

U.G. PROGRAM OUTCOME - BACHELOR OF SCIENCE (B.Sc.) in **BOTANY**

Introduced from the session 2019-20

The Odisha government introduced a uniform syllabus for undergraduate courses in all universities from the 2019-2020 academic session, a common syllabus across all the universities. "Introduction of uniform syllabus for the students in colleges will help them pursuing further higher studies in a competitive and meticulous manner.

B.Sc Botany Course Outcomes: Botany is a basic science and forms the foundation for most of the modern multidisciplinary subjects like, Biotechnology, Molecular Biology which deals with plant life. It facilitates in studying the rapidly developing fields like Molecular Biology, Genetic Engineering, Tissue Culture, Phytomedicine, Biochemistry and Horticulture. Students can pursue academic career as Lectures and Teachers. On completion of the course students will have broad job opportunities in various fields of Botany like Plant Taxonomy, Ethnobiology, Pathology, Palaeobotany and Palynology, Plant cytology, Plant Genetics, Plant Ecology, and as scientists in BSI and Government departments through UPSC exams.

The undergraduate course in Botany under CBCS credit system has been semesterised in 2019-20 having 14 Core Papers and 4 DSE papers.

In **Semester I** there are two core courses Phycology and Microbiology (CC1) and Biomolecules and Cell Biology (CCII). A brief account on classification, life history and economical importance of different algal and microbial genera and basic cell biology cum biochemistry are taught in these two papers which help the students to develop a clear concept on cryptogamic groups of plant kingdom. Besides, the practical classes the local field excursions enable the students to identify the microbial and algal genera. Students learn various culture techniques and bacterial staining method in practical class.

In **Semester II** there are two core courses Mycology and Phytopathology (CCIII) and Archaeogoniate(CC IV). In Phytopathology and micology, students study about life history of different groups of fungus important plant diseases, host pathogen interaction and plant disease management. In archaeogoniate paper the students study about Bryophyte, Pteridophyte and Gymnosperm groups of plant kingdom. In this semester students go for a long excursion in a place of higher altitude to observe and identify these groups of plants in their natural habitat.

In *Semester III* there are three core courses. In anatomy of Angiosperms (CC5) paper helps the students to know about Internal structural organisation of plant organs. The students also do practical to study the anatomical details of plant tissue and organs. In Economic Botany paper (CC6) students study about economically rich groups of plant crops viz. cereals, legumes, sugar and starches, spices, beverage, oil and fat, drug yielding plants etc. In Genetics paper (CC7) students get a clear concept on various topics of Genetics specially Mendelian genetics, population genetics, and cytogenetics. In practical classes the students study about mitotic and meiotic chromosomes.

In *Semester IV* students are offered three core courses. In Cell and Molecular Biology paper (CC8) students come to know about origin and evolution of cells, DNA replication, transcription, translation, gene regulation and recombinant DNA technology. In Practical classes students carry out a number of experiments on Plant Molecular Biology. In Plant ecology and Phytogeography paper (CC9) students study about plant evolution, plant ecology and plant evolution. Long excursion to a phytogeographic region in India is being carried out in this semester. Plant systematics paper (CC10) deals with the Taxonomy of Angiosperms. This is a very important field of Plant Science which deals with Plant nomenclature, System of Classification and Taxonomic families. The students work out on angiosperm specimens in practical class and they also learn to identify plants. A number of local field excursions are in the curriculum during this semester. Students learn to prepare field note book, voucher specimen book and herbarium specimens..

In *Semester V* students are offered two core and two DSE courses. In Reproductive Biology of Angiosperms (CC11) the students learn about morphology of angiosperm and embryology. In Plant Physiology (CC12) paper students acquire knowledge about various physiological processes viz. Photo morphogenesis, plant growth regulators, seed dormancy etc. In Analytical Techniques in Plant Sciences DSE paper (DSE-I) students acquire knowledge about various methods of instrumentation techniques and statistical tools apply in plant science. Natural resource management (DSE-II) paper students acquire knowledge about management of natural resources and biodiversity conservation.

In *Semester VI* There are two core courses and two DSE papers in this semester. In plant metabolism paper (CC13) students study about primary and secondary metabolic pathways such

as photosynthesis, respiration, nitrogen and lipid metabolism etc. In Plant Biotechnology (CC14) paper students acquire knowledge about various methods of plant propagation, in-vitro method of plant tissue culture and development of transgenic plants and their application. In Industrial and Environmental Microbiology DSE paper (DSE-III) students acquire knowledge about various techniques of Microbial Genetics, Industrial Microbiology, Bioinformatics, Molecular Biology, Biochemistry, and Microbial Physiology and study the large-scale and profit motivated production of microorganisms or their products for direct use, or as inputs in the manufacture of other goods. And the last (DSE-2D) paper is a project paper, in which students do experiment and compile a dissertation paper under the supervision of guide/ mentor. Which make them expertise in the field of basic research and innovation.

This will open up new avenues and job opportunities for the students. The contents of core course and optional courses in UG/PG curriculum are beneficial for the students to get prepared for NET/SET/GATE and also GRE and other competitive examinations.
