BSC BOTANY MODEL 1

Programme Outcome

The student graduating with the Degree B.Sc Botany should be able to acquire:

Core competency: Students will acquire core competency in the subject Botany, and in allied subject areas. The student will be able to identify major groups of plants and compare the characteristics of lower (e.g. algae and fungi) and higher (angiosperms and gymnosperms) plants. Students will be able to use the evidence based comparative botany approach to explain the evolution of organisms and understand the genetic diversity on the earth. The students will be able to explain various plant processes and functions, metabolism, concepts of gene, genome and how an organism's function is influenced at the cell, tissue and organ level. Students will be able to understand adaptation, development and behavior of different forms of life. The understanding of networked life on earth and tracing the energy pyramids through nutrient flow is expected from the students. Students will be able to demonstrate the experimental techniques and methods of their area of specialization in Botany.

Analytical ability: The students will be able to demonstrate the knowledge in understanding research and addressing practical problems. Application of various scientific methods to address different questions by formulating the hypothesis, data collection and critically analyzing the data to decipher the degree to which their scientific work supports their hypothesis.

Critical Thinking and problem solving ability: An increased understanding of fundamental concepts and their applications of scientific principles is expected at the end of this course. Students will become critical thinkers and acquire problem solving capabilities.

Digitally equipped: Students will acquire digital skills and integrate the fundamental concepts with modern tools.

Ethical and Psychological strengthening: Students will also strengthen their ethical and moral values and shall be able to deal with psychological weaknesses.

Team Player: Students will learn team workmanship in order to serve efficiently institutions, industry and society.

Independent Learner: Apart from the subject specific skills, generic skills, especially in botany, the program outcome would lead to gain knowledge and skills for further higher studies, competitive examinations and employment.

Course Outcome

Course Code	Course Title	Course Outcome	
Semester I			
BO1CRT01	METHODOLOGY OF SCIENCE AND AN INTRODUCTION TO BOTANY	CO1	The specific objectives of this course is to understand the universal nature of science, demonstrate the use of scientific method, impart an insight into the different types of classifications in the living kingdom and appreciate the world of organisms and its course of evolution and diversity.
Semester II			
BO2CRT02	MICROBIOLOGY, MYCOLOGY AND PLANT PATHOLOGY	CO1	During this course student understand the world of microbes, fungi and lichens, appreciate the adaptive strategies of the microbes, fungi and lichens and to study the economic and pathological importance of microorganisms
Semester III			
BO3CRT03	PHYCOLOGY AND BRYOLOGY	CO1	To study the evolutionary importance of Algae as progenitors of land plants, understand the unique and general features Algae and Bryophytes and familiarize it, to study the external morphology, internal structure and reproduction of different types of Algae and Bryophytes and realize the application of Phycology in different fields.
Semester IV			
BO4CRT04	PTERIDOLOGY, GYMNOSPERMS AND PALEOBOTANY	CO1	To understand the diversity in habits, habitats and organization of various groups of plants. The semester helps students to impart an insight into the modern classifications in lower forms of plants and understand the significance of Palaeobotany and its applications.
Semester V			
BO5CRT05	ANATOMY, REPRODUCTIVE BOTANY AND MICROTECHNIQUE	CO1	Imparting an insight into the internal structure and reproduction of the most evolved group of plants, the Angiosperm. Understand the individual cells and also tissues simultaneously Understand the structural adaptations in plants growing in different environments. Understand the morphology and development of reproductive parts. Get an insight into the fruit

			and seed development. Understand the techniques used to preserve and study plant materials.
BO5CRT06	RESEARCH METHODOLOGY, BIOPHYSICS AND BIOSTATISTICS	CO1	To equip the students to conduct independent research and prepare research reports. To make the students acquaint with different tools and techniques used in research work. To equip the students with basic computer skills necessary for conducting research. To enable the students to have enough numerical skills necessary to carry out research.
BO5CRT07	PLANT PHYSIOLOGY AND BIOCHEMISTRY	CO1	Acquire basic knowledge needed for proper understanding of plant functioning. Familiarize with the basic skills and techniques related to plant physiology. Understand the role, structure and importance of the biomolecules associated with plant life.
BO5CRT08	ENVIRONMENTAL SCIENCE AND HUMAN RIGHTS	CO1	Acquaint the student with the significance of Environmental Science. Make the students aware about the extent of the total biodiversity and the importance of their conservation. Help the student to design novel mechanisms for the sustainable utilization of natural resources. Enable the students to understand the structure and function of the ecosystems. Enable the students to understand various kinds of pollution in the environment, their impacts on the ecosystem and their control measures. Make the students aware about various environmental laws in India and the role of various movements in the protection of nature and natural resources.
BO5OPT02	Horticulture and Nursery Management	CO1	Understand the importance of horticulture in human welfare. Understand the propagation and cultural practices of useful vegetable, fruit and garden plants. Understand the impact of modern technologies in biology on horticultural plants. Understand the basic concepts of landscaping and garden designing. Inculcate interest in landscaping, gardening and flower and fruit culture.
Semester VI			
BO6CRT09	GENETICS, PLANT BREEDING AND HORTICULTURE	CO1	Imparting an insight into the principles of heredity Understand the patterns of inheritance in different organisms Understand the inheritance pattern of nuclear and extranuclear genes Understand the methods of crop improvement Understand the importance of horticulture in human welfare Develop skill in gardening technique among students

BO6CRT10	CELL AND MOLECULAR BIOLOGY	CO1	Understand the ultra structure and functioning of cell in the sub-microscopic and molecular level. Get an idea of origin, concept of continuity and complexity of life activities. Familiarization of life processes. Understand the basic and scientific aspect of diversity. Understand the cytological aspects of growth and development. Understand DNA as the basis of heredity and variation.
BO6CRT11	ANGIOSPERM MORPHOLOGY, TAXONOMY AND ECONOMIC BOTANY	CO1	Acquainted with the aims, objectives and significance of taxonomy. Identify the common species of plants growing in Kerala and their systematic position. Develop inductive and deductive reasoning ability. Acquainted with the basic technique in the preparation of herbarium. Familiarizing with the plants having immense economic importance.
BO6CRT12	BIOTECHNOLOGY AND BIOINFORMATICS	CO1	Understand the current developments in the field of Biotechnology and Bioinformatics. Equip the students to carry out plant tissue culture. Introduce the vast repositories of biological data knowledge. Equip to access and analyze the data available in the databases.
BO6PET01	Agribusiness	CO1	Inculcate and impart an idea about the business opportunities in the field of plant sciences. Develop an entrepreneurial mindset and also to stick on to the core subject among the Botany students. Give an idea about the need of sustainable development and organic farming. Harness the opportunities and potentials in the field of ecotourism, processing technology and food sciences.

Programme Specific Outcome

- A student completing the course is able to understand different branches of Botany such as systematics, evolution, ecology, developmental biology, physiology, biochemistry, plant interactions with microbes and insects, morphology, anatomy, reproduction, genetics and molecular biology of various life-forms.
- They become competent enough in various analytical and technical skills related to plant sciences.
- The student completing the course is able to identify various life forms of plants, design and execute experiments related to basic studies on evolution, ecology, developmental biology, physiology, biochemistry, plant interactions with microbes and insects, morphology, anatomy, reproduction, genetics, microbiology, molecular biology, recombinant DNA technology, proteomics and transgenic technology. Students are also familiarized with the use of bioinformatics tools and databases and in the application of statistics to biological data.

- The student completing the course is capable of performing short research projects using various tools and techniques in plant sciences and developing scientific temperament and research attitude.