

Courses offered by BOTANY Department

Bachelor of Science and Master of Science

Syllabus

FIRST DEGREE PROGRAMME IN BOTANY UNDER CBCSS

Course Outcome

Semester – 1

Course name with code

Angiosperm anatomy, Reproductive Botany and Palynology BO 1141

Semester – 2

Course name with code

Foundation Course Methodology and Perspectives in Plant Sciences BO 1221

Semester – 3

Course name with code

Microbiology, Phycology, Mycology, Lichenology and Palynology BO 1341

Semester – 4

Course name with code

Bryology, Pteridology, Gymnosperms and Palaeobotany BO 1441

Semester – 5 (If there is more than one course, kindly give the outcome of each course.)

Course name with code

Angiosperm Morphology, Systematic Botany, Economic Botany, Ethnobotany and Pharmacognosy

BO 1541

Outcome:

- Ability to identify different types of inflorescences, flowers and fruits, their arrangements and relative position.

- Familiarization of basic rules of Angiosperm classification and different types of classification.
- Preparation and Maintenance of Herbarium.
- Identification of plants to their respective families.
- Understanding of ethno botanical and pharmacological significance of plants.

Environmental Studies and Phytogeography BO 1542

Outcome:

- Understand and identify different ecosystems and ecosystem processes.
- Develops deep understanding about biodiversity and importance of its conservation.
- Develops skills to identify polluted sites, its major pollutants and recognize the need to mitigate environmental pollution.
- Awareness about different types of disasters and to adapt strategies to overcome and reduce the impact.
- Identify the importance of Phytogeographical site in India.

Cell Biology, Genetics and Evolutionary Biology BO 1543

Outcome:

- Students have a better understanding of cell structure and cell organelles.
- Can prepare micro slides of cell divisions and identify various stages of mitosis and meiosis.
- Able to work out problems in classical genetics, modified Mendelian ratios and population genetics.

Open Course Horticulture BO 1551.1

Outcome:

- Students are familiarized in horticulture implements and methods of gardening
- Better understanding of commercial horticulture, flower arrangements, cut flowers.
- Can understand about land scaping, fertilizers and plant protection.

Semester – 6 (If there is more than one course, kindly give the outcome of each course.)

Course name with code

Plant Physiology and Biochemistry BO 1641

Outcome:

- Students get a clear understanding of the basic concepts of Physiology and Biochemistry
- Understands photosynthesis, respiration, plant growth regulators, nitrogen metabolism and stress physiology.
- Familiarization of basic physiological practical procedures.
- Students get the basic knowledge about the macromolecules and their overall role in cell metabolism and secondary plant products.
- Identification of protein, reducing and non-reducing sugar by qualitative tests.

Molecular Biology, General Informatics and Bio informatics BO 1642

Outcome:

- Understands DNA as genetic material, develops awareness about chemical composition and different types of DNA including their replication method.
- Students understand various molecular aspects of gene expression and regulation of genes.
- Develops awareness about various academic services applied for their studies.
- Awareness about features of a computer , different application and system software.
- Recognizes the need for safe use of internet and also become aware about health issues related to over usage of computers and mobile phones as well as cyber crimes and cyber laws.
- Students will be familiarized to molecular phylogeny, Biological Databases, Sequence analysis, Genomics, Proteomics and Comparative genomics.

Horticulture, Plant Breeding and research Methodology BO 1643

Outcome:

- Students able to identify and use various horticultural implements
- Can propagate plants through grafting, budding and layering and can prepare manures, fungicides etc.
- Can effectively do plant breeding methods and understands their practical application in betterment of food crops.
- Can devise an experimental design and carry out a project
- Students trained about various steps for the conduct of a research project and write a project report.

M.Sc. Degree in Botany

(Specialization: Ethnobotany and Ethnopharmacology)

SEMESTER – 1

Course name with code

Ethnobotany, Ethnopharmacology and Indigenous Traditional Knowledge BE 211

Outcome:

- Appreciate the need to conserve floristic and cultural diversity of the region.
- Rescue and document Ethnobotanicals for sustainable use of plant resources.
- Understand the need for development of new drugs for safe and more rational use of herbal preparations.
- Recognition of intellectual property rights and its benefit to people and society who share their knowledge and wisdom.
- Develop laboratory skill in testing of herbal drugs and new commercial products.

HISTOLOGY, MICROTECHNIQUE, HISTOCHEMISTRY, BIOPHYSICS AND BIOSTATISTICS BE 212

Outcome:

- Understand the anatomical features of plant parts and identify the anomalous growth
- Correlate the anatomical features to taxonomy
- Familiarize the techniques for the preservation and processing of tissues
- Apply practical experience in microtechnique and histochemistry in laboratories
- Familiarize the instruments used in biology and statistical applications in solving biological problems

PHYCOLOGY, MYCOLOGY, BRYOPHYTES AND PTERIDOPHYTES BE 213

Outcome:

- Awareness about geographical distribution, classification, structure, life history and phylogeny of Algae, Fungi Bryophytes and Pteridophytes.
- Understand ecological role of the plants and economically important products obtained from them and their uses.
- Familiarize the fossil members of these groups.

SEMESTER – II

Course name with code

GYMNOSPERMS, ANGIOSPERM MORPHOLOGY AND TAXONOMY BE 221

Outcome:

- Awareness in identifying characters, classification and lifecycle of Gymnosperms
- Understand the concepts and principles related to morphology and Plant taxonomy
- Acquire the skill in plant identification and herbaria preparation
- Develop an attitude in conserving plants for sustainable development
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PHARMACOGNOSY AND PHYTOCHEMISTRY BE 222

Outcome:

- Awareness about types of drugs and systems of medicine
- Analyze the purity and strength of crude drugs
- Identify the sources of drugs
- Apply the Identification and separation techniques to evaluate the medicinally important metabolites

REPRODUCTIVE BIOLOGY, PLANT PHYSIOLOGY AND BIOCHEMISTRY BE 223

Outcome:

- Understand methods of reproduction and apply it for breeding varieties
- Understand physiology and biochemistry of metabolic processes
- Identify and evaluate various metabolites involved in growth and reproduction of plants

SEMESTER – III

Course name with code

GENETICS, CELL AND MOLECULAR BIOLOGY, IMMUNOLOGY BE 231

Outcome:

- Awareness about Molecular Biology and Immunology and various techniques in Molecular Biology
- Apply the practical skill in isolation of DNA, RNA and Protein genetic studies
- Understand gene action, gene regulation and synthesis

ENVIRONMENTAL BIOLOGY, FOREST BOTANY, PLANT BIOTECHNOLOGY AND HORTICULTURE BE 232

Outcome:

- Understand the concepts on ecosystem and environment
- Understand the causes and effects of pollution and climate change
- Awareness about the significance of genetic resources and its conservation
- Understand and apply methods of gene transfer techniques and production of improved varieties

MICROBIOLOGY, PLANT PATHOLOGY, PLANT BREEDING AND HORTICULTURE BE 233

Outcome:

- Understand types of microbes and its economic importance
- Generate basic knowledge in plant breeding, and horticulture
- Understand different breeding methods and develop practical skills in plant breeding
- Identify the microbial diseases in plants and apply the control measures

SEMESTER IV

Course name with code

HERBAL TECHNOLOGY, BIOINFORMATICS APPROACHES IN DRUG DESIGN AND DEVELOPMENT BE 241

Outcome:

- Understand branches of Herbal Technology such as Medicinal plants, Natural dyes, Biopesticides, Biofertilizers and Biofuel.
- Students would acquire knowledge of Herbal Technology and Nutraceutical therapy.
- Comprehend the role of metabolomics and microbial diversity around plants in deciding the quality of herbal drug product.
- Develop knowledge on the use of Herbal technology in Cosmetics and laws pertaining to herbal technology
- Understand biological databases, Pharmacogenomics and Sequence Analysis.
- Acquire knowledge of molecular viewing of macromolecules and prediction and analysis of protein structure.

- Understand Molecular Designing and development of Drugs (Computer Aided Drug Design) and identify the steps for designing new drugs, target lead molecule identification and validation.

Ethnopharmacology, Phytopharmaceutical product Development , IPR & Patents BE 242

Outcome:

- Appreciate ethnopharmacology as an integrative science of social and biocultural components.
- Practice scientific method in documenting Indigenous/traditional knowledge for future use.
- Understand the need for the development of new herbal drugs
- Develop laboratory skills in the scientific testing of herbal drugs and new commercial products for safe and rational use.
- .• Have an in-depth understanding of the ethical and commercial implications of drug development from medicinal plants.