

COURSE OUTCOME

Botany

Botany Honours	Semester I	UG-H-BOT-CC-T&P-01	Biomolecules and Cell Biology	describe the types, nomenclature and structures of biomolecules; explain the function and structure of cells including the metabolic reactions that occur in cells;
		UG-H-BOT-CC-T&P -02	Plant Morphology and Anatomy	describe plants by morphological and anatomical features for correct identification; explain developmental patterns of both vegetative and reproductive organs of plants;
		UG-H-BOT-GE-T&P -01	Biodiversity of Microbes, Algae, Fungi and Archegoniate	describe general characteristics of viruses, bacteria, algae, fungi and archegoniate with special reference to their classification, morphology, reproduction and ecology;
	Semester II	UG-H-BOT-CC-T&P -03	Diversity of Microbes and Algae	describe general characteristics of viruses, bacteria and algae with special to their classification, morphology, reproduction, distribution and ecology;

		UG-H-BOT-CC-T&P -04	Diversity of Fungi and Plant Pathology	describe general characteristics of fungi with special reference to their classification, somatic diversity, reproduction, symbiosis and applied aspects; explain plant pathogen interactions, control spread of plant pathogens and plant diseases.
		UG-H-BOT-GE-T&P -02	Plant Ecology, Morphology and Taxonomy	explain the concept of ecology and the influence of different environmental, climatic and physiographic and edaphic factors on plant life; comprehend the concept of phytogeography, describe botanical zones in India and explain endemism;
	Semester III	UG-H-BOT-CC-T&P -05	Diversity of Bryophytes and Pteridophytes	describe general characteristics of bryophytes and pteridophytes with special to their classification, morphology, reproduction, distribution and ecology; explain their role in environment, human welfare and in industrial applications;
		UG-H-BOT-CC-T&P -06	Diversity of Gymnosperms and Palaeobotany	determine the concept of progymnosperms and its significance in plant evolutionary history describe general characteristics of gymnospermous plant group with special reference to their classification, morphology, reproduction, distribution, and ecology;

		UG-H-BOT-CC-T&P -07	Reproductive Biology of Plants	explain the process of pollination and fertilization in flowering plants;apply the knowledge gained to comprehend self-incompatibility in plants and apply methods to overcome it;
		UG-H-BOT-GE-T&P -03	Biodiversity of Microbes, Algae, Fungi and Archegoniate	describe general characteristics of viruses, bacteria, algae, fungi and archegoniate with special reference to their classification, morphology, reproduction and ecology;
		UG-H-BOT-SEC-T-01 (ANY ONE)	A. Biofertilizers	elucidate different types of fertilizers using biological organisms; apply the knowledge gained in utilization of biofertilizers in organic farming.
		UG-H-BOT-CC-T-01	B. Plant Diversity and Human Welfare	explain the concept and value of biodiversity, threats to biodiversity, need for conservation and environmental stewardship; apply and implement conservation strategies for biodiversity management.
	Semester IV	UG-H -BOT-CC-T&P -08	Taxonomy of Angiosperms and Plant Systematics	classify the plant Kingdom;identify and name a plant and fix its rank under any system of classification;apply taxonomic treatment using gross morphology ('alpha' taxonomy), cytology, breeding behavior and barriers ('omega' taxonomy);technique) for identification and description of changing patterns of floristic components of an area.
		UG-H -BOT-CC-	Plant Ecology and	elucidate the interactions between biotic and abiotic constituents of the ecosystem;explain interactions at inter and intra-specific levels and at different

		T&P -09	Phytogeography	ecosystems; explain interactions at inter and intra-specific levels and at different trophic levels;
		UG-H -BOT-CC-T&P -10	Economic Botany and Pharmacognosy	identify the plant parts of economic importance and their uses; identify the medicinal plants from the pharmacognostic preparations;
		UG-H-BOT-GE-T&P -02	Plant Ecology, Morphology and Taxonomy	explain the concept of ecology and the influence of different environmental, climatic and physiographic and edaphic factors on plant life; comprehend the concept of phytogeography, describe botanical zones in India and explain endemism;
		UG-H-BOT-SEC-T-02	B. Mushroom Culture	describe nutritional and medicinal values of edible mushrooms and their cultivation strategies; apply the knowledge gained in storage and food preparation.
		UG-H-BOT-SEC-T-02	C. Intellectual Property Rights	identify different types of Intellectual Properties (IPs), right of ownership, scope of protection of IP and ways to create and extract value from IP; recognize the role of IP in different sectors for promoting product and technology development; identify activities that constitute IP infringements and the remedies available to the IP owner and describe the steps to be taken to prevent infringement of such rights in products and technology development; discuss the processes and various approaches of Intellectual Property Management (IPM).

Semester V	UG-H-BOT-CC-T&P -11	Plant Physiology	discuss plant water relations, i.e. how plants acquire, utilize, and regulate the flow of water between plant and environment; outline the mineral nutrients plants require, and how they are obtained, metabolized, transported and their role in plants;
	UG-H-BOT-CC-T&P -12	Plant Metabolism	describe the concepts of different types of metabolisms and their regulation in plants;
	UG-H-BOT-DSE-T&P -01 A	Analytical Techniques in Plant Science	describe various imaging related techniques; give an overview of the principle of Spectrophotometry and its application in biological research; characterize proteins and nucleic acids; analyze statistical data and perform chi-square test for goodness of fit.
	UG-H-BOT-DSE-T&P -01B	Industrial and Environmental Microbiology	apply the basics of microbiology to build a foundation for studies in microbiology and use of microbes in industry to manufacture food or products
	UG-H-BOT-DSE-T&P -02A	Stress Biology	describe stress sensing and signaling pathways in plants; give an overview of reactive oxygen species (ROS) production
	UG-H-BOT-DSE-T&P -02B	Plant Breeding and Biometry Microbiology	get an overview of the hybridization technique; explain inbreeding depression and heterosis; understand the role of biotechnology in crop improvement; analyse statistical data and understand the nature of inheritance
Semester VI			

		UG-H -BOT-CC-T&P -13	Genetics	explain Mendel's theory of inheritance;understand the extranuclear inheritance;construct chromosome map;
		UG-H -BOT-CC-T&P -14	Plant Molecular Biology and Biotechnology	Explain the principles, technical requirement, scientific and commercial applications of plant tissue and cell culture.Understand different gene transfer techniques.Exploit the recombinant DNA technology for development of transgenic plants
		UG-H -BOT-DSE-T&P -03A	Biodiversity and Conservation	demonstrate an advanced understanding of the application of fundamental principles of ecological studies to the conservation of biodiversity;
				communicate effectively in the form of written reports and spoken presentations.
		UG-H -BOT-DSE-T&P -03B	Coastal Biology	explain basic concepts of estuary, biodiversity, ecology and evolution as they pertain to marine, coastal and estuarine environment.
				disseminate basic idea about saline agriculture and forestry
		UG-H -BOT-DSE-T&P -04A	Research Methodology	define the meaning of research, explain the concept, nature and scope of research in plant science.
			1.	differentiate, apply and practice different laboratory practices in plant science research.
				observe, document and interpret data.
		UG-H -BOT-DSE-T&P -04B	Dissertation/ Project	apply the knowledge gained through different courses in practical field.
				solve problems related to his course of study.
				document, calculate, analyse and interpret data.
				deduce findings from different studies
				write and report in standard academic formats.

Botany PCC	Semester-I	UG-BOT-G-CC-T&P -01	Biodiversity of Microbes, Algae, Fungi and Archegoniate	describe general characteristics of viruses, bacteria, algae, fungi and archegoniate with special reference to their classification, morphology, reproduction, distribution and ecology.
	Semester II	UG-BOT-G-CC-T&P -02	Plant Ecology, Morphology and Taxonomy	explain the concept of ecology and the influence of different environmental, climatic and physiographic and edaphic factors on plant life; comprehend the concept of phytogeography, describe botanical zones in India and explain endemism;
	Semester III	UG -BOT-G-CC-T&P -03	Plant Cell, Anatomy and Embryology	identify, describe and differentiate plant cells and cell organelles and their functions; apply plant anatomical features for correct identification; explain the developmental patterns of both vegetative and reproductive organs of plants; reproductive biology.
		UG-BOT-G-SEC-T-01A	Biofertilizers	elucidate different types of fertilizers using biological organisms; apply the knowledge gained in utilization of biofertilizers in organic farming.

		UG-BOT-G-SEC-T-01B	Plant Diversity and Human Welfare	<p>explain the concept and value of biodiversity, threats to biodiversity, need for conservation and environmental stewardship;</p> <p>apply and implement conservation strategies for biodiversity management.</p>
Semester IV		UG -BOT-G-CC-T&P -04	Plant Physiology and Metabolism	<p>explain plant water relations and elucidate mineral nutrients that plants require, how they are obtained, metabolized and transported;</p> <p>hormones, environmental responses and nitrogen metabolism required for plant growth and development.</p>
		UG-BOT-G-SEC-T-02B	Mushroom Culture	<p>describe nutritional and medicinal values of edible mushrooms and their cultivation strategies;</p> <p>apply the knowledge gained in storage and food preparation.</p>
Semester V		UG-BOT-G-DSE-T&P -01A	Analytical Techniques in Plant Sciences	<p>describe various imaging related techniques;</p> <p>give an overview of the principle of spectrophotometry and its application in biological research;</p> <p>characterize proteins and nucleic acids;</p> <p>analyze statistical data and perform chi-square test for goodness of fit</p>
				<p>plan, analyze, and, solve the problems associated with herbal science and technology and related fields.</p>

		UG-BOT-G-SEC-T-03A	Herbal Technology	design plant-wise processes including unit operations leading to a professional qualification that will serve the herbal or phytochemical industry.
Semester VI		UG—BOT-G-DSE-T&P -02A	Biodiversity and Conservation	<p>demonstrate an advanced understanding of the application of fundamental principles of ecological studies to the conservation of biodiversity.</p> <p>discuss and cite theories and case studies as prerequisites for success in sustainable utilization and effective species conservation.</p>
		UG -BOT-G-SEC-T-04A	Ethnobotany	<p>explain the traditional and indigenous knowledge, utilization, and conservation of plants by ethnic people;</p> <p>describe the interactions between cultural practices, ecosystems, and modern science.</p>