UG Programme B. Sc. Botany

Objectives of the programme

- To impart knowledge of Science is the basic objective of education.
- To develop scientific attitude is the major objective to make the students open minded, critical, curious.
- To develop skill in practical work, experiments and laboratory materials and equipments along with the collection and interpretation of scientific data to contribute the science.
- To understand scientific terms, concepts, facts, phenomenon and their relationships.
- To make the students aware of natural resources and environment.
- To provide practical experience to the students as a part of the course to develop scientific ability to work in the field of research and other fields of their own interest and to make them fit for society.
- The students are expected to acquire knowledge of plant and related subjects so as to understand natural phenomenon, manipulation of nature and environment for the benefit of human beings.
- To develop ability for the application of the acquired knowledge to improve agriculture and other related fields to make the country self reliant and sufficient.
- Understand and appreciate the role of biology in societal issues, such as the environment and biological resources, biodiversity, ethics and human health and diseases.
- To enrich the students with the latest developments in the field of Information technology, Biotechnology, Bioinformatics and other related fields of research and development
- To create enthusiasm to understand more about the beautiful planet Earth and to give awareness to the public the need to protect the planet from all kinds of exploitation.
- To keep the scientific temper which the student acquired from school level and to develop a research culture
- To introduce the students to industrial activities related to Botany and to get an industry orientation and skills

COURSE AND COURSE CODE	COURSE OUTCOME As per syllabus (BOS)	SEMESTER / TAXONOMIC LEVEL

Course code BO 1141 **ANGIOSPERM ANATOMY, REPRODUCTIVE BOTANY AND PALYNOLOGY**	• Students are able to understand the complexities of cell wall organization, • The microscopic and sub microscopic structures. • Students can distinguish various anatomical features of monocots and dicots(stem and root) with respect to permanent tissues and tissue systems. • Identify and differentiate male and female gametophyte development in angiosperms. • Distinguish monocot and dicot embryo and the basic features of pollen grains.	**SEMESTER-I**
Course code : BO 1221 **FOUNDATION COURSE METHODOLOGY AND PERSPECTIVES IN PLANT SCIENCES**	• Students will be familiarized with the fundamental characteristics of Science. • Develops an idea about involvement of science in improvement of human life. • Create awareness of scientific approach towards life and learns the values of ethics in science. • Develops skills to interpret scientific data using basic statistical methods. • Create skills to prepare specimens for microscopic and gross anatomical studies and familiarize with different microscopic methods for sample analysis. • Students become able to prepare buffers, measure pH, separate plant pigments and construct absorption spectrum of a sample	**SEMESTER-II**
Course code : BO 1341 **MICROBIOLOGY, PHYCOLOGY, MYCOLOGY, LICHENOLOGY AND PLANT PATHOLOGY**	○ The student can prepare micro preparations and identify the thallus and reproductive structures of lower plant groups like algae, fungi and lichen ▪ An awareness created among students about various	**SEMESTER-III**

	microbes, structure and economic importance ▪ Students can use effectively the methodology to isolate and identify bacteria present in curd and root nodules ▪ Can identify various plant diseases, etiology of pathogens and control measures o Able to prepare fungisides like tobacco decoction and Bordeaux mixture	
Course code : BO 1441 **BRYOLOGY, PTERIDOLOGY, GYMNOSPERMS AND PALAEOBOTANY**	• Students are able to make micro preparations of thallus and reproductive structures of as well as better understanding of the life cycle of selected members of Bryophytes, Pteridophytes and Gymnosperms • Can understand the economic and ecologic importance of lower groups of plant kingdom • Better understanding of fossilization and importance of Palaeo botany • Identify various parts of fossil plants through micro slides	**SEMESTER-IV**
Course Code :BO1541 **ANGIOSPERM MORPHOLOGY, SYSTEMATIC BOTANY, ECONOMIC BOTANY, ETHNO BOTANY AND PHARMACOGNOSY**	• Ability to identify different types of inflorescences, flowers and fruits, their arrangement and relative position. • Familiarization of basic rules of Angiosperm classification and different types of classification. • Preparation and maintenance of Herbarium. • Identification of plants to their respective families. • Understanding of ethnobotanical and pharmacological significance of plants.	**SEMESTER-V**

Course code: BO 1542 **ENVIRONMENTAL STUDIES AND PHYTOGEOGRAPHY**	▪ Develops awareness about natural resources, its conservation and importance of sustainable lifestyles. ▪ Understands and identify different ecosystems and ecosystem processes. ▪ Develops deep understanding about biodiversity and importance of its conservation ▪ Develops skills to identify polluted sites, its major pollutants and recognize the need to mitigate environmental pollution ▪ Awareness about different types of disasters and to adopt strategies to overcome and reduce the impact ▪ Identify the importance of phyto geographical sites in India ▪ Can devise an experimental design and carry out a project ▪ Students trained about various steps for the conduct of a research project and write a project report	**SEMESTER-V**
Course Code : BO 1543 **CELL BIOLOGY, GENETICS AND EVOLUTIONARY BIOLOGY**	• Students have a better understanding of cell structure and cell organelles • Prepare microslides of cell divisions and identify various stages of mitosis and meiosis • Able to work out problems in classical genetics, modified mendelian ratios and population genetics • Able to understand genetic diseases and their inheritance • Understand evolutionary principles, theories and methods of speciation	**SEMESTER-V**
Course code : BO 1641 **PLANT PHYSIOLOGY AND BIOCHEMISTRY**	• Students get a clear understanding of the basic concepts of Physiology and Biochemistry. • Understands photosynthesis, respiration, plant growth regulators, nitrogen metabolism, and stress physiology • Familiarization of basic	**SEMESTER-VI**

	physiological practical procedures. • Students get the basic knowledge about the macromolecules and their overall role in cell metabolism; and secondary plant products. • Identification of protein, reducing and non reducing sugar by qualitative tests.	
Course code : BO 1642 **MOLECULAR BIOLOGY, GENERAL INFORMATICS &BIOINFORMATICS**	• Understands DNA as genetic material, develops awareness about chemical composition and different types of DNA including their replication method. • Students understand various molecular aspects of gene expression and regulation of genes • Develops awareness about various academic services applied for their studies • Awareness about features of a computer, different application and system software. • Recognizes the need for safe use of internet and also become aware about health issues related to over usage of computers and mobile phones as well as cyber crimes and cyber laws. • Students will be familiarized to molecular phylogeney, Biological Databases, Sequence analysis, Genomics, Proteomics & Comparative genomics	**SEMESTER-VI**
BIOTECHNOLOGY, NANOBIOTECHNOLOGY, HORTICULTURE & PLANT BREEDING **Course code : BO 1643**	• Students are familiarized in preparation of culture solutions, sterilization, inoculation of explants, induction of callus and orphogenesis • They are familiarized in biotechnological tools like RFLP, RAPD and PCR techniques • Appreciate the application of equipments and tools in biotechnology • Understanding of ethical and legal	**SEMESTER-VI**

	issues in biotechnology and basic knowledge about IPR • Better understanding of nanosystems, and applications of nanomaterials • Students able to identify and use various horticultural implements • Can propagate plants through grafting, budding and layering &can prepare manures, fungicides etc • Can effectively do plant breeding methods and understands ttheir practical application in betterment of food crops	
OPEN COURSE -I (b) **Course code : BO1551.2** **MUSHROOM CULTIVATION AND MARKETING**	• Identify mushrooms, structure and mode of propagation • Understand commercial mushroom cultivation, marketing and their nutritional value • Better understanding of methods of processing and storage of mushrooms	**SEMESTER-V**

COMPLEMENTARY COURSE BOTANY
FOR **FIRST DEGREE PROGRAMME IN ZOOLOGY**

COURSE AND COURSE CODE	COURSE OUTCOME As per syllabus (BOS)	SEMESTER / TAXONOMIC LEVEL
Course code : BO 1131 **MICROTECHNIQUE, ANGIOSPERM ANATOMY AND REPRODUCTIVE BOTANY**	▪ To develop skills for preparation and identification of microscopic structures ▪ To distinguish various tissue systems and internal structure ▪ To acquire basic knowledge about embryo development and pollen grains	**SEMESTER-I**

Course code : BO 1231 **Thallophytes, Archegoniatae and Plant pathology**	▪ To familiarize characteristic features of microbes and their significance in environment ▪ To generate idea about types of algae, fungi, lichen and their economic as well as evolutionary significance ▪ To familiarize the students the characteristic features, life cycle and evolutionary significance of Bryophytes, Pteridophytes and Gymnosperms. ▪ To impart knowledge about diseases in plants	**SEMESTER-II**
Course code :BO 1331 **SYSTEMATIC BOTANY, ECONOMIC BOTANY, ETHNO BOTANY, PLANT BREEDING**	▪ To introduce importance of morphological characters in classification and plant identification. ▪ To develop skill in identification of plants. ▪ To acquire knowledge about economic, ethnobotanical significance and pharmacognosy of plants ▪ To get knowledge about plant breeding techniques	**SEMESTER-III**
Course Code : 1431 **PLANT PHYSIOLOGY, PLANT ECOLOGY, HORTICULTURE AND PLANT BIOTECHNOLOGY**	▪ To understand physiology of absorption, photosynthesis and respiration. ▪ To study ecosystem and ecological modifications ▪ To generate awareness about horticultural techniques. ▪ To familiarize plant tissue culture techniques	**SEMESTER-IV**