

# DEPARTMENT OF BOTANY

## PROGRAM OUTCOME FOR UG DEGREE PROGRAM

After completion of three year program in Botany students will be able to:

- Identify major groups of plants and compare the characteristics of lower (non-vascular) and higher (spermatophytes) plants.
- To understand the importance of Plant diversity and genetic diversity on the earth.
- Explain various plant processes and functions.
- The concept of hierarchy in systematic Botany.
- Understand the concept of heredity and variation
- Understand adaptation, development and behaviour of different forms of life.
- Understand the interaction of life on earth and tracing the energy pyramids through nutrient flow
- Understand the economic importance of various plants and plant products.
- Demonstrate the experimental techniques and methods of their area of specialization in Botany.

## COURSE SPECIFIC OUT COME

Course I: Plant Diversity I

- 1) This course makes student aware about the diversity in various life forms of plant kingdom.
- 2) It enables students to identify algae and fungi.
- 3) It is the basis of advanced study in botany.
- 4) It enables students to differentiate structural differences.
- 5) Increase the awareness and appreciation of human friendly viruses, bacteria, algae and their economic importance.
- 6) Students learn about most simple plants.

Course II: Cell Biology

- 1) Students learn about basic unit of life i:e Cell.
- 2) Develop understanding on chemical bonding among molecules.
- 3) Students learn about differences between prokaryotic and eukaryotic organism on the basis of cellular details.
- 4) It enables students to know about chromosomes, genes etc.
- 5) Students learn about the functional role of each cell organelles in the cell.
- 6) Students learn about how new cells are formed by mitosis and meiosis.

Course III: Plant Diversity II

- 1) This course makes student aware about the diversity in various life forms of plant kingdom.
- 2) Students able to identify between bryophytes and pteridophytes.
- 3) Students develop critical understanding on morphology, anatomy and reproduction of Bryophytes & Pteridophytes.
- 4) Students learn about evolution of first land plants.

Course IV: Genetics

- 1) It makes students aware about heredity and variation.
- 2) Students come to know how children are different from parents.

- 3) Develop concept wise understanding of laws of inheritance, genetic basis of loci and alleles and their linkage.
- 4) Students able to differentiate between alleles and non-alleles and allelic and non-allelic interactions.
- 5) Students learn about genetic material and various factors responsible for variations in plants.

#### Course V: Diversity of Seed Plants and their Systematics-I

- 1) Students learn about the evolved group of non-flowering plants with naked seeds i.e: Gymnosperms.
- 2) Students learn about the habitat and economic importance of these plants.

#### Course VI: Structure Development and reproduction in Flowering Plants-I

- 1) This course in combination with course v enables students to differentiate between flowering and Non-flowering plants.
- 2) Students learn about plants on the basis of their life cycle.
- 3) Students learn about various types of stem and their modification, phyllotaxy.
- 4) Students learn about various types of ovules and embryo sac.

#### Course VII: Diversity of Plants and their Systematics-II

- 1) This course is the backbone of botany as it enables students to learn about systematics, without which no advanced study in botany can be pursued.
- 2) Students acquire the skill of identifying and naming of plants.

#### Course VIII: Structure Development and reproduction in Flowering Plants-II

- 1) This course makes student learn how the multicellular plants develop, how different tissue systems form.
- 2) Students acquire the knowledge of normal and anomalous structures.
- 3) Students learn how plant reproduce.

#### Course IX: Plant Physiology-I

- 1) Students able to understand Water relation of plants with respect to various physiological processes.
- 2) Students able to learn role of micro and macro nutrients in plant development.
- 3) Learn various proteins their structure and interaction in plants.
- 4) Learn about different enzymes their role and their importance.

#### Course X: Plant Ecology

- 1) Students learn about environment and core concepts of biotic and abiotic factors.
- 2) Students learn the concept of ecosystem .
- 3) Learn the concept of population , community and biome.
- 4) Learn concept of ecological succession.

#### Course XI: Plant Physiology-II

- 1) Learn how seeds germinate, seedlings grow, plants reproduce and die.
- 2) Learn various physiological processes necessary for plants.
- 3) Students able to learn the basics of photosynthesis and respiration.

4) Learn the basic aspect of plant tissue culture.

#### Course XII: Economic Botany

- 1) Students able to understand the core concepts of Economic Botany.
- 2) Develop a basic knowledge of plant wealth such as medicinal plants, crop plants and beverages.

#### HIGHER EDUCATION:

MASTERS IN SCIENCE: Since the world of Botany is very vast, after completing graduation in science with botany as subject many options available at Masters Level for students are:

- Botany
- Genetics and Plant Breeding
- Economic botany
- Forestry
- Plant Pathology
- Plant physiology
- Environment Management
- Cellulose and Paper Technology
- Biochemistry
- Human Genetics/Genomics
- Microbiology
- Molecular Biology and Biochemistry
- Honours in Microbial and food technology
- Public Health
- Stem Cell Tissue Engineering & Biomedical Excellence
- System Biology and Bioinformatics
- Biophysics
- Forensic Science and Criminology

#### Post Graduate Diplomas

- PG diploma in food safety and quality assurance in food industry

#### Certificate courses

- Certificate course in applied human genetics
- Certificate Course in Aromatic and Medicinal Plants

• Placement Opportunities After dully completing their bachelor's education in Botany, a candidate can look forward to work in industry/Institute as a technician and can compete for centre and state government jobs. After completing master's education one can look forward to work with some industries or being a part of good research teams. One can also join BSI after openings as Scientist. After doing Ph.D. one can also work in college or university as Assistant Professor.