

BOTANY COURSE OUTCOMES (COs):NEP

At the end of the course the student should be able to:

Semester I: Microbial Diversity and Technology

1. Understand the fascinating diversity, evolution, and significance of microorganisms.
2. Comprehend the systematic position, structure, physiology and life cycles of microbes and their impact on humans and environment.
3. Gain laboratory skills such as microscopy, microbial cultures, staining, identification, preservation of microbes for their applications in research and industry.

Semester II: Diversity of Non- Flowering Plants

1. Understand the diversity and affinities among Algae, Bryophytes, Pteridophytes and Gymnosperms.
2. Understand the morphology, anatomy, reproduction and life cycle across Algae, Bryophytes, Pteridophytes and Gymnosperms, and their ecological and evolutionary significance.
3. Obtain laboratory skills/explore non-flowering plants for their commercial applications.

Semester III : Plant Anatomy and Developmental Biology

1. Observation of variations that exist in internal structure of various parts of a plant and as well as among different plant groups in support for the evolutionary concept.
2. Skill development for the proper description of internal structure using botanical terms, their identification and further classification.
3. Understanding the basic concepts in plant morphogenesis, embryology and organ development.

Semester IV: Ecology & Conservation Biology

1. Understanding the fundamental concepts in ecology, environmental science and Phytogeography.
2. Concept development in conservation, global ecological crisis, Sustainable development and pros and cons of human intervention.
3. Enable the student to appreciate bio diversity and the importance of various conservation strategies, laws and regulatory authorities and global issues related to climate change and sustainable development.

Semester V: Plant Taxonomy &Resource Botany

1. Ability to identify, classify and describe the plants in scientific terms. Identification of plants using dichotomous keys.
2. Recognition, processing and utilization of economically important plants.
3. Skill development in processing of biomass and plant products as source of food, healthcare, energy and natural products.

Semester V: Cell Biology & Genetics

1. Identify the basic principles and current trends in classical genetics and Cell biology.
2. Recognize the historical process of the evolution of molecular genetics from classical genetics.
3. Develop theoretical background on molecular genetics to provide a strong support for

the student for future research and employability.

Semester VI: Plant Physiology & Biochemistry

1. Preliminary understanding of the basic functions and intermediary metabolism in a plant body.
2. Awareness on the interdisciplinary nature of botany, chemistry and physics by studying the principles of plant life, growth and reproduction.
3. Recognizing the wonderful mechanism of transport and the Interrelationships existing between metabolic pathways thereby gaining an idea about the importance of plants in the dynamicity of nature.

Semester VI: Plant Biotechnology

1. Learning of knowledge & skill in plant tissue culture, plant molecular biology and transgenic.
2. Application of plant biotechnology in plant genomics, phylogenetic studies and metabolic engineering.
3. Understanding of new molecular techniques in cell and metabolic manipulations.

Semester VII: Molecular Biology

1. Understanding the mechanism and concepts of life process at molecular level through central dogma concept.
2. Skill acquiring in the basic molecular biology techniques & characterization of micromolecules
3. Acquiring the emerging technology skills in plant genetic engineering & proteomics.

Semester VII : Seed Biology & Seed Technology

1. Understanding the seed structure and related functions, seed health and productivity.
2. Technology for assessing the seed pathology, purity, and preservation.
3. Learning the field and laboratory protocols of seed production, certification and quality.

Semester VII : Plant Health Technology

1. Understanding & learning common diseases & control measures of plant diseases.
2. Acquiring skills in plant disease diagnosis, control & management through IPM.
3. Learning of new skills in health clinic through biological methods.

Semester VIII : Medicinal Plants & Phytochemistry

1. Knowledge of Indian system of medicine with regard to medicinal plants.
2. Acquiring skills in identification, cultivation and preservation of medicinal plants.
3. Isolation, identification, characteristics of active principles in medicinal plants & drug formulations.

Semester VIII: Bioinformatics & Computational Biology

1. Learning of basic principles of application, ICT Technology in biological studies & research.
2. Acquiring skill to utilize the computational apps, active data basis and tools in analysis in genetics & proteomics.
3. Learning skills and software used for biological research & process understanding.

Semester VIII : Research Methodology

1. Understanding the working of science for further application in free, independent, individual needs and in designing scientific experimentation.
2. Acquire knowledge on the principles, components and applications of various scientific equipment in biology.
3. Foundation knowledge in the basic concepts, components and functions of informatics and the importance of statistical principles in biological research.

COURSE OUTCOMES: DEPARTMENT OF BOTANY (CBCS)

SEMESTER I: MICROBIAL DIVERSITY ALGAE FUNGI PLANT PATHOLOGY AND BRYOPHYTES

- Understand the fascinating diversity, evolution, and significance of microorganisms.
- Comprehend the systematic position, structure, physiology and life cycles of microbes and their impact on humans and environment.
 - Gain laboratory skills such as microscopy, microbial cultures, staining, identification, preservation of microbes for their applications in research and industry.
 - Understand the diversity and affinities among Algae, Bryophytes
 - Understand the morphology, anatomy, reproduction and life cycle across Algae, Bryophytes
 - Obtain laboratory skills/explore non-flowering plants for their commercial applications.
 - Understanding & learning common diseases & control measures of plant diseases.
 - Acquiring skills in plant disease diagnosis, control & management
 - Learning of new skills in health clinic through biological methods.

SEMESTER II : PTERIDOPHYTES GYMNOSPERMS, PLANT MORPHOLOGY & TAXONOMY

- Understand the diversity and affinities among Pteridophytes and Gymnosperms.
- Understand the morphology, anatomy, reproduction and life cycle across Pteridophytes & Gymnosperms, and their ecological and evolutionary significance.
- Obtain laboratory skills/explore non-flowering plants for their commercial applications. Understanding the basic concepts in plant morphogenesis
- Ability to identify, classify and describe the plants in scientific terms.
- Identification of plants using dichotomous keys.
- Recognition, processing and utilization of economically important plants.
- Skill development in processing of biomass and plant products as source of food healthcare, energy and natural products.

SEMESTER III: PLANT ECOLOGY PLANT ANATOMY AND PLANT PHYSIOLOGY:

- Understanding the fundamental concepts in ecology, environmental science and Phytogeography.
- Concept development in conservation, global ecological crisis, Sustainable development and pros and cons of human intervention.
- Enable the student to appreciate bio diversity and the importance of various conservation strategies, laws and regulatory authorities and global issues related to climate change and sustainable development.
- Observation of variations that exist in internal structure of various parts of a plant and as well as among different plant groups in support for the evolutionary concept.
- Skill development for the proper description of internal structure using botanical terms, their identification and further classification.
- Preliminary understanding of the basic functions and intermediary metabolism in a plant body.
- Awareness on the interdisciplinary nature of botany, chemistry and physics by studying the principles of plant life, growth and reproduction.
- Recognizing the wonderful mechanism of transport and the Interrelationships existing between metabolic pathways thereby gaining an idea about the importance of plants in the dynamicity of nature.

SEMESTER IV: CELL AND MOLECULAR BIOLOGY GENETICS REPRODUCTIVE BIOLOGY AND PLANT BREEDING:

- Identify the basic principles and current trends in classical genetics and Cell biology. Recognize the historical process of the evolution of molecular genetics from classical genetics.
- Develop theoretical background on molecular genetics to provide a strong support for the student for future research and employability.
- Skill development for the proper description of internal structure using botanical terms, their identification and further classification.
- Understanding the basic concepts in plant embryology and organ development Understanding the seed structure and related functions, seed health and productivity. Technology for assessing the seed pathology, purity, and preservation.
- Learning the field and laboratory protocols of seed production, certification and quality.

SEMESTER V : TAXONOMY OF FLOWERING PLANTS:

- Ability to identify, classify and describe the plants in scientific terms.

- Identification of plants using dichotomous keys.
- Recognition, processing and utilization of economically important plants.
- Skill development in processing of biomass and plant products as source of food, healthcare, energy and natural products.

SEMESTER V (SEC): MEDICINAL AND ORNAMENTAL PLANTS:

- Preliminary understanding of the basic functions and intermediary metabolism in a plant body.
- Knowledge of Indian system of medicine with regard to medicinal plants.
- Acquiring skills in identification, cultivation and preservation of medicinal plants.
- Isolation, identification, characteristics of active principles in medicinal plants & drug formulations.
- Knowledge of Floriculture provides opportunity in establishing small scale business
- Acquire skills in maintenance of flowers for decorative purpose

SEMESTER VI (DSEB): ECONOMIC BOTANY AND MEDICINAL PLANTS:

- Knowledge of Indian system of medicine with regard to medicinal plants.
- Acquiring skills in identification, cultivation and preservation of medicinal plants.
- Isolation, identification, characteristics of active principles in medicinal plants & drug Formulations.
- Recognition, processing and utilization of economically important plants.
- Skill development in processing of biomass and plant products as source of food, healthcare, energy and natural products.

SEMESTER VI (SECB): NURSERY AND GARDENING:

- Develops responsibility from caring plants
- Educate about plants growth techniques
- Enjoy the food plants they have grown
- Understand ecology and environment
- Offers ideal area to teach and reinforce ideas and concepts about plant science, biology, chemistry and soil science
- Gardening can relieve stress and improve health