Bellary V V Sangha's

VIJAYANAGAR COLLEGE HOSAPETE

(Affiliated to Vijayanagar Sri Krishnadevaraya University, Bellary),

Accredited 'B++' Grade by NAAC

DEPARTMENT OF BOTANY

B.Sc. Botany Program outcome

- Systematic, extensive and coherent knowledge and understanding of plant science as a whole and its applications and links to interdisciplinary areas of the study, including critical understanding of the established theories, principles and concepts of a number of advanced and merging issues in the field of Botany.
- Practical and procedural knowledge that creates different types of professionals in the field of Botany like in research and development, teaching, government and public services e.g., conservationist, plant explorer, ecologist, horticulturist, plant biochemist, nursery manager, molecular biologist, plant pathologist, taxonomist, farming consultant and environmental consultant.
- Students learn to carry out practical work, in the field and in the laboratory, with minimal risk, interpreting plant morphology and anatomy, plant identification, physiochemical analyses of plant materials in the context of plant physiology and biochemistry.
- Apply the knowledge of basic science, life science and fundamental process of plants to study and analyse any plant forms.
- Understand the impact of the plant diversity in societal and environmental contexts, and demonstrate the knowledge of, and need for sustainable development.
- Ethical approach towards environment, sustainability and conservation practices.

Program-Specific Outcomes

- Critical evaluation of ideas and arguments by collecting relevant information about the plants, so as to recognise their position in the classification systems and at phylogenetic level.
- Students will be able to access the primary literature, identify relevant works for a particular topic, and evaluate the scientific content of these works.

- Students will be bale to compare and contrast the characteristics of the different groups of plants such as algae, fungi, bryophytes. Pteridophytes, gymnosperms and angiosperms.
- Students will be able to explain how plants function at gene, genome, cellular and tissue level.
- Students will be able to relate the physical features of the environment to the structure of populations, communities and ecosystems.
- Filed studies and one day excursions for optimizing proficiency in the subject.
- Students will be able to conceive the idea of artificial propagation of plants via vegetative methods and to find a livelihood via establishing miniature plant nurseries.

B.Sc. Botany - Course Outcomes

Semester: III

Course title: Histology, Anatomy, Embryology and Palynology

Course outcome: On completion of this course, the students will be able to;

- Gain knowledge of plant cells, tissues, primary and secondary growth development.
- Make connections between plant anatomy and the other major disciplines of biology.
- Study and understand the developmental aspects of male and female reproductive organs in higher plants.
- Know significance of pollination and various agents that help in the mechanism of fertilization and development of seeds.
- Understand various applications of polyembryony in plant improvement.
- Understand concept palynology and its interdisciplinary applications.

Semester: III Practical - Histology, Anatomy, Embryology and Palynology

On successful completion of practical, students will be able to

- Understand basic concept of tissues and different forms of tissues by taking sections of plant parts.
- Learn different techniques of anatomy like sectioning and staining, mounting media & mounting techniques.
- Comparative study on anatomy of dicot and monocot stem, root and leaves.
- Learn about normal and anomalous growth in plants.

- Study various developmental stages of microsporogenesis and megasporogenesis.

Semester: IV

Course title: Ecology and Environmental Biology

Course outcome: Upon completion of this course, the students will be able to;

- Describe the basic principles of ecology, including population ecology, community ecology, and ecosystem function.
- Understand the characteristics and the importance of the major biomes and ecosystems of the Earth.
- Gain knowledge on Ecological successions and the interrelationships between land, sea, the atmosphere and the living things that occupy these environments.
- Discuss the role that humans play in affecting the characteristics of the environment.
- Critically analyse conservation methods of soil, water and forests.
- Evaluate current environmental issues and problems including the solutions and management practices.

Semester: IV Practical - Ecology and Environmental Biology

Upon completion of the practical's, the students will be able to,

- Understand working principle and applications of various ecological instruments.
- Understand the adaptations of hydrophytes, xerophytes, mesophytes and epiphytes through sectioning and observation.
- Apply the scientific method and quantitative techniques to describe, monitor and understand environmental systems.

Semester: V (Paper 5.1)

Course Title: Morphology, Taxonomy and Economic Botany

Course outcome: Upon completion of this course, the students will be able to;

- Understand plant morphology terminologies and identifying morphological peculiarities.
- Understand the systems of classification of angiosperms, nomenclature and interdisciplinary approaches.
- Gain knowledge in writing short species descriptions and illustration.

- Recognise members of the major angiosperm families by identifying their diagnostic features and economic importance.
- Understand herbarium techniques and its importance.
- Develop critical thinking about cultivation techniques of cereals, millets, pulses, spices, beverages and timber.
- Gain knowledge about value of medicinal plants.

Semester: V Practical (Paper 5.1) - Morphology, Taxonomy and Economic Botany

On completion of the practical, students will be able to,

- Understand and analyse variations in morphology of different plant parts.
- Recognise key characters pertaining to different taxonomic families.
- Identify various common plants using taxonomic key provided.
- Gain knowledge on various economical important plants, parts of the plant, applications & medicinal values.

Semester: V (Paper 5.2)

Course Title: Cell Biology and Cytogenetic

Course outcome: After successful completion of this course, students will be able to understand;

- The cell structures in relation to function of cells the fundamental unit of life, are concerned in this course along with molecules present in cells.
- Numerical alterations in chromosomes, polyploidy and its significance in crop and yield improvement.
- Gene concept (expression and regulation of genes), Gene mutations, Genetic code and explain central dogma of molecular biology (replication, transcription and translation).
- Plant genetics and Mendel's laws of heredity.
- Modification of Mendelian Ratios and chromosomal mechanism of sex determination methods.

Semester: V Practical (Paper 5.2) - Cell Biology and Cytogenetic

After completion of the practical, students will be able to,

- Understand the basics of chromosome structure and occurrence of abnormalities.

- Fix and count meiotic and mitotic chromosomes of selected plants.
- Solve different genetic problems and understand heredity of traits in off-springs.

Semester: VI (Paper 6.1)

Course title: Plant Breeding, Biotechnology and Plant Tissue Culture

Course outcome: On completion of this course, the students will be able to;

- Understand different methods of plant breeding and its significance in producing new and improved varieties of medicinal plants and economically important plants.
- Gain practical knowledge on propagation techniques like cutting, air-layering, grafting, wedge grafting, approach grafting, and bud grafting.
- Learn tools and techniques in Biotechnology and its applications in pharmaceutical, agriculture, industrial and environmental aspects.
- Understand the importance of Plant tissue culture in various aspects like aseptic culture conditions, culture media, organogenesis, somatic embryogenesis, haploid culture.
- Understand application of tissue culture in agriculture and human welfare.

Semester: VI Practical (Paper 6.1) - Plant Breeding, Biotechnology and Plant Tissue Culture

Upon completion of the practical, students will be able to,

- Acquire knowledge on floral biology and selection of proper breeding method.
- Cultivate skill in emasculation and pollination of various plant species.
- Learn applied skills of propagation techniques like cutting, air-layering, grafting and its types.

Semester: VI (Paper 6.2)

Course Title: Plant Physiology

Course outcome: On completion of this course, the students will be able to;

- Impart an insight into the various plant water relations.
- Understand mineral nutrition in plants.
- Understand the mechanism of various metabolic processes in plants.
- Acquire basic knowledge about growth and development in plants.

- Gain knowledge regarding important techniques related to plant physiology so that they can perform their own experiments.
- Learn about physiological and practical application of different plant hormones and also clarify the mechanism and breaking of seed dormancy.

Semester: VI Practical (Paper 6.2) - Plant Physiology

On completion of the practical, students will be able to,

- Perform and handle different physiological experiments & instruments.
- Analyze the concepts of transpiration, photorespiration via conducting experiments.
- Understand plant movements with respect to light and water.