

B.Sc. Botany General: Course Outcome

SEMESTER I

CORE COURSE I

Plant Diversity I (Phycology, Mycology, Phytopathology, Bryophytes and Anatomy)

Upon completion of this course, the students will be able to understand the unique and general features of Algae, fungi and bryophytes, also to Identify their external morphology, internal structure, reproduction and life cycle patterns of different taxa.

Understanding the algal diversity and ecological roles help them assess and manage aquatic environment, impacting water quality and nutrient cycling. Additionally, algae hold potential in various industries and pharmaceuticals.

The mycological section also aims to include economic importance and various symbiotic interactions such as mycorrhiza and lichens showcasing the versatility and ecological importance of fungi.

Studying phytopathology is crucial because plant diseases can have significant economic impacts on agriculture, affecting crop yields and food security. Understanding the causes mechanism and spread of plant diseases help develop effective strategies for disease management and crop protection.

Bryophytes are early land plants that offers insights into the evolutionary transition from aquatic to terrestrial environment. The also syllabus includes their ecological and economic importance as well.

Studying plant anatomy of angiosperms especially the anatomy of root, stem and leaf is crucial for understanding intricate structural intricacies inherent to them. The secondary growth of dicot stem along with their peculiar anomalous structures are also included here.

SEMESTER II

CORE COURSE 2

Plant Diversity II (Pteridophytes, Gymnosperms, Palaeobotany, Morphology and Taxonomy)

Upon completion of this course, the students will be able to understand and describe the general characters, classifications and evolutionary trends in Pteridophytes and Gymnosperms. They will also be able to identify the economic importance of Pteridophytes and Gymnosperms.

The course offers an overall insight to fossilization processes, geological time scale, significance of Paleobotany, basic concepts of spore-pollen and their applications

The students will be acquainted with the aims, objectives significance of taxonomy and apply morphological features in describing plants. Taxonomic study and identification of common angiosperm plants with analytical drawings, botanical description and identification up to the rank of species will enhance their knowledge about the subject. The students will be able to

explain the essentials of plant taxonomy, taxonomic hierarchy, concepts of numerical taxonomy, cladistics and classification systems. They will also learn the basic technique in the preparation of herbarium.

SEMESTER III

CORE COURSE 3

Cell Biology, Genetics and Microbiology

The objective of this course is to have an insight into mechanism of gene expression and its regulation in prokaryotes and eukaryotes. This course helps the students to develop a firm foundation in the fundamentals of cell biology and cytogenetics and to understand the biochemical nature of nucleic acids, their role in living systems, experimental evidences to prove DNA as a genetic material. It also includes the chromosome ultrastructure along with different structural and numerical aberrations. This also provide insight into the Central Dogma, genetic code, principles of heredity, the patterns of inheritance in of nuclear and extra nuclear genes different organisms.

The course is designed to familiarize the students with microbes and their ultrastructure, reproduction and adaptive strategies of the microorganisms and to study the economic and pathological importance of them.

SEMESTER IV

CORE COURSE 4

Plant Physiology and Metabolism

The objective of the particular course is to obtain basic knowledge that is required for proper understanding of plant metabolism and to get familiar with the basic skills and techniques related to plant physiology. To describe the physiological details of photosynthesis and respiration in plants. Describe the role of various phytohormones and nitrogen metabolism required for plant growth and development.

SEMESTER V

SEC A

Biofertilizers

In present scenario of increasing soil and water pollution due to excessive use of chemical fertilizers, Bio fertilizer is the only ray of hope. It will reduce the rate of pollution and is an eco-friendly process. Students having an idea of this course can take up Bio-fertilizer Industry as his/her career. Recycling of biodegradable wastes is another burning topic in present and upcoming days to save our nature. Preparation biofertilizers using microorganisms like Rhizobium, Azotobacter, Anabaena and pteridophyte like Azolla. Role of mycorrhiza in growth of crop plants. Green manuring, compost preparation and their field application. Recycling of biodegradable wastes.

DSE A

Phytochemistry And Medicinal Botany

The study comprises different aspects of medicinal importance of plants which are used in Ayurveda, Siddha and Unani. Not only that, the students will get ideas of secondary metabolites such as terpenoids, phenolic, alkaloids; their source plants and role against different diseases. This course also offers brief knowledge about Indian folk medicine and their application in treatment of common diseases.

SEMESTER VI

SEC B

Mushroom Culture Technology

This course is prepared to provide a basic knowledge about the diverse techniques and economic importance of the mushroom culture. In the core course, they have gathered knowledge about the fungal diversity and their economic importance. This course deals with identification of edible and poisonous mushrooms, their culture techniques, spawn preparations, storage techniques, recipes of mushrooms and cost & benefit ratio. In this section they will know about the important of wild and common cultivated edible mushroom in India. They can use this knowledge for mushroom farming, large scale production, storage and marketing in India in day-to-day life as an alternative livelihood. They will come to know about the nutritive value of these mushrooms its marketing strategy.

DSE B

Horticultural Practices and Post Harvest Technology

The course helps to understand the importance of horticulture in human welfare; propagation and cultural practices of useful vegetable, fruit and garden plants; the impact of modern technologies in biology on horticultural plants; the basic concepts of landscaping and garden designing.

The course also offers knowledge of techniques applied to agricultural produce after harvest for its production, conservation, processing, packaging, distribution, marketing and utilization to meet the food and nutritional requirements of the people in relation to their needs along with post-harvest diseases of fruits and vegetables and their management and biochemical changes in fruits and vegetables due to post harvest microbial infections.