

DEPARTMENT OF BOTANY

3-year B.Sc. Honours in Botany under Choice Based Credit System

Course Outcome

SEM I:

CO1. Microbiology and Phycology: Microbiology gives knowledge related to classification and characterization of various microbes, their life cycle and their interaction with plants. It also deals with the technologies for their effective uses in industry. Algae on paper deal with the diversity and the important roles.

CO2. Archegoniatae: Highlights advances made in diversity analysis, developmental biology, reproductive biology and phylogenetics of the lower plants with female organ being archegonium present in bryophytes, pteridophytes and most of the gymnosperms.

SEM II:

CO3. Mycology and Phytopathology: Studying in depth about fungi. To make students aware of the pests and pathogens adversely affecting the yield of important crop plants, their control and underlying mechanisms of employed by plants.

CO4: Morphology & Anatomy of Angiosperms: CO4. Morphology & Anatomy: To acquaint the students about the morphology, biology and importance of angiosperms. The course will enable students to know about the different tissue systems in angiosperms and how they function.

SEM III:

CO5: Plant Ecology and Phytogeography: To acquaint the students about the population structure of the organisms, organization into communities and their functional relationships with their environment. Enable the student about diversity of plants, plant communities, and functional aspects of ecosystem. The course will enable students to understand how environment influence the life of different organisms and vice versa.

CO6: Plant Systematics: The course will enable students to the basis of angiosperm classification and features of few basic families of flowering plants. Also deals with recent developments in plant systematic and phylogenetics.

CO7: Economic Botany: To acquaint the students about the importance of plants in our day to day life.

CO8. Mushroom Cultivation Technology (Skill Enhancement Courses)

Mushroom cultivation is now becoming a household culture. Nutritionally rich edible mushrooms are valuable in markets. Therefore, mushroom cultivation itself can provide self-employment opportunity. After completion of this course students will get a brief idea about mushroom cultivation & storage, and its nutritional as well as medicinal importance.

SEM IV:

CO9: Palaeobotany & Palynology: To acquaint the students about the evolution of plants through study of the fossils of extinct plants and also the study of plant pollen, spores, and certain microscopic planktonic organisms, in both living and fossil form.

CO10: Biomolecules and Cell Biology: To acquaint the students about the structure and function of cells, along with the molecules present in cells and their interaction, which make the basic framework of cells and cellular network.

CO11: Molecular Biology: The course will enable students to the basic understanding of the molecular mechanisms through which genetic information is stored, expressed and transmitted among generations.

CO12. Biofertilizers (Skill Enhancement Courses): The course will enable students to the basic understanding of the Bio fertilizers, which are pollution free, natural and organic fertilizer. It's used in sustainable, non pollution organic farming and agriculture.

SEM V:

CO13: Plant Physiology: The course will enable students to know the importance of nutrients, photosynthesis, respiration, flowering and other life supportive processes in plants.

CO14: Plant Metabolism: The course will enable students to know about the events that help in maintenance of metabolism in plants.

CO15: Reproductive Biology of Angiosperms: The course will enable students about the genetic and molecular aspects of flower development, pollination and fertilization. To acquaint the students about the process, locations, and significance of gametogenesis and fertilization of angiosperm. About structure and significance of various types of pollens, embryo, endosperm and seeds.

CO16: Biostatistics: The course will enable students how to apply statistics in biological data and its significance.

SEM VI:

CO17: Genetics & Plant Breeding: This course is aimed at understanding the basic concepts of genetics at molecular level to develop analytical and quantitative skills from classical to molecular genetics. It also aims to teach the technique of plant breeding for crop improvement.

CO18: Plant Biotechnology: To acquaint the students about the application of various modern technological advances, which allowed the scientist to perform various experiments and understand the mechanism of various biological processes of plant life.

CO19: Plant Evolution & Biodiversity (Discipline Specific Electives): To acquaint the students about the evolutionary trends from green algae to land plants and the evolution in major groups of plants. To understand the basic concepts of evolutionary theories and plant diversity around the world.

CO20: Industrial and Environmental Microbiology (Discipline Specific Electives): To acquaint the students about the scope of microbes in industry and environment. Microbial production of industrial products such as microbial enzymes of industrial interest. Also the roles of microbes in the environment.

3-year B.Sc. General in Botany under Choice Based Credit System

Course Outcome

SEM I:

CO1. Biodiversity (Microbes, Algae, Fungi and Archegoniate):

A. Microbiology gives knowledge related to classification and characterization of various microbes, their life cycle and their interaction with plants. Students can understand the use of microbes in preparation of medicines, antibiotics, different enzymes, in food technology and pasteurization.

B. Study of algae, phycology will let students understand diversity of life forms & life cycle patterns of different algae and the important roles they play in ecological & economic perspectives.

C. Studying in depth about fungi. To make students aware of different types of fungi, their life cycle patterns, ecological importance, edible or poisonous, mycorrhizal association: how does it help plants

D. Archegoniatae syllabus highlights advances made in diversity analysis, developmental biology, reproductive biology and phylogenetics of the lower plants with female organ being archegonium present in bryophytes, pteridophytes and most of the gymnosperms.

SEM II:

CO2. Plant Ecology and Taxonomy:

A. To acquaint the students about the population structure of the organisms, organization into communities and their functional relationships with their environment. Enable the student about diversity of plants, plant communities, and functional aspects of ecosystem. The course will enable students to understand how environment influence the life of different organisms and vice versa.

B. Taxonomy will enable students to the basis of angiosperm classification and features of few basic families of flowering plants. Also deals with recent developments in plant systematic and phylogenetics.

SEM III:

CO3. Plant Anatomy and Embryology

The course will enable students to know about the different tissue systems in angiosperms and how they function. Idea of plant protective systems of & how do plants adapt to different environmental conditions will be clear to students.

Plants are the torch bearer of life on earth. Reproduction of plants leads to growth of vegetation. Fruits, seeds & grains what we eat are the outcome of plant reproduction. This course will teach students how do plant reproduce, how some plants are dependent on insects, some on birds & some other on air or water for successful reproduction. Embryonic development of plants & different strategies will be vivid.

SEM IV:

CO4. Plant Physiology and Metabolism

The course will enable students to know how plants do cook, eat, respire & excrete. The importance of water & minerals in plant nutrition, their uptake. Students will also understand the mechanism of photosynthesis&respiration in plants, how plants depend on light and microorganisms for flowering & nitrogen fixation respectively.

CO5. Floriculture

Gardening & landscaping are very important to reestablish green within urban concretes. Both ecologically & economically it has significant role to play. Students will learn the methods of gardening, landscaping &prevention measures for protecting plants from diseases & pests. They can take it up as a potential career opportunity in future.

SEM V:

CO6. Economic Botany and Biotechnology

Economic botany teaches how rich our mother nature is. It is full of resources which provide us useful cereals, oils, fibers, spices rich in alkaloids & so on. Hence this course will acquaint students about the importance of plants in our day-to-day life.

Biotechnology course will enable students to know about the application of various modern technological advances, which allowed scientists to clone genes, multiply it, transform an organism and also to understand the mechanism of various biological processes of plant life.

SEM VI:

CO7. Cell Biology, Genetics and Molecular Biology

Students will understand about the structure and function of cells, along with the molecules present in cells and their interaction, which make the basic framework of cells and cellular network through the cell biology course. Knowledges on modern techniques in biology like Scanning Electron Microscopy, Transmission Electron Microscopy are also part of important course outcomes.

Genetics course will help in better understanding of the basic concepts of genetics from classical to molecular level to develop analytical and quantitative skills.

Molecular Biology course will enable students to the basic understanding of the molecular mechanisms through which genetic information is stored, expressed and transmitted among generations.

CO8. Mushroom Cultivation Technology

Mushroom cultivation is now becoming a household culture. Nutritionally rich edible mushrooms are valuable in markets. Therefore, mushroom cultivation itself can provide self-employment opportunity. After completion of this course students will get a brief idea about mushroom cultivation & storage, and its nutritional as well as medicinal importance.

Programme Outcomes

PO1. In-depth Knowledge and perception of:

- A. The diversity of structure and function in plants.
- B. The relationships of plants with its environment and the role of plants in global ecosystem.
- C. To compare and contrast the characteristics of plants, algae, and fungi that differentiates them from each other and from other forms of life.
- D. The evolutionary trends among plants.
- E. The way of classification of plants.
- F. How Plants function at the level of the gene, genome, cell and tissue. About the complex yet perfect genetic regulation of flower development.
- G. How the theory of evolution offers the scientific explanation for the diversity of life on planet earth.
- H. The ecological interconnection of every life form and how the energy and nutrient flow through the environment. The structure of populations, communities and ecosystems.
- I. Application of statistics in biological data.

PO2. Practical skills:

During the whole course students learn how to convert theoretical knowledge in to practical data and vice versa, both in the field and laboratory, with optimum precautions. They learn to interpret plant morphology and anatomy. Identification of plant diseases. How to identify a Plant. The techniques used to analysis vegetation. A range of biochemical and physiochemical analyses of plant materials. How to analyze data using statistical methods. Students gain knowledge on mushroom cultivation and can adapt it as a profession. Uses of Bio fertilizers in sustainable, non pollution organic farming and agriculture.

PO3. Usage of modern tool:

They learn to use various chemicals, techniques, and instruments for Biochemical estimation, Molecular Biology, Biotechnology and Plant Tissue culture experiments.

PO4. Plants, environment and sustainability:

Understand the importance of the plants for environment and its need for sustainable development of the society.

PO5. Importance of team work:

How to work efficiently as an individual or as a part of diverse teams.

PO6. Transferable skills:

Use of IT (word-processing, internet). Documentation of scientific ideas/data. Ability to work in a group. Ability to gather information through survey of literature. Acquiring ability to apply the knowledge of sciences to study, analyze and interpret any plant form.