

Course Outcomes – Program Outcomes (COPO) Mapping

Undergraduate Curriculum Framework (UGCF)

National Education Policy (NEP)

The Preamble of the Undergraduate Curriculum Framework-2022 underlines the historical perspective, philosophical basis, and contemporary realities of higher education as enshrined in the National Education Policy 2020 and endeavours to synchronize these cornerstones while charting the road ahead for the state of higher education.

ABBREVIATIONS / NOMENCLATURE

Sno.	Nomenclature	Description	Aggregate Courses
1.	PO	Program Outcome	PO1, PO2, PO3
2.	CO	Course Outcome	CO1, CO2, CO3, CO4, CO5, CO6, CO7
1.	DSC	Core Courses	DSC1, DSC2, DSC3, DSC4, DSC5, DSC6, DSC7, DSC8, DSC9, DSC10, DSC11, DSC12
2.	DSE	Discipline Specific Electives	DSE1, DSE2
3.	GE	General Electives	GE4

Program Outcomes (PO): B.Sc. (H) Botany

UGCF (NEP)

Sno.	Program Outcomes (PO): B.Sc. (H) Botany	Statements
1.	PO1	Understanding of plant classification systematics, evolution, ecology, developmental biology, physiology, biochemistry, plant interactions with microbes and insects, morphology, anatomy, reproduction, genetics and molecular biology of various life-forms.
2.	PO2	Understanding of various analytical techniques of plant sciences, use of plants as industrial resources or as human livelihood support system and is well versed with the use of transgenic technologies for basic and applied research in plants.
3.	PO3	Understanding of various life forms of plants, morphology, anatomy, reproduction, genetics, microbiology, molecular biology, recombinant DNA technology, transgenic technology and use of bioinformatics tools and databases and the application of statistics to biological data.

Course Outcomes (CO): B.Sc. (H) Botany

SEMESTER 1:			
DSC1: Plant Diversity and Evolution			
Unique Paper Code	Name of the Paper	Course Outcome: CO	Statement
2162011101	DSC1: Plant Diversity and Evolution	CO1	By studying this course students will gain basic knowledge on The diversity of plants and microbes
		CO2	Their general characteristics.
		CO3	Various groups of plants and their evolutionary relationships
		CO4	Basic principles and concepts of evolution that contribute to plant diversity.
DSC2: Cell Biology: Organelles and Biomolecules			
2162011102	DSC2: Cell Biology: Organelles and Biomolecules	CO1	By studying this course students will gain basic knowledge on the relationships between the properties of macromolecules, their cellular activities and biological functions.
		CO2	Physico-chemical composition of organelles and their functional organization.
		CO3	Basic principles and concepts of evolution that contribute to plant diversity
DSC3: Basic Laboratory and Field Skills in Plant Biology			
2162011103	DSC3: Basic Laboratory and Field Skills in Plant Biology	CO1	This course will be able to demonstrate basic knowledge and understanding of Good laboratory practices, management of laboratory waste, understanding hazards and risks to ensure a safe laboratory environment.
		CO2	Basics of measurements, units and common mathematical calculations, sampling and data collection.
		CO3	Operation and maintenance of instruments

		CO4	Presentation, analysis of data and interpretation of results.
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COPO MAPPING

SEMESTER I: COPO MAPPING				
Papers	Program Outcome : PO			
	Course Outcome: CO	PO1	PO2	PO3
DSC1	CO1	✓		
	CO2	✓		
	CO3	✓		
	CO4	✓		✓
DSC2	CO1	✓	✓	
	CO2	✓	✓	
	CO3	✓		✓
DSC3	CO1	✓		
	CO2	✓	✓	
	CO3	✓	✓	
	CO4	✓	✓	

SEMESTER II:			
DSC4: Microbiology and Plant Microbe Interactions			
Unique Paper Code	Name of the Paper	Course Outcome: CO	Statement
2162011201	DSC4: Microbiology and Plant Microbe Interactions	CO1	Understanding microbes and their roles and applications.
		CO2	Understanding about modes of reproduction of Viruses, Archaeobacteria, Eubacteria.
		CO3	Understand plant-microbe interaction

DSC5: Plant Resources and Economic Botany			
2162011202	DSC5: Plant Resources and Economic Botany	CO1	This course would provide students with information about the economic importance and products derived from plants and their roles in our daily lives.
		CO2	Students will learn to perform micro-chemical tests to study presence of various components.
		CO3	Students will explore the regional diversity in food crops and other plants and their ethnobotanical importance.
DSC6: Plant Systematics			
2162011203	DSC6: Plant Systematics	CO1	Understand technical terminology used in plant taxonomy
		CO2	Apply the terminologies to describe, identify and classify flowering plants
		CO3	Search and analyse taxonomic information from internet-based scientific databases and other resources
		CO4	Interpret and evaluate the concept of species and evolutionary processes in angiosperms
		CO5	Comprehend and compare various systems of classifications
		CO6	Recognise diversity in local/regional flora
		CO7	Appreciate the significance and application of systematics in science and welfare of society

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SEMESTER II: COPO MAPPING				
Papers	Program Outcome : PO			
	Course Outcome: CO	PO1	PO2	PO3
DSC4	CO1	✓		
	CO2	✓		
	CO3	✓		
DSC5	CO1	✓		
	CO2	✓	✓	
	CO3	✓		
DSC6	CO1	✓		
	CO2	✓		

	CO3	✓		✓
	CO4	✓		
	CO5	✓		
	CO6	✓		
	CO7	✓		✓

SEMESTER III:			
DSC7: Phycology - The World of Algae			
Unique Paper Code	Name of the Paper	Course Outcome: CO	Statement
2162012301	DSC7: Phycology - The World of Algae	CO1	By studying this course students will gain basic knowledge on algae, with reference to the diversity and general characteristics.
		CO2	Distinguishing features of taxa belonging to different families.
		CO3	The various ecological and economic benefits.
DSC8: Bryophytes, Pteridophytes and Gymnosperms			
2162012302	DSC8: Bryophytes, Pteridophytes and Gymnosperms	CO1	At the end of this course students will be able to identify and describe the group of plants that have given rise to land habit and the flowering plants.
		CO2	Comprehend various phenological stages of the plants belonging to the sub-groups – bryophytes, pteridophytes and gymnosperms.
DSC9: Genetics & Plant Breeding			
2162012303	DSC9: Genetics & Plant Breeding	CO1	On completion of the course the students will be able to understand the fundamentals of Mendelian inheritance and its deviation in gene interactions.
		CO2	Describe the concepts of linkage and crossing over and their usage in constructing gene maps.
		CO3	Become familiar with pedigree analysis.

		CO4	Learn about principles of population genetics
		CO5	Gain knowledge about gene mutations and inherited disorders
		CO6	Learn about various plant breeding techniques / methods
DSE1: Biostatistics & Bioinformatics for Plant Sciences			
2163012002	DSE1:Biostatistics & Bioinformatics for Plant Sciences	CO1	use the various online databases and resources for accessing biological data.
		CO2	use the different methods of alignment of DNA, RNA and protein sequences and interpret the significance of the same.
		CO3	understand the descriptive and inferential statistical tests for interpretation of experimental data.

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SEMESTER III : COPO MAPPING				
Papers	Program Outcome : PO			
	Course Outcome: CO	PO1	PO2	PO3
DSC7	CO1	✓		✓
	CO2	✓		
	CO3	✓		✓
DSC8	CO1	✓		
	CO2	✓		
DSC9	CO1	✓	✓	
	CO2	✓	✓	✓
	CO3	✓	✓	
	CO4	✓	✓	
	CO5	✓	✓	
	CO6	✓	✓	
DSE1	CO1	✓		✓
	CO2	✓		✓
	CO3	✓		✓

SEMESTER IV:**DSC10: MYCOLOGY**

Unique Paper Code	Name of the Paper	Course Outcome: CO	Statement
2162012401	DSC10: MYCOLOGY	CO1	Understand the world of fungi, lichens and pathogens of plants
		CO2	Understand characteristics the ecological and economic significance of the fungi and lichens
		CO3	Understand the application of mycology in various fields of economic and ecological significance
DSC11: Ecology and Conservation			
2162012402	DSC11: Ecology and Conservation	CO1	The interrelationship between organisms and environment
		CO2	Methods to study vegetation, community patterns and processes, ecosystem functions, and principles of phytogeography.
		CO3	Evolving strategies for sustainable natural resource management and biodiversity conservation
DSC12: Development al Biology of Angiosperms: Form, Anatomy & Function			
2162012403	DSC12: Development al Biology of Angiosperms: Form, Anatomy & Function	CO1	Become familiar with the structure and functions of various components of plant cell.
		CO2	Understand the process of cell growth and its regulation
		CO3	Comprehend the structure and functions of tissues organising the various plant organs
		CO4	Get acquainted with the reproductive processes involved in the life cycle of angiosperms
		CO5	Be able to appreciate the interactions between the developmental pathways resulting in the differentiation of plant body
		CO6	Recognise the importance of plant developmental biology in the improvement and conservation of plants
DSE2: Industrial and Environmental Microbiology			

2163012004	DSE2: Industrial and Environmental Microbiology	CO1	understand how microbiology is applied in manufacturing of industrial products
		CO2	know about design of bioreactors
		CO3	understand the rationale in medium formulation, design for microbial fermentation, sterilization of medium and air
		CO4	comprehend the techniques and the underlying principles in upstream and downstream processing
		CO5	learn the occurrence, abundance and distribution of microorganism in the environment and their role in the environment and also learn different methods for their detection
		CO6	understand the basic principles of environment microbiology and application of the same in solving environmental problems - waste water treatment and bioremediation
		CO7	comprehend the various methods to determine the quality of water
GE-4: Ethnobotany			
2164001204	GE-4: Ethnobotany	CO1	After studying this course the student will have an understanding of the value and usefulness of the natural products and their efficient use by the local communities as food and medicine and their conservation practices.

COPO MAPPING

SEMESTER I : COPO MAPPING				
Papers	Program Outcome : PO			
	Course Outcome: CO	PO1	PO2	PO3
DSC10	CO1	✓		✓
	CO2	✓		
	CO3	✓		✓
DSC11	CO1	✓		
	CO2	✓	✓	
	CO3	✓	✓	
DSC12	CO1	✓		
	CO2	✓	✓	
	CO3	✓		

	CO4	✓		✓
	CO5	✓		
	CO6	✓		✓
DSE2	CO1	✓	✓	
	CO2	✓	✓	
	CO3	✓	✓	
	CO4	✓	✓	
	CO5	✓	✓	
	CO6	✓	✓	
	CO7	✓	✓	
GE4	CO1	✓		✓