

DEPARTMENT OF BOTANY

B.Sc.Botany

Botany is a scientific study of plant. It includes the study of their structure, how they grow, how they can be effectively classified the thing that impact their development etc. Botany is the branch of biology, which is study of all living organism.

Programme Outcomes

PO1: Understand structure function and life cycle patters of different life forms.

PO2: Understand of plant physiology, ecology and biochemistry.

PO3: Identify plants in their natural habitats, their economic and ethnobotanical importance.

PO4: Study of cryptogams and phanerogams plant.

PO5: Identify plant diseases, causing organisms and their control measures.

PO6: Apply the knowledge of nursery management for propagation of economically important plant

PO7: Students have developed the skills identify types of plant.

PO8: Apply knowledge of medicinal and economic Botany in day to day life.

PO9: Students learn to carry out practical work, in the field and in the laboratory, interpreting plant morphology and anatomy, plant identification, vegetation analysis techniques.

PO10: Apply the Knowledge gained from the Study For the upliftment of society via addressing health, environment issues.

PO11: Apply the knowledge of basic science life sciences and fundamental process of plants to study and analyze any plant from.

PO12: Apply the knowledge to develop the sustainable and eco-friendly technology in industrial botany.

Programme Specific Outcomes

PSO1:Students will be able to compare and contrast the characteristics of the different groups of plants such as algae, fungi, bryophytes, pteridophytes, gymnosperms and angiosperms.

PSO2: Understand the multi-functionality of plants in production of secondary metabolites and there widespread industrial applications.

PSO3: Describe the evolution anatomy morphology systematic genetics physiology and ecology of plants.

PSO4:Students will be able to relate the features of the environment to the structure of populations communities and ecosystems.

Course Outcomes

F. Y. B. Sc. Sem I

BSC0C103: Biodiversity, Plant Morphology & Plant Ecology

After successfully completing this course, students will be able to:

- CO1:** Classify the members of plants groups in to cryptogams and Phanerogams.
- CO2:** Explain the classification of algae given by G.M Smith and fungi give by G.C Ainsworth.
- CO3:** Explain the general characters, classification, ecology and economic Importance of Bryophytes.
- CO4:** Describe the life cycle and economic importance of Algae, Fungi, Bryophytes on the basis of their classification with reason.
- CO5:** Describe characters and importance of lichen.
- CO6:** Describe the introduction, scope and branches of ecology.
- CO7:** Describe external and internal characters and Adaoptation of hydrophytes, Xerophytes and Halophytes, principle biogeographical zone, endemism.
- CO8:** Describe the morphology of leaves, inflorescences and flowers(calyx, corolla, perianth, androecium, gynoecium, stigma and style)

BSC0P103: Botany Practical

After successfully completing this course, students will be able to:

- CO1:** Identify and prepare slide of Nostoc, Spirogyra, Saragassum.
- CO2:** Identify and prepare slide of Mucor and Puccinia.
- CO3:** Identify and prepare slide of Riccia and Funaria.
- CO4:** Explain the working method of ecological instrument.
- CO5:** Determination of soil pH and analysis of soil sampels for carbonates, chlorides, nitrates and base deficiency.
- CO6:** Study of morphological adaptation of hydrophytes and Xerophytes.
- CO5:** Illustrate the leaves, phyllotaxy, stipules, inflorescences, flowers and its types.

F. Y. B. Sc. Sem II

BSC0C203: Biodiversity, Plant Taxonomy and Plant ecology

After successfully completing this course, students will be able to:

- CO1:** Explain the general characters and classification, ecological and economic importance of pteridophytes and gymnosperms.
- CO2:** Explain plant community, ecosystem and Ecological pyramids.
- CO3:** Outline classification of Bentham and Hooker's Ranks, categories and taxonomic groups.
- CO4:** Explain botanical nomenclature ICBN; Binomial system, principal priority and its limitation.
- CO5:** Explain Importance of Herbaria, Botanical garden of the India
- CO6:** Study of following angiospermic families (Malvaceae, Solanaceae, Euphorbiaceae, Liliaceae)

BSC0P203: Botany Practical

After successfully completing this course, students will be able to:

- CO1:** Identify and Prepare The Slides Of Nephrolepis and Selaginella.
- CO2:** Identify and Prepare the slides of cycas and ephedra.
- CO3:** Determination of minimal quadrat size for the study of herbaceous vegetation in the college campus.
- CO4:** Determination of the frequency of various species occurring in a given area.
- CO5:** Demonstration of biogeographical zone of India.
- CO6:** Identify the morphological characters of some angiospermic families and its floral dissection [Malvaceae, Solanaceae, Euphorbiaceae, Liliaceae]

S. Y. B. Sc. Sem III

BSCC303A: Plant Pathology, Anatomy & Ethnobotany

After successfully completing this course, students will be able to:

- CO1:** Explain the symptoms and modes of infections in plants control of plant diseases types: Describe some fungal diseases.
- CO2:** Explain the Characteristics and classification meristem, Theories of apical organization shoot & root apex.
- CO3:** Understand the structure and functions of simple, complex, dermal tissue system, Epidermal outgrowths root stem transition nodal anatomy, cambium types.
- CO4:** Explain normal secondary growth anomalous secondary growth abnormal secondary growth in some plants.

- CO5:** Explain Introduction concept scope objective's and branches of ethnobotany methods of ethnobotanical research history and development of ethnobotany in India.
- CO6:** Significance of the some plants used by local tribes in ethnobotanical practices roles of ethnobotany in modern medicine.

BSCC303B: Fossils, Plant Physiology, Nursery & Gardening

After successfully completing this course, students will be able to:

- CO1:** Study of condition and formation of fossils types of fossils geological time scale.
- CO2:** Explain the general characters of psilophytales, lepidodendrales calamitales, cycadoflicales, cordaitales.
- CO3:** Explain plant water relation diffusion osmosis plasmolysis imbibition transpiration Photosynthesis.
- CO4:** Describe phases of growth and growth correlations enzymes.
- CO5:** Explain pH and buffer, Plant growth regulators.
- CO6:** Explain definition objectives and scope development / planning of nursery and gardening.

BSC0P303: Botany practical

After successfully completing this course, students will be able to:

- CO1:** Study of some plant diseases.
- CO2:** Prepare the slides, Identify different types of tissue, nodal anatomy.
- CO3:** Study of normal and anomalous secondary growth using double staining some plant.
- CO4:** Study of ethonobotanical palnts and Gardening tools.
- CO5:** Identify some fossil slides of Pteridophyte and gymnosperm.
- CO6:** To study the rate photosynthesis under different wavelength, concentrations of light and CO₂, plant physiological experiments
- CO7:** To study the enzymatic activity of amylases, catalases and dehydrogenases from plant material.
- CO8:** To study the anatomical features of C₃ and C₄ palnts using drop of Iodine On leaf T.S.

S.Y.B.Sc. Sem IV

BSCC403A: Angiosperm Embryology, Taxonomy and Plant tissue culture

After successful completing this course, students will be able to:

- CO1:** Study the structure and development of plant embryo, Ovule types.
- CO2:** Study the Pollination, endospems and Apomixs
- CO3:** Bentham & Hooker's system of classification- merits and demerits.
- CO4:** Study of the some family with their Economic Importance.
- CO5:** Study of Taxonomy evidences from palynology, phytochemistry and molecular data.

CO6: Application of some tools and organization of plant tissue culture, method of sterilization.

CO7: Explain the some technique of plant tissue culture.

BSCC403B: Cell Biology, Biochemistry, Genetics and Economic botany

After successful completing this course, students will be able to:

CO1: Describe ultra structure and function of cell organelles in plant cell.

CO2: Study the cell cycle & cell division.

CO3: Describe the classification and structure of carbohydrates, lipid, protein, Nucleic acid and types of DNA, RNA

CO4: Explain DNA replication and Symbiotic Nitrogen fixation.

CO5: Interpret the Mendel's principles, acquire knowledge on cytoplasmic inheritance and sex linked inheritance.

CO6: Explain general account, methods of cultivation, climate and uses of Some plant.

BSC0P403: Botany Practical

After successful completing this course, students will be able to:

CO1: To study Endosperm from cucumis seed, pollen tube germination from pollen germination pollen tube on stigma of catherenthus roses.

CO2: Identify the morphological characters of some angiospermic families and its floral dissection.

CO3: Demonstrate the instruments useful in plant tissue culture.

CO4: Identify the permanent slide of Embryology Dicots and Monocots embryo.

CO5: Prepare the slides of different stages of mitosis and meiosis.

CO6: To study Histochemical localization of DNA, RNA, Starch. Lignin, Fat, Glucose from plant material.

CO7: Study of Cell organs DNA, RNA types, DNA replication, Giant chromosome, Solve the Genetic problems.

CO8: Study of Economic botany

T. Y. B. Sc. Sem V

BSCC503A: Microbiology, Algae, Fungi & plant pathology

After successfully completing this course, students will be able to:

CO1: Explain brief outline nomenclature, classification, multiplication, properties of virus.

CO2: Describe the types of bacteria, ultrastructure of bacteria, cyanobacteria.

CO3: Application of microbiology in agriculture, industries, medicine and in control of soil, water pollution, important crop disease caused by viruses and bacteria.

- CO4:** Explain classification according to Smith for some classes of algae, origin and evolution in algae.
- CO5:** The study of life history of algae and fungi on the basis of their classification with reason, general accounts of diatoms.
- CO6:** Describe the general characters and classification of algae and Fungi;
- CO7:** Explain plant disease: introduction, definition of disease, general symptoms of disease caused by fungi, Classification of plant diseases, disease control, prevention and cure.

BSCC503B: Bryophyta & Pteridophyta

After successfully completing this course, students will be able to:

- CO1:** Explain the general characters, classification, origin and evolution of Bryophytes.
- CO2:** Explain life history of Marchantia, Pellia, Porella, Anthoceros, Polytrichum, Sphagnum;
- CO3:** Resemblances of Bryophytes with Algae and Bryophytes with Pteridophytes.
- CO4:** Explain the general characters, classification of Pteridophytes.
- CO5:** Explain life history of Psilotum, Isoetes, Azolla, Marsilea, Equisetum
- CO6:** Describe the general characters of psilophytales, Lepidodendrales, Calamitales.
- CO7:** Explain evolution of sporophytes in pteridophytes, Stellar evolution in Pteridophytes, Apospory and Apogamy;

BSCC503C: Gymnosperms & Paleobotany

After successfully completing this course, students will be able to:

- CO1:** Explain the general characters, classification, economic importance of Gymnosperm;
- CO2:** Explain life history of Pinus, Ginkgo, Gnetum.
- CO3:** Origin and Development of Heterospory in Gymnosperms;
- CO4:** Resemblances and difference between Gymnosperm and pteridophytes, Gymnosperm and Angiosperms.
- CO5:** Describe Fossilization and Types of Fossils, some useful techniques for fossil study.
- CO6:** Describe the nomenclature of fossils and geological time table.
- CO7:** Explain the general characters of Fossils (Horneophyton, Lepidocarpon, Sphenophyllum, Lygenopteris, Cycadeoidea, Cordaites)

BSCC503D: Systematic Botany & Angiosperm Taxonomy

After successfully completing this course, students will be able to:

- CO1:** Explain principles of Taxonomy, Numerical Taxonomy, Chemotaxonomy.
- CO2:** Origin and evolution of Angiosperms.
- CO3:** Comparative accounts, merits, demerits, various system of classification.
- CO4:** Explain Herbarium techniques and some important Herbaria in India.

CO5: Explain embryology, cytology and Molecular data (APG IV System) in Angiosperms.

CO6: Explain types of Branches (Lateral & Dichotomy), Leaf shape, Leaf incision, fruit.

CO7: Study of some angiospermic families.

BSCSE503: Ethnobotany

After successfully completing this course, students will be able to:

CO1: Introduction, concept, scope, objective, Ethnobotany as an interdisciplinary science.

CO2: Tribals of India, and their life styles, plantes used by tribals.

CO3: Methodology of ethnobotanical studies.

CO4: Explain the medico- ethnobotanical sources in India; significance of the following plants in ethnobotanical practices.

CO5: Describe the modern medicine plant

CO6: Explain role of ethnic groups in conservation of plant genetic resources, Endangered taxa and forest management, ethnobotany as a tool to protect interest of ethnic groups.

CO7: Explain sharing of wealth concept with few examples from India biopiracy.

BSCP503A: Botany Practical

After successfully completing this course, students will be able to:

CO1: Study of some Microbiological species through permanent slide and model.

CO2: Identify and prepare the slide Algae, Fungi and Plant disease.

CO3: To study the morphology and internal structure of Bryophytic and Pteridophytic plants.

CO4: Identify permanent slides of Fossil pteridophytes

BSCP503B: Botany Practical

After successfully completing this course, students will be able to:

CO1: To study the external and internal structure of Gymnosperm plants.

CO2: Identify permanent slides of Gymnosperm Fossil.

CO3: To study types of Branches, Leaf shape, Leaf incision, Fruit.

CO4: Identify the morphological characters of some angiospermic families and its floral dissection.

T.Y.BS.c.Sem VI

BSCC603A: Anatomy & Embryology

After successfully completing this course, students will be able to:

CO1: Know Various tissue Systems.

CO2: Understand the Anomalous secondary growth in some Plants.

CO3: Explain Types Of Stele Tapetum Poriderm and leaf fall.

CO4: To understand about polynology.

CO5: Explain Nutrition of Embryo and Embryosac.

CO6: Explain Embryo Development of Monocot and Dicot Seed.

BSCC603B: Biochemistry, Plant Physiology, Plant Breeding

After successfully completing this course, students will be able to:

CO1: Explain Amino acids, carbohydrates.

CO2: Study the General account of structure and functions of Vitamins.

CO3: To learn properties & protoplasm as a colloidal system, plant movement.

CO4: Knowledge of water potential, water as a plant constituent, Growth indices and Mineral nutrition.

CO5: Explain seed germination and factor affecting seed germination, factor affecting rate of Photosynthesis.

CO6: Explain CAM cycle, Pentose phosphate pathway, Photorespiration and Stress physiology.

CO7: Understand the process of Respiration and Heterotrophic nutrition in plants.

CO8: Explain aims, objective and impact of plant breeding.

CO9: Understand the introduction to plant breeding domestication plant.

CO10: Know the method of selection and hybridization techniques.

BSCC603C: Ecology, Plant Geography, Forestry & Economic Botany

After successfully completing this course, students will be able to:

CO1: Study Structure and Methods of plant communities, Analytical and synthetic characters

CO2: Explain Plant Biodiversity act and biological Hot-Spots, Biogeochemical cycles, Biological Clock.

CO3: Understand Major Plant Communities and Phytogeographic Region of the world.

CO4: Describe Forest types of India And Its Conservation, Soil types of India.

CO5: Study Ecological and economic importance of forest, social forestry.

CO6: Describe the Cultivation of some economically important plants.

CO7: Explain Some Medicinal and Aromatic plant.

BSCC603D: Cell Biology, Molecular Biology, Genetics & Biostatistics

After successfully completing this course, students will be able to:

CO1: Describe Prokaryotic and Eukaryotic Cells-Structure and ultra structure details

CO2: Study of programmed cell Death (P.C.D), Cytoskeleton and Microtubules.

CO3: Describe Restriction Endonuclease, Cloning Vectors.

CO4: Study Of Gene expression in Prokaryotes, DNA Sequencing, DNA Finger Printing DNA damage and repair.

CO5: Learn the scope and importance of molecular Biology.

CO6: Understanding of genes and their sex chromosome and sex linked inheritance, polyploidy in plant.

- CO7:** Explain gene mutation, Linkage and crossing over.
- CO8:** Describe aim & objective as application to biological science of Biometric.
- CO9:** Comprehend the fundamental concepts related to descriptive and inferential Biostatistics.

BSCSE603: Plant Diversity and Human Welfare

After successfully completing this course, students will be able to:

- CO1:** Understanding types of Biodiversity, conservation of biodiversity.
- CO2:** Study Agrobiodiversity and cultivated plant taxa, wild taxa.
- CO3:** Understanding Loss of Biodiversity types.
- CO4:** Study the management of plant Biodiversity.
- CO5:** Study values and use of Biodiversity .
- CO6:** Explain In-situ and Ex- situ Conservation.
- CO7:** Explain the Role of plant in human welfare.

BSCP603A: Botany Practical

After successfully completing this course, students will be able to:

- CO1:** Identify different types of Dermal tissue.
- CO2:** To study of various types of stele.
- CO3:** To study of Anomalous secondary growth using double staining method.
- CO4:** Study of pollen characters from pollen grains.
- CO5:** Mount embryo of any dicot and monocot plant.
- CO6:** Demonstrate and perform the Plant physiological and Biochemistry experiment.
- CO7:** Demonstrate the some physiological instrument.
- CO8:** Study of plant Breeding.

BSCP603B: Botany Practical

After successfully completing this course, students will be able to:

- CO1:** Determination of frequency, Density and Abundance.
- CO2:** To study the species composition of an area analyzing biological spectrum and comparison
- CO3:** To study plant geography.
- CO4:** Determination of total hardness, Carbonate and Bicarbonate in water sample.
- CO5:** Identification and characteristics of wood Plant and economical plant.
- CO6:** To study different stages of mitosis and meiosis, cell organelles.
- CO7:** To study Histochemical localization of DNA, RNA, Proteins in plant material.
- CO8:** To study Genetics problems, Biostatistics parameters.