

Programme Specific Outcome for Department of Botany (PG)

Name of the Programme: M.Sc. Botany (Under CBCS)

Year of Introduction: 2018

Programme Specific Outcome

- PSO1 The M.Sc. Botany (Under CBCS) Syllabus is a combination of core and elective papers to develop a holistic knowledge of all the classical and applied fields of plant sciences and fulfill the criteria of CBCS respectively.
- PSO2 Students become proficient in theory and practical on the different domains of plant sciences. Exposures are given to cutting-edge technologies of the subject to grow interest among students to select biological science as career. They are acquainted with good laboratory practices and safety measures.
- PSO3 Educational tours and field studies helps to expand and strengthen their knowledge about the local flora, phytogeographic regions of the state, country in their natural habitat. Students develop knowledge about the diverse floral resource of the world including medicinally important plants
- PSO4 Students learn to handle sophisticated instruments and modern techniques independently. They learn to design experiment, perform and present research work during dissertation work. Also, they learn to design posters and their presentation in seminars.
- PSO5 Students develop individual and leadership qualities to work in a team. Students got motivation for higher studies, research or administrative jobs. The present course helps them to prepare for competitive exams in the country and also for abroad to pursue higher studies and research. They are mostly prepared for teaching, research work, industry, forest service, environment and biodiversity, entrepreneurship, scientific writing on relevant topics via the present curriculum.

Course Outcome

CO of Semester 1:

- CO1 There are 4 core courses in Sem-1, Microbiology (Bot C11), Phycology (Bot C12), Bryophytes, Pteridophytes and Gymnosperms (Bot C13) and Cell Biology (Bot C14). In Bot C11 and 12 students develop a detailed idea on Microbiology and Phycology respectively including their classical and applied parts. In Bot C13, they gain a detailed knowledge on Bryophytes, Pteridophytes and Gymnosperms, their classification, diversity, application & conservation. In C14 they develop a detailed idea on Cell Biology and its applied parts.
- CO2 Students are acquainted with good laboratory practices and safety measures and able to perform experiments individually. They receive hands on training on sterilization, staining, and applied microbiological methods, perform individual experiments and identify algae and bryophytes, pteridophytes and gymnosperms respectively upto genus level. The local and long field trips help them to identify the different group of plants in their natural habitat. They receive hands on training on microscopy, staining, and applied phycological and cytological methods. They perform experiments individually with the modern tools and techniques on cell biology.
- CO3 Students learn to handle sophisticated instruments like fluorescence and phase contrast microscopes, DNA and Protein gel apparatus, Centrifuge, gel doc, UV VIS Spectrometer and advanced techniques like plasmid, genomic DNA isolation, transformation, SDS - PAGE, ELISA, algal culture level to fulfill the needs of future research.

CO of Semester 2:

- CO1 There are 4 core courses in Sem-2, Palaeobotany and Palynology (Bot C21), Taxonomy of Angiosperms (Bot C22), Phytochemistry and Pharmacognosy (Bot C23) and Genetics and Genomics (Bot C24). In Bot C21, students develop a detailed idea on Paleobotany, geological time scale and understand the various fossil genera representing different fossil groups, Palynology and its applied parts. In Bot C22, students develop a detailed idea taxonomy, Biosystematics, get knowledge about the diverse floral resource of the world including medicinally important plants. In Bot C23 they get a detailed knowledge on classification & Pharmacological actions of plant drugs for human welfare. In Bot C24, they study classical genetics, structural and functional genomics and proteomics.
- CO2 They get hands on training on techniques to study fossils and pollens; workout on plant specimens from representative families locally available, training in identification of specimens described in classes using relevant literatures and herbaria and able to prepare keys at species level. The local and long field trips help them to identify angiosperms and medicinal plants in their natural habitat. They learn to explore and identify medicinal plants and their active plant parts and work on drug extraction and detection of common plant drugs in pharmacognosy. They learn to work on basic and applied genetics & different molecular biology techniques.
- CO3 Students learn to handle sophisticated instruments like PCR, Spectrophotometer and advanced techniques like genomic DNA isolation, RAPD, RNA isolation, RT-PCR to fulfill the needs of future research. They get hands on training on dry lab techniques to work with the different bioinformatics tools.

CO of Semester 3:

- CO1 This semester comprises of 2 core courses viz. Mycology and Plant Pathology (Bot C31) and Plant Physiology and Biochemistry (Bot C32), one optional paper from the 8 optional papers mentioned in the curriculum and 2 choice based courses mentioned in the syllabus. In Bot C3, students get a detailed idea on classical mycology and applied mycology & plant pathology. In Bot C34 they learn about plant physiology and biochemistry.
- CO2 Students get a hands on training on laboratory safety, sterilization, mycological and applied mycological techniques. They learn to prepare buffers and solutions and able to perform physiological and biochemical experiments independently.
- CO3 They learn to handle sophisticated instruments like Spectrophotometer and advanced techniques like fungal genomic DNA isolation, enzyme kinetics, SDS-PAGE to fulfill the needs of future research.

CO of Semester 4:

- CO1 In Semester 4 three courses are offered viz. Plant Anatomy and Developmental Biology (Bot C41) Plant Biotechnology (Bot C42) and Ecology (Bot C43) and the students are allowed to choose any one optional paper from the 8 optional papers mentioned in the curriculum. In Bot C41, they learn about the internal structure of various plant organs and the mechanisms associated with development, differentiation, their metabolic and physiological changes. In Bot C42 they get a clear concept different types of plant tissue culture, genetic engineering and development and analysis of transgenic plants. In Bot C43 they learn about ecology and environment, biodiversity and conservation, community structure, sustainable development.
- CO2 They perform hands on experiments on plant anatomy and developmental biology, plant tissue culture and molecular biology tools.
- CO3 They learn to handle sophisticated instruments like Laminar Air Flow, Autoclave and advanced techniques like plant tissue culture, developmental biology experiments, *Agrobacterium* mediated gene transformation.
- CO4 Students have to carry out dissertation work under the supervision of a teacher from Semester 3 and submit a project report and present the work in Semester 4. The project helps them to design and perform experiment as independent researcher and inspires them to take research as future career.