



NAME OF THE PROGRAMME: B.SC. BOTANY (CBCS)

Programme Outcomes (PO)

After completing the Three Year Undergraduate Programme in Botany, Students are expected to achieve the following Programme Outcomes:

- PO1:** Critical thinking
- PO2:** Communication Skills
- PO3:** Problem-solving
- PO4:** Analytical reasoning
- PO5:** Research-related skills
- PO6:** Cooperation/Teamwork
- PO7:** Reflective thinking
- PO8:** Digital literacy/ Use of Modern Tools
- PO9:** Environmental Awareness
- PO10:** Practical Skills
- PO11:** Lifelong Learning
- PO12:** Botany and society

Programme Specific Outcomes (PSO)

The programme-specific outcomes of the Undergraduate Programme in Botany are listed below. After completing the programme, the students will be able to-

- PSO1:** Understand structure and reproduction of plant forms algae, fungi, bryophytes, pteridophytes, gymnosperms and angiosperms.
- PSO2:** Understand basic concepts in methodology of science, plant systematics, ecology, anatomy, cell biology, physiology, molecular biology, genetics, plant breeding, biotechnology and bioinformatics.
- PSO3:** Carry out experiments with essential laboratory practical's in anatomy, cytology, microtechnique, physiology, taxonomy, morphology, biochemistry and biophysics.

Course Outcomes (CO)**B.Sc. 1st Semester****Course Title: Microbiology and Phycology**

Course Code: BC101T and BC101P

On completion of this course, the students will be able to –

- CO1** Gain knowledge on Economic importance of microbes
- CO2** Understand the identification, classification and naming of microbes
- CO3** Understand the identification, classification and naming of algae
- CO4** Gain knowledge on characteristics and reproduction of different groups of algae
- CO5** Understand the practical aspects of Algae

Course Title: Biomolecules and Cell Biology

Course Code: BC102T & BC102P

At the end of this course, the students will be able to:

- CO1** Gain knowledge on various biomolecules.
- CO2** Understand the cell division and regulation.
- CO3** Get knowledge on cellular composition.
- CO4** Apply the concepts of cell biology to understand the basic processes in life.
- CO5** Understand the structure and function of DNA, RNA and protein.

B.Sc. 2nd Semester**Course Title: Mycology and Phytopathology**

Course Code: BC201T & BC201P

At the end of this course, the students will be able to:

- CO1** Understand the basics of plant groups Fungi.
- CO2** Understand the different groups of fungi their growth forms and structure.
- CO3** Understand about the symbiotic association like mycorrhiza and lichen
- CO4** Understand about the importance of fungi in medicine, industry etc.
- CO5** Understand about the plant diseases caused by fungi and basic knowledge to mitigate.

Course Title: Archegoniates

Course Code: BC202T&P

At the end of this course the students will be able to:

- CO1** Understand archegoniates
- CO2** Understand identification, classification and naming of bryophytes & the economic importance.
- CO3** Understand identification, classification and naming of pteridophytes & the economic importance.
- CO4** Gain knowledge on characteristics and reproduction of different groups of gymnosperms & the economic importance.
- CO5** Understand of archegoniates and fossil plants and to acquire practical knowledge .

B.Sc. 3rd Semester**Course Title: Anatomy of Angiosperms**

Course Code: BC301T

At the end of this course, the students will be able to:

- CO1** Understand the scope and importance of Anatomy.
- CO2** Understand the various types of tissues and tissue system.
- CO3** Understand the normal and anomalous secondary growth in plants and their causes.
- CO4** Know different adaptive and protective systems exists in plants and able to apply the knowledge in various fields for cytotaxonomic identification.
- CO5** Analyze the different layers of tissues in dicot and monocot plants.

Course Title: Economic Botany

Course Code: BC302T

At the end of this, course the students will be able to:

- CO1** Know about the indigenous knowledge system and centre of origin of plants, germplasm conservation.
- CO2** Know about sources of starch, spices, beverages, different sources of oils and fats.
- CO3** Know about various medicinally important plants, timber yielding, fibre yielding aromatic plants.
- CO4** Perform chemical tests for the presence of starch, fats, lipids and proteins.
- CO5** Collect and identify plants of medicinal use.

Course Title: Genetics

Course Code: BC303T

At the end of this course, the students will be able to:

- CO1** Understand Mendelian and Neo-mendelian genetics.
- CO2** Understand the different types of genetic interaction, incomplete dominance, codominance, alleles, quantitative inheritance etc.
- CO3** Draw and evaluate conclusions for genetic data.
- CO4** Practically know how to detect blood group.
- CO5** Gain practical knowledge of various genetic diseases and disorders.

B.Sc. 4th Semester**Course Title: Molecular Biology**

Course Code: BC401T

At the end of this course, the students will be able to:

- CO1** Gain an understanding of chemical nature of biological macromolecules.
- CO2** Understand the process of replication, transcription and translation.
- CO3** Learn about the post transcriptional and translational modification.
- CO4** Apply the knowledge of process of central dogma.
- CO5** Learn about molecular biology.

Course Title: Plant Ecology and Phytogeography

Course Code: BC402T

At the end of this course, the students will be able to:

- CO1** Explain various Ecosystems & relationships between Organisms and environment.
- CO2** Elaborate plant population and community Ecology.
- CO3** Discuss Phytogeography, the major plant communities of the world and different Vegetational belts of the earth with characteristic climatic Conditions of the area.
- CO4** Identify Phyto geographical Regions of India, Plant Biodiversity and its importance.
- CO5** Apply the knowledge of plant community in studying vegetation and use the instruments for ecological study.

Course Title: Plant Systematics

Course Code: BC403T

At the end of this course the students will be able to:

- CO1** Understand the process of documentation and preservation.
- CO2** Learn about the nomenclature of plants the system and rules of naming plants.
- CO3** Classify plants based on their morphology and identify them using the classification systems.
- CO4** Understand the evolution.
- CO5** Gain practical knowledge on various families through practical.

B.Sc. 5th Semester**Course Title: Reproductive Biology of Angiosperms**

Course Code: BC501T

At the end of this course, the students will be able to:

- CO1** Know about the reproductive development.
- CO2** Understand structure and development in microsporangium and megasporangium.
- CO3** Understand the process of microsporogenesis and megasporogenesis.
- CO4** Understand the process of pollination and fertilization, endosperm and embryogeny.
- CO5** Differentiate various types of pollen and ovules through practical.

Course Title: Plant Physiology

Course Code: BC502T

At the end of this course, the students will be able to:

- CO1** Identify Growth and Development in Plants.
- CO2** Understand the conduction path of water and mineral nutrients.
- CO3** Know about the functions of various phytohormones.
- CO4** Understand various metabolic processes involved with plant life.
- CO5** Comprehend the effect of abiotic and biotic stress in plants, strategies in plants to overcome the same.

Course Title: Analytical techniques in plant sciences

Course Code: BC503T

At the end of this course, the students will be able to:

- CO1** Use different tools and techniques of botanical research.
- CO2** Understand the principles and applications of the instruments used in Plant Sciences.
- CO3** Critically evaluate and design experiments used in Plant Sciences.
- CO4** Explain the theoretical aspects of key analytical techniques and instruments.
- CO5** Prepare and use of stains, fixatives and mounting media.

Course Title: Bioinformatics

Course Code: BC504T

At the end of this course, the students will be able to:

- CO1** Understand the scope and application of Bioinformatics.
- CO2** Get introduced with the vast repositories of biological data; and access and analyze the data available in the database.
- CO3** Access and retrieve information from public databases and incorporate them in further research applications.
- CO4** Know about the drug designing process.
- CO5** Construct phylogenetic tree and perform sequence alignment.

B.Sc. 6th Semester**Course Title: Plant Metabolism**

Course Code: BC601T

At the end of this course, the students will be able to:

- CO1** Understand and relate the various light and dark reaction cycles
- CO2** Understand both anaerobic and aerobic respiration, including glycolysis, Krebs cycle, and mitochondrial electron transport system
- CO3** Understand the Beta Oxidation, Gluconeogenesis and its role in mobilization of fatty acids during germination.
- CO4** Know the nitrogen metabolism and its importance and the various signalling process in plants.
- CO5** Demonstrate of plant metabolism processes.

Course Title: Plant Biotechnology

Course Code: BC602T

At the end of this course, the students will be able to:

- CO1 Learn the application of modern tools and techniques in Biology.
- CO2 Describe the components of tissue culture media and the role of plant growth regulators.
- CO3 Construct restriction mapping.
- CO4 Understand the steps involved in recombinant DNA technology and the characteristics of cloning vectors.
- CO5 Know the application of Biotechnology in various fields of agriculture, vaccine, horticulture, medicine.

Course Title: Plant Breeding

Course Code: BC603T

At the end of this course the students will be able to:

- CO1 Explain the different methods of selection, hybridization, and plant propagation in plant breeding.
- CO2 Understand the techniques of production of new superior crop varieties.
- CO3 Get the detail knowledge about modern strategies applied in Plant Breeding for crop improvement i.e. Mass selection, Pureline Selection and Clonal selection.
- CO4 Know about exploitation of Heterosis, hybrid and variety development and their release through artificial hybridization.
- CO5 Understand the role plants in human welfare.

Course Title: Biostatistics

Course Code: BC604T

At the end of this course the student should be able to:

- CO1 Gain basic knowledge about statistics.
- CO2 Present data using relevant tables, graphical displays, and summary statistics,
- CO3 Perform sampling.
- CO4 Gain sufficient numerical skills for carrying out research, including data interpretation & statistical analysis,
- CO5 Gain statistical data analysing skills to substantiate their laboratory experiments and research.
