Department of Botany

Programme outcomes: B.Sc. Botany

Department of Botany	**After successful completion of three year degree programme in Botany students is able to;-**
Programme outcome	➢ Students know about different types of lower and higher plant, there evolution in from algae to angiosperm and also there economic and ecological importance. ➢ Cell biology gives Knowledge about cell organelle and there functions ➢ Molecular biology give Knowledge about chemical properties of nucleic acid and their role in living systems. ➢ Genetics Provide knowledge about laws of inheritance, various genetic interaction, chromosomal abrasions and multiple alleles. ➢ Structural changes in chromosomes. ➢ Students can describe morphological and reproductive characterof plants and also identified different plant families and classification. ➢ They know economic importance of various products and artificial method of plants propagation. ➢ Students will gain knowledge and learn techniques in Plant sciences. ➢ They will understand the difference between Prokaryotic and Eukaryotic cell, its functions in control and regulation of various metabolic pathways of organisms. ➢ Understands the Basic Life forms from Cryptogams to Phanerogams. ➢ Understand the Physiological and Developmental processes of Plants ➢ Gain knowledge of Agro Forestry/Pharmacognosy /Gardening/ Mushroom /bio fertilizers etc to develop entrepreneur attitude.

Programme Specific Outcomes	➢ Students acquire fundamental Botanical knowledge through theory and practical's. ➢ To explain basic plant of life, reproduction and their survivalin nature. ➢ Helped to understand role of living and fossil plants in our life.PSO- 4. Understand good laboratory practices and safety. ➢ To create awareness about cultivation, conservation and sustainable utilization of biodiversity. ➢ To know basic technique in plant science like tissue culture,plant diseases management, medicinal plant. ➢ Understand the nature and basic concepts of cell biology, genetics, molecular biology, taxonomy, physiology, ecology, diseases,disease spreading agents and applied Botany

COURSE OUTCOME F.Y. B.Sc. SEMESTER-I(CBCS)	
Course	**Outcomes After completion of these courses students should be able to;**
BO-01-Plant Diversity- I (Micro-organisms, Algae, Fungi and Plant Pathology)	• Describes general characteristics of life- viz, Virus,Bacteria, Mycoplasma, Cyanobacteria. • Understand the Concept of Cryptogams and Phanerogams • General characteristics, classification and economic importance of Algae, Fungi and Lichens. • Understand the representative forms in Algae, Fungi and Lichens. • Application of Botany in agriculture through study of plant pathology. • Understand plant disease in terms of causal organism,symptoms and control measures

Course	Outcomes After completion of these courses students should be able to;
BO-02- Plant Diversity-II (Bryophyte, Pteridophyta,Gymnosperm and Pale botany)	• Understand the diversity of plants from Bryophytes toGymnosperms. • General characteristics, classification and economic importance of Bryophyta, Pteridophyta and Gymnosperms. • Understand the life history from representative forms of Bryophyta, Pteridophyta and Gymnosperms. • Concept of Heterospory and seed habit • Understand the geological time scale. • The process of fossilization and types of fossils.
Practical (Based on paper I & II)	• Practical on handling the compound microscope, Differentiate the various groups of bacteria. • Study various life stages of representatives of Cryptogams to Gymnosperms. • Different plant diseases and causal organisms. • Types of fossil. • Study of fossil Gymnosperms

SEMESTER -II

Course	Outcomes After completion of these courses students should be able to;
BO-03- Paper I Morphology and Anatomy of Angiosperm	• Morphological modification of root, stem, leaves and floralparts and its taxonomic relevance in plant identification. • Allow the students to understand the anatomical features of angiosperms and function of various tissues in plants life. • Differentiation of tissue system in Monocot and Dicot root,stem and leaf. Anomalous secondary growth in root and stem • Understand the normal and anomalous secondary growth inplants and their causes.

Course	Outcomes After completion of these courses students should be able to;
BO-04- Paper II Taxonomy and Diversity of Angiosperm	• Help to understand Diversity of Angiosperms and conceptof Taxonomy. • Origin of Angiosperms with Bennettitalian theory • Understand various rules, principles and recommendations of plant nomenclature produces in¬ plant identification. • Classification of Angiosperms and detailed study of Bentham and Hookers system classification. • Imparts to the importance of Herbarium in Taxonomy. • Learn about the characters, floral variations and economic importance of important families of¬ angiosperms.
Practical (Based on paper I & II)	• Morphological modification of Angiosperms plants in relation to adaptation; types of tissue system; their function and role in plant life. • Study of Bentham and Hookers classification system for dicot and monocot plant. • Technique of classical and digital Herbarium preparation.

S.Y. B.Sc. SEMESTER -III

Course	Outcomes After completion of these courses students should be able to;
BO-05- Paper I Reproductive Biology of Angiosperm, Plant Growth and Development	• Importance of pollination and their types in reproduction ofplants; developmental process of male and female gametophyte. • Stages involved in Seed development; causes of seed dormancy and its importance. • Understand development and types of endosperm andembryo. • Phases of plant growth and development and how growth hormones play an important role? • Tropic and Nastic movements. • Understand the concept of photoperiodism, vernalization,circadian rhythm, senescence and abscission.

SEMESTER -III

Course	Outcomes After completion of these courses students should be able to;
BO-06- Paper II Plant Biochemistry and Physiology	• Understanding the concept of bio molecules includes thecarbohydrates, proteins, lipids, amino acids and enzymes and their importance, mechanism and role in physiological and biochemical processes of plants. • Importance of nitrogen in plant growth, sources of nitrogen. The process of biological nitrogen fixation and role ofnitrate reductase in nitrogen metabolism. • Role of mineral nutrition in plant growth and developmentand deficiency symptoms. • Understand the concept of Ascent of sap, Transpiration, phloem transport and theories of absorption of solutes. • Understand in detail about Photosynthesis and Respirationin plants.
Practical (based on paper I & II)	• Understand the concept of Enzyme substrate complex. • structure and development of seed • phenomenon of nastic and tropic movement • Learn the methods of breaking seed dormancy. • Impart the knowledge of fermentation, imbibition, transpiration and photosysnthesis.

SEMESTER -IV

Course	Outcomes After completion of these courses students should be able to;
BO-07- Paper I Cell Biology, Genetics and Biotechnology	• Understand Cell wall Plasma membrane, Cell organellesand cell division. • Cell division to leran how cell divide by equational andreduction division. • Understand mutation, linkage and crossing over. • Learn structural and numerical variation of chromosomes

	• Structure of DNA and its replication • Concept of totipotency, steps in micropropagation. • Understand the Mendelian genetics and interaction ofgenes. • Structure and function of Extra nuclear genome. • Knowing the effect of chromosomal aberrations. Variation in chromosome number, sex linkage and sex determination. • Understand the principle and basic protocols for • Recombinant DNA Technology, Genetic¬ Engineering & PlantTissue Culture. .

Course	**Outcomes** **After completion of these courses students should be able to;**
BO-08- Paper II **Plant Ecology**	• Importance of ecology in relation to understand the plantand environment interaction. • Understand the concept of ecosystem; biotic and abioticfactors. • Biogeochemical cycle, community ecology and assessmentof environmental pollution. • Plant succession and climax concept and phytogeographical regions of India. • Understand interaction between living and no livingcomponents of nature • Understand causes and control of environmental pollutionCO-Analyze population and community characters • Understand evolution and distribution of flora.
Practical (Based on Paper I & II)	• Understand the ultra structure of cell. • Learn different stages of mitosis and meiosis and staining technique. Working out of law of inheritance. • Get acquainted with laboratory organization, tools of genetic engineering. • Use of various instruments. • Techniques of Plant Tissue Culture.

	• Ecological adaptation of plants • Method of determining the plant biomass, • Learn the water holding capacity of soil.

T.Y. B.Sc. SEMESTER -V

Course	Outcomes After completion of these courses students should be able to;
DSC-BO-09 ECONOMIC BOTANY	• To understand the Importance and scope of Economic Botany • Cultivation and uses of Cereals & Pulses • Vegetables, Sugars and fruits • Information of oil & Wild edible fruit plants • Information of Fibre & forage plants • Spices, condiments and beverages plants Rubber and dye yielding plants • Timber yielding plants and Bamboo:
MOLECULAR BIOLOGY	• The basic life processes in Biology • To Study the reaction at molecular level • Differentiate between Prokaryotic and Eukaryotic process Different forms of Genetic Material • Students will understand Central dogma of Biology and Genetic code
GENETICS AND PLANT BREEDING	• To understand the Mendel's Law of Heredity • Non-Mendelian Inheritance. • Plant Breeding: Introduction and its objectives • Plant genetic resources & Hybridization • Gene organization & genetic code • Special types of chromosome • Role of biotechnology in crop improvement

T.Y. B.Sc. SEMESTER -VI

Course	Outcomes After completion of these courses students should be able to;
DSC-BO-10- Plant diversity and conservation	• To understand the Concept of Biodiversity • Its applications at various levels • Biodiversity in Terrestrial & Aquatic Environment Biodiversity distribution • Biogeographically & Phytogeographical classificationof India • Biodiversity- Threats , loss and its causes Listing of Threatened biodiversity • Conservation and Prevention Acts • In situ & Ex situ conservation • Conservation through tissue Culture
PLANT BIOTECHNOLOGY	• To understand the Basics and techniques in Plant TissueCulture (PTC) • Micropropagation & Secondary metabolite production in Plants • To get aware with modern Tissue Culture Techniques • Methods of gene transfer & Transgenic Crop Production • Applications of Plant Biotechnology & Transgenic plants
ETHNOBOTANY	• To understand the concept, scope and objectives ofEthnobotany • Methodology of Ethnobotanical studies • Role of Ethnobotany in modern Medicine Ethnobotany and legal aspects