

**COURSE & PROGRAM OUTCOMES OF BOTANY HONOURS (B.SC.)  
UNDER CBCS  
GOVT. WOMEN'S COLLEGE, BALANGIR**

The CBCS Course curriculum of the discipline of Botany is well designed and very promising. The core course would help to enrich the subject knowledge of the students and increase their confidence level in the field of both academia and industry. Generic electives make integration among various interdisciplinary courses to fulfill the vision and mission of designing the course. The introduction of Skill Enhancement Courses (SEC) would help to gain more powerful knowledge not only in their core Botany subject but also in interrelated multidisciplinary subjects both theoretically and practically. The inclusion of Discipline Specific Courses (DSE) has brought an opportunity in front of students to gain knowledge on various naturally and industrially important useful materials and also helps them to familiar and expert in handling different botany-based software after proper training. In brief the student graduated with this type of curriculum would be able to disseminate subject knowledge along with necessary skills to suffice their capabilities for academia, entrepreneurship and industry.

After careful analysis of the course, the department of Botany has pointed out the following outcomes of the course.



## Course Objectives and Course Outcomes

### Department of Botany, Govt. Women's College, BALANGIR

Course Code	Course Name	Course Outcomes
C-1	Microbiology and Phycology	To understand the ecology, distribution, thallus, organisation, classification, reproduction and life cycles of different algal. To explore the economic importance of algae. To understand the morphology, classification, structure and reproduction of Bacteria and Viruses.
C-2	Biomolecules and Cell Biology	To understand the cell cycle, cell division (Mitosis and Meiosis) and its importance. To study the plant cell and important cell organelles i.e.: Cell wall, Chloroplasts, Mitochondria and Nucleus with their structure and function.
C-3	Mycology and Phytopathology	To understand the ecology, distribution, thallus organisation, classification, reproduction and life cycles of different algal and fungal specie. To explore the economic importance of algae and fungi. To study the various diseases caused by microorganisms, their symptoms, disease cycle and control measures.
C-4	Archegoniate	To study the evolutionary importance of Bryophytes and their transition to land plants. To understand the general features and Economic importance of Bryophytes, Pteridophytes, Gymnosperms To study the external morphology, internal structure, reproduction and life cycle of different familiar genera of Bryophytes, Pteridophytes and Gymnosperms. To understand the significance of Paleobotany and its applications, fossils and fossilization process. To study in detail fossilized genera of Pteridophytes and Gymnosperms.
C-5	Anatomy of Angiosperms	To understand the process of normal and anomalous secondary growth in plants.
C-6	Economic Botany	To study the economically important plants and their uses in daily life
C-7	Genetics	To study the Mendal's laws of inheritance. To study the extra chromosomal inheritance. To study the mutation.
C-8	Molecular Biology	To learn about DNA, RNA replication and their repair. To study transcription and translation.
C-9	Plant Ecology & Phytogeography	To understand the basic concepts of plant ecology; soil, water and their interactions To learn about the interaction between biotic and abiotic components of the environment To know about the concepts of energy flow, Food chain, Food web, Ecological Pyramids, Succession and Biogeochemical cycles.
C-10	Plant Systematics	Learn about the various angiospermic plants To understand basic concepts of Plant taxonomy Classification, Nomenclature and Identification, Flora, Keys, Herbarium and ICBN Rules. To study various types of Plant classifications, and important families of Polypetalae, Gamopetalae and Monochlamydeae To study the morphology of Flower, Fruit and Seed. Vegetative and Floral characters of Annonaceae, Asclepiadaceae, Nyctaginaceae and Poaceae families.
C-11	Reproductive Biology of	To study the organization of flower, pollination mechanisms, adaptations and Fertilization in Angiosperms



	Angiosperms	To understand the embryological aspects of development (Embryo, Endosperm, Apomixis and Polyembryony) in Angiosperms.
C-12	Plant Physiology	To study plant water reation. To study different growth regulators. To study Physiology of flowering
C-13	Plant Metabolism	To learn Carbon assimilation, ATP-Synthesis, Lipid metabolism and Nitrogen metabolism
C-14	Plant Biotechnology	To study different Plant Tissue Culture methods. Recombinant DNA technology- Applications of Biotechnology
DSE-1	Analytical Techniques in Plants Sciences	To study Imaging and related techniques Cell fractionation To study concept of Biostatistics
DSE-2	Natural Resource Management	To study Natural resources, Energy: Renewable and non-renewable sources of energy
DES-3	Horticulture Practices & Post Harvest Technology	To study Ornamental plants: Fruit and vegetable crops To learn Disease control and management and Post-harvest technology
DSE-4	Project Work	Each student complete a dissertation on a topic mutually agreed between him/her and a faculty member, who asks as a mentor. The objective is to train students in basics of research, literature recession, analysis and expression of their understanding of the topic in their own words. To create research oriented thought process and basic training
GE -1A (Theory)	Biodiversity (Microbes, Algae, Fungi & Archegoniate)	Demonstrate ability to critically and systematically integrate knowledge and perspectives and to analyze, assess and deal with complex biological problems, issues and situations in particular within the field of Biodiversity and Systematics.
GE -2A	Plant Physiology &Metabolism	The principal focus of the existent course is on the molecular aspects of the physiological and metabolic processes in plants. Students will be oriented into developing a molecular understanding of the principles of photosynthesis and photo-morphogenesis, molecular basis of nutrient uptake.
GE-1B	Plant Ecology & Taxonomy	Learn the Approaches to the study of Ecology (Autecology, Synecology and Genecology) Understand the population & Community Ecology - concept of metapopulation The student completing the course is able to identify various life forms of plants, design and execute experiments related to basic studies on evolution, ecology, developmental biology, physiology, biochemistry, plant interactions
GE-2B	Plant Anatomy , Embryology & Biotechnology	This study programme focuses on the internal structure and function of plant cells, tissue, and organs. To know the structure and development of monocot and dicot embryos. Provides a detailed view of the visualizing concepts and technique for genetic engineering and biotechnology. Deals mainly with science, methodology and applications of plant tissue culture methods



## **B.Sc. Botany Program Specific Outcomes**

**PSO 1:** Students acquire fundamental Botanical knowledge through theory, practicals and observation of surrounding environment.

**PSO 2:** Understand the morphology and reproduction of non-flowering plants (Algae, Fungi, Bryophytes and Pteridophytes including bacteria and viruses) and flowering plants (Gymnosperms & Angiosperms), also identify them in the field and herbarium.

**PSO 3:** To create awareness about cultivation, conservation and sustainable utilization of the plant biodiversity.

**PSO 4:** Understand the basic concepts of Developmental Botany, Angiosperm Taxonomy, Anatomy, Physiology, Ecology and Ethnobotany.

**PSO 5:** Students able to start nursery, mushroom cultivation, biofertilizer production, organic farming and horticultural practices. Also acquire skills in Greenhouse technology, Tissue culture and Plant Breeding through value-added courses.

**PSO 6:** Students are also familiarized with the use of Biostatistics and Computer applications for analysis of biological data.

**PSO 7:** Perform the laboratory techniques in anatomy, cytology, physiology, tissue culture, biochemistry, biotechnology, molecular biology; apply in research and industry level.

**PSO 8:** Understand contribution of Botany in increase and improve supply of medicines, food, fibres and other economical plant products.

**PSO 9:** Create platform for higher studies, research attitude in Botany and facilitate students to take-up successful career in Botany for their employment.

