BOTANY

Programme Specific Outcomes

Programme offered by the Department	Outcomes
B.Sc Honours Programme	**PSO1**. Students will understand and appreciate the diversity of Flora and learn about their ecological and economical importance. They will gain knowledge of simplest to most complex plant forms. **PSO2**. Students will be fascinated to learn the details of morphological, anatomical and embryological behaviour of plants and learn about the phylogeny with taxonomic hierarchy for identification of Angiosperms. **PSO3.** Students will enhance their knowledge towards environment, ecosystems, natural resources, Biodiversity and Conservation. It will provide baseline information on applied aspects of Botany and improve their skill regarding industrial and environmental microbiology for sustainable development. **PSO4**. Students will gain knowledge about Research Methodologies and develop special skills with computer programming, statistics and biology with big data to learn basic structural and functional properties of proteins, genomes, genes, etc. They will also gain the basic knowledge of Biotechnology, Mushroom Culture Technology, Pharmaceutical and Economic Botany. **PSO5.** It will employ critical thinking and scientific knowledge in studentsto design, carry out and analyze the outcome of biological experiments.
B.Sc Programme Course **(General)**	Students will understand the basic concept of plant diversity ecology, anatomy, physiology, embryology and taxonomy. They will also build their knowledge about recent trends such as biotechnology, mushroom culture technology, herbal technology, pharmaceutical and economic botany. They will become aware about the plant diversity at the ecosystem level, values and uses of biodiversity, loss of biodiversity and different organizationsassociated with biodiversity management and conservation. Learn the importance of forestry in different commercial aspects like alcoholic beverages, wood, avenue trees, ornamental plants, fruits and nuts for human welfare. The students will also developed skill in the industrial and environmental microbiology.

BOTANY

Course Outcomes (COs)

B.Sc Honours Programme

Semester	Course Code	Course Title	Outcomes
I	CC1	Phycology and Microbiology	Learning the Algal biodiversity with respect to various phylum and understand the Microbial world including viruses and bacteria.
	CC2	Biomolecules and Cell Biology	Learning the structural behaviour of bio molecules and explore different cell organelle along with cell division.
	GE-1 Paper 1	Biodiversity (Microbes, Algae, Fungi and Archegoniate)	Systematic and extensive knowledge about the morphological and anatomical diversity of Algae, Fungi and Archegoniate and learn about their ecological and economical importance.Also, understand the Microbial world including virus and bacteria.
II	CC3	Mycology and Phytopathology	Learning the structural variation of various fungal species from different phylum with their biotechnological application in different aspects and acquired knowledge about the plant pathogens.
	CC4	Archegoniate	Understanding the biodiversity of Archegoniate including Bryophytes, Pteridophytes and Gymnosperms.
	GE-1 Paper 2	Plant Ecology and Taxonomy	The student will acquire knowledge about the diversity, distribution and abundance pattern of the plants, environmental effects on plant abundance, interaction between biotic and abiotic components of the environment, their conservation, sustainable development, ecosystem structure and function; identification, nomenclature, classification and systematic position of plants.
III	CC5	Morphology and Anatomy of Angiosperms	Learning the fundamental relevance of morphological and anatomical study of plant body.
	CC6	Economic Botany	Learning the economic importance of various cultivated plants.
	CC7	Genetics	Learning Mendel's laws of inheritance. Also, know about chromosomal variation, extrachromosomal inheritance, chromosomal behaviour, mutation, and evolutionary genetics.
	SEC Paper 1	Mushroom Culture Technology	The students will develop knowledge and skills about the nutrition value, morphology, types, identification and spawn production technique of mushrooms, which allow many students to establish a most profitable agri-business with mushroom farming. In addition, they will

			understand basic diseases management, post harvesting techniques, and scope of mushroom cultivation.
	GE-2 Paper 1	Plant Anatomy and Embryology	The students will explore the basic aspects of anatomy of plant tissues and reproductive developmental aspects of plant. Students will be benefitted by embryological studies in various aspects like analysis of evolutionary trends, circumscription and delimitation of taxa and making a decision on systematic positions.
IV	CC8	Molecular Biology	Understanding in details the central dogma of molecular biology through replication, transcription and translation.
	CC9	Plant Ecology and Phytogeography	Fascinate to learn the functional ecosystems which regulate the relationship with other organisms and known all aspects of plant distribution.
	CC10	Plant Systematics	Learning the phylogeny with taxonomic hierarchy for identification of angiosperms. Also acquire knowledge about biosystematics related to taxonomy.
	SEC Paper 2	Plant Diversity and Human Welfare	The student become aware about the plant diversity at the ecosystem level, values and uses of biodiversity, loss of biodiversity and different organizations associated with biodiversity management and conservation. They will also deal with the importance of forestry in different commercial aspects like alcoholic beverages, wood, avenue trees, ornamental plants, fruits and nuts for human welfare.
	GE-2 Paper 2	Plant Physiology and Metabolism	The student will understand the mechanism of photosynthesis and Respiration. They get acquire knowledge about carbohydrate, lipid, and nitrogen metabolisms including different signal-transduction cascade.
V	CC11	Reproductive Biology of Angiosperms	Learning the detailed structure of plantreproductive organelle. Also acquired knowledge about various mode of pollination, the details offertilization process, and endospermdevelopment.
	CC12	Plant Physiology	Learning the physiological and biochemical processes of an individual plant cell.
	DSE1	Biostatistics	The students will learn about the hypothesis ofbasic statistical tests in large sample also helps to understand the fundamentals of probability and its distribution.
	DSE2	Industrial and Environmental Microbiology	The students will acquainted knowledge about bioreactors and fermenters; knowing the advantages and application of different microbial enzymes in large industrial scale interest. Besides this, they will trained for sustainable development using microbes in sewage and domestic wastewater treatment. Also, know about PGPR, Mycorrhiza, bio fertilizers that help to improve soil health.
VI	CC13	Plant Metabolism	Learning different regulatory mechanisms of plant cell.
	CC14	Plant Biotechnology	Learning the development of new plant traits or varieties that are used in biotechnological application in different field.
	DSE3	Bioinformatics	Special skill set for students deal with computer programming, statistics and biology with big data

			to learn basic structural and functional properties of proteins, genomes, genes, etc. Basic knowledge of bioinformatics nowadays careers for many students in healthcare, biotechnology, and pharmaceutical fields.
	DSE4	Research Methodology	Learning necessary knowledge for proper understanding the subject for better research carriers. To learn about issues, plagiarism, collaboration, writing skills, etc.

B.Sc Programme (General)

Semester	Course Code	Course Title	Outcomes
I	DSC1	Biodiversity (Microbes, Algae, Fungi and Archegoniate)	Understanding the Systematics, gain extensive knowledge about the morphological and anatomical diversity of different categories of plants and learn about their ecological and economical importance.
II	DSC2	Plant Ecology and Taxonomy	The student will acquired knowledge about the diversity, distribution and abundance pattern of the plants, environmental effects on plant abundance, interaction between biotic and abiotic components of the environment, their conservation, sustainable development, ecosystem structure and function; identification, nomenclature, classification and systematic position of plants.
III	DSC3	Plant anatomy and Embryology	The students will explore the basic aspects of anatomy of plant tissues such as meristems, epidermis, permanent tissues, complex tissue systems and reproductive developmental aspects of plant. Students will be benefitted by embryological studies in various aspects like analysis of evolutionary trends, circumscription and delimitation of taxa and making a decision on systematic position.
IV	DSC4	Plant Physiology and Metabolism	Learning the biological and chemical processes of an individual plant cell.
V	DSE1	Industrial and Environmental Microbiology	The students will acquainted knowledge about bioreactors and fermenters; knowing the advantages and application of different microbial enzymes in large industrial scale interest. Besides this, they will trained for sustainable development using microbes in sewage and domestic wastewater treatment. Also, know about PGPR, Mycorrhiza, bio fertilizers that help to improve soil health.
VI	DSE2	Economic botany and Biotechnology	Learning the economic importance and development of new plant traits or varieties, which are used in various industrial field.
III	SEC1P1	Mushroom Culture Technology	The students will develop knowledge and skills about the nutrition value, morphology, types, identification and spawn production technique of mushrooms, which allow many students to establish a most profitable agri-business with mushroom

			farming. In addition, they will understand basic diseases management, post harvesting techniques, and scope of mushrooms cultivation.
IV	SEC1P2	Plant Diversity and Human Welfare	The student become aware about the plant diversity at the ecosystem level, values and uses of biodiversity, loss of biodiversity and different organizations associated with biodiversity management and conservation. They will also deal with the importance of forestry in different commercial aspects like alcoholic beverages, wood, avenue trees, ornamental plants, fruits and nuts for human welfare.
V	SEC2P1	Bio fertilizers	The student will acquired knowledge about the importance of bio fertilizer, advantages of bio fertilizers over chemical one, increasing the awareness, marketing and future perspectives for sustainable development in agriculture.
VI	SEC2P2	Herbal Technology	Knowledge gained regarding various active compounds used as herbal drugs and its use in medicine field.