different methods of biotechnology and recombinant DNA technology.
CO2	Overview the method of genetic engineering in plants and microbial genetic manipulation.
CO3	Describe the methods of DNA synthesis and sequencing.
CO4	Evaluate the different techniques of genomics and proteomics.
Title of the Course and Paper	Molecular plant pathology paper IV
On completion of the course, the students will be able to:	
CO1	Describe general principles of plant pathology and classification of plant diseases.
CO2	Describe general symptoms of plant disease and pathogenesis.
CO3	Describe effect of environment on disease development, host parasite relationship.
CO4	Describe methods of studying plant diseases.

Title of the Course	Botany practical III
On completion of the course, the students will be able to:	
CO1	Experiment related to plant development and resources
CO2	Experiment related to ecology.
CO3	Experiment related to techniques of biotechnology.

CO4	Experiments related to plant pathology.
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M. Sc. IV SEM	
Title of the Course and Paper	Plant reproduction and utilization of resources Paper I
On completion of the course, the students will be able to:	
CO1	Describe types of reproduction and self incompatibility.
CO2	Details of male and female gametophyte.
CO3	Describe seed and fruit development
CO4	Overview of utilization of resources and ethanobotanically important plants of chhattisgarh .

Title of the Course and paper	Pollution And biodiversity conservation paper II
On completion of the course, the students will be able to:	
CO1	Overview of climate soil and vegetation patterns of the world.
CO2	Describe poll, climate change and ecosystems.
CO3	Overview of biodiversity of India
CO4	Details of conservation strategies.
Title of the Course and Paper	Biotechnology -II PAPER III Plant cell, tissue culture and organ culture
On completion of the course, the students will be able to:	
CO1	Overview of Plant cell and tissue culture.
CO2	Mechanics and techniques of somatic embryogenesis androgenesis and somatic hybridization.
CO3	Utility of cryopreservation and germplasm storage.
CO4	Application of plant tissue culture and production of secondary metabolites.

Title of the Course and paper	Molecular Plant pathology paper IV
On completion of the course, the students will be able to:	
CO1	General principle of plant Disease Control epidemiology and disease forecasting.
CO2	Overview of Defence mechanism in plants resistance and susceptibility.
CO3	General account of diseases due to fungi and bacteria.
CO4	General account of diseases due to viruses mycoplasma and nematodes.
Title of the Course and Paper	Botany Practical-IV
On completion of the course, the students will be able to:	
CO1	Experiments and techniques related to biotechnology
CO2	Study of microsporogenesis and gametogenesis infection of anthers
CO3	Study of nuclear and cellular endosperm through dissection and staining.
CO4	Determine the water holding capacity of soil collected from different location.