

B.Sc. Botany
Programme Outcomes (PO's)

PO1. Understanding of Plant Diversity and its importance in the maintenance of ecological balance.

PO2. Students learn to carry out practical work, in the field and in the laboratory, interpreting plant morphology and anatomy, Plant identification, Vegetation analysis techniques.

PO3. Apply the knowledge of basic science, life sciences and fundamental process of plants.

PO4. Apply modern techniques and instruments for Biochemical estimation, Molecular Biology, Biotechnology, Plant Tissue culture experiments, cellular and physiological studies of plants with an understanding of the applications in human life.

PO5. Apply the knowledge gained from the studies for the upliftment of society via addressing health, environmental issues, food scarcity etc.

UNION CHRISTIAN COLLEGE ALUVA

Programme Specific Outcomes (PSO's)

PSO1. Critical evaluation of ideas and arguments by collecting relevant information about the plants, so as to recognize their position in the classification systems and at phylogenetic level.

PSO2. Students will be able to access the primary literature, identify relevant works for a particular topic, and evaluate the scientific content of these works.

PSO3. 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.

PSO4. Students will be able to use the evidence of comparative biology to explain how the theory of evolution offers the only scientific explanation for the unity and diversity of life on earth.

PSO5. Students will be able to explain how Plants function at gene, genome, cellular and tissue level,

PSO6. Students will be able to relate the physical features of the environment to the structure of populations, communities, and ecosystems.

PSO7. 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 Programme
Course Outcome (CO's)**

**Core course 1 Code: BO1CRT01
METHODOLOGY OF SCIENCE AND AN INTRODUCTION TO BOTANY
(Theory 36 hrs; Practical 36 hrs; Credits 2 + 1)**

- CO 1 – To understand the universal nature of science
- CO 2 – To demonstrate the use of scientific method
- CO 3- To lay a strong foundation to the study in Botany
- CO 4 - Impart an insight into the different types of classifications in the living kingdom.
- CO 5- Appreciate the world of organisms and its course of evolution and diversity.
- CO 6- Develop basic skills to study Botany in detail

**Core course 2 Code: BO2CRT02
MICROBIOLOGY, MYCOLOGY AND PLANT PATHOLOGY
(Theory 36 hrs; Practical 36 hrs; Credits 2 + 1)**

- CO 1- Understand the world of microbes, fungi and lichens
- CO 2- Appreciate the adaptive strategies of the microbes, fungi and lichens
- CO 3- To study the economic and pathological importance of microorganisms

**Core course 3 Code: BO3CRT03
PHYCOLOGY AND BRYOLOGY
(Theory 54 hrs; Practical 36 hrs; Credits 3 + 1)**

- CO1- To study the evolutionary importance of Algae as progenitors of land plants
- CO2- Understand the unique and general features Algae and Bryophytes and familiarize it
- CO3- To study the external morphology, internal structure and reproduction of different types of Algae and Bryophytes
- CO4- Realize the application of Phycology in different fields

**Core course 4 Code: BO4CRT04
PTERIDOLOGY, GYMNOSPERMS AND PALEOBOTANY
(Theory 54 hrs; Practical 36 hrs; Credits 3 + 1)**

- CO1- Understand the diversity in habits, habitats and organization of various groups of plants.
- CO2- To impart an insight into the modern classifications in lower forms of plants.
- CO3- Understand the evolutionary trends in Pteridophytes and Gymnosperms.
- CO4- Study the anatomical variations in vascular plants.
- CO5- Understand the significance of Paleobotany and its applications.

Core course 5 Code: BO5CRT05
ANATOMY, REPRODUCTIVE BOTANY AND MICROTECHNIQUE
(Theory 54 hrs; Practical 36 hrs; Credits 3 + 1)

- CO1-** Imparting an insight into the internal structure and reproduction of the most evolved group of plants, the Angiosperm.
- CO2-** Understand the individual cells and also tissues simultaneously
- CO3-** Understand the structural adaptations in plants growing in different environment.
- CO4-** Understand the morphology and development of reproductive parts.
- CO5-** Get an insight in to the fruit and seed development.
- CO6-** Understand the techniques used to preserve and study plant materials.

Core course 6 Code: BO5CRT06
RESEARCH METHODOLOGY, BIOPHYSICS AND BIOSTATISTICS
Theory: 54 hrs; Practical: 45 hrs; Credits: 3 + 1)

- CO1-** To equip the students to conduct independent research and prepare research reports.
- CO2-** To make the students acquaint with different tools and techniques used in research work.
- CO3-** To equip the students with basic computer skills necessary for conducting research.
- CO4-** To enable the students to have enough numerical skills necessary to carry out research.

Core course 7 Code: BO5CRT07
PLANT PHYSIOLOGY AND BIOCHEMISTRY
(Theory 54 hrs; Practical 45 hrs; Credits 3 + 1)

- CO1-** Acquire basic knowledge needed for proper understanding of plant functioning.
- CO2-** Familiarize with the basic skills and techniques related to plant physiology.
- CO3-** Understand the role, structure and importance of the bio molecules associated with plant life.

Core course 8 Code: BO5CRT08
ENVIRONMENTAL SCIENCE AND HUMAN RIGHTS
(Theory 54 hrs; Practical 36 hrs; Credits 3 + 1)

- CO1-** Acquaint the student with the significance of Environmental Science.
- CO2-** Make the students aware about the extent of the total biodiversity and the importance of their conservation.
- CO3-** Help the student to design novel mechanisms for the sustainable utilization of natural resources.
- CO4 -** Enable the students to understand the structure and function of the ecosystems.
- CO5-** Enable the students to understand various kinds of pollution in the environment, their impacts on the ecosystem and their control measures
- CO6-** Make the students aware about various environmental laws in India and the role of various movements in the protection of nature and natural resources.

Open course 2 Code: BO5OPT02
HORTICULTURE AND NURSERY MANAGEMENT
(Theory 72 hrs; Credits 3)

- CO1- Understand the importance of horticulture in human welfare.
- CO2- Understand the propagation and cultural practices of useful vegetable, fruit and garden plants.
- CO3- Understand the impact of modern technologies in biology on horticultural plants.
- CO4- Understand the basic concepts of landscaping and garden designing.
- CO5- Inculcate interest in landscaping, gardening and flower and fruit culture.

Core course 9 Code: BO6CRT09
GENETICS, PLANT BREEDING AND HORTICULTURE
(Theory 54 hrs; Practical 45 hrs; Credits 3 + 1)

- CO1- Imparting an insight into the principles of heredity
- CO2- Understand the patterns of inheritance in different organisms
- CO3- Understand the inheritance pattern of nuclear and extra nuclear genes
- CO4- Understand the methods of crop improvement
- CO5- Understand the importance of horticulture in human welfare
- CO6- Develop skill in gardening technique among students

Core course 10 Code: BO6CRT10
CELL AND MOLECULAR BIOLOGY
(Theory 54 hrs; Practical 36 hrs; Credits 3 + 1)

- CO1- Understand the ultra structure and functioning of cell in the sub-microscopic and molecular level.
- CO2- Get an idea of origin, concept of continuity and complexity of life activities.
- CO3- Familiarization of life processes.
- CO4- Understand the basic and scientific aspect of diversity.
- CO5- Understand the cytological aspects of growth and development.
- CO6- Understand DNA as the basis of heredity and variation.

Core course 11 Code: BO6CRT11
ANGIOSPERM MORPHOLOGY, TAXONOMY AND ECONOMIC BOTANY
(Theory 72 hrs; Practical 45 hrs; Credits 3 + 1)

- CO1- Acquaint with the aims, objectives and significance of taxonomy.
- CO2- Identify the common species of plants growing in Kerala and their systematic position.
- CO3- Develop inductive and deductive reasoning ability.
- CO4- Acquaint with the basic technique in the preparation of herbarium.
- CO5- Familiarizing with the plants having immense economic importance.

Core course 12 Code: BO6CRT12
BIOTECHNOLOGY AND BIOINFORMATICS
(Theory 54 hrs; Practical 36 hrs; Credits 3 + 1)

- CO1-** Understand the current developments in the field of Biotechnology and Bioinformatics.
- CO2-** Equip the students to carry out plant tissue culture.
- CO3-** Introduce the vast repositories of biological data knowledge.
- CO4-** Equip to access and analyze the data available in the databases.

Programme elective course 2 Code: BO6PET02
PLANT GENETIC RESOURCES MANAGEMENT
(Theory 54 hours; Credit 3)

- CO1-** Acquaint the student with the history and evolution of crop plants, and their diversity.
- CO2-** Familiarize the student with the available plant genetic wealth and the measures adopted for the conservation of these resources.
- CO3-** Help the student to identify the crop plants and their wild relatives.
- CO4-** Help the student to explore the potentialities of various underutilized plants to project as the future food prospects.
- CO5-** Understand the significance of modern technology to locate the distribution of endangered species.

Complementary course 1 Code: BO1CMT01
CRYPTOGAMS, GYMNOSPERMS AND PLANT PATHOLOGY
(Theory 36 hrs; Practical 36 hrs; Credits 2 + 1)

- CO1-** Acquire fundamental knowledge in plant science and to make the student to understand that Botany is an integral part of the human life and developments.
- CO2-** Foster and encourage an attitude of curiosity, appreciation and enquiry of various life forms of plants.
- CO3-** Understand the identifying characters of the different types included in the syllabus.
- CO4-** Understand the diversity of plants with respect to Algae, Fungi, Lichens, Bryophytes, Pteridophytes and Gymnosperms.

Complementary course 2 Code: BO2CMT02
PLANT PHYSIOLOGY
(Theory 36 hrs; Practical 36 hrs; Credits 2 + 1)

- CO1-** Make the students realize the importance of all physiological processes which take place in plants.
- CO2-** Understand the mechanism of various physiological processes related to plant life.

Complementary course 3 Code: BO3CMT03
ANGIOSPERM TAXONOMY AND ECONOMIC BOTANY
(Theory 54 hrs; Practical 36 hrs; Credits 3 + 1)

- CO1-** Acquaint the student with the objectives and components of Taxonomy.
- CO2-** Help the student to understand the systems of classification of angiosperms.
- CO3-** Help the student to identify the common angiosperm species of Kerala.
- CO4-** Familiarize the student with plants of immense economic importance.

Complementary course 4 Code: BO4CMT04
ANATOMY AND APPLIED BOTANY
(Theory 54 hrs; Practical 36 hrs; Credits 3 + 1)

- CO1-** Understand different types of plant tissues.
- CO2-** Understand the internal structure of different plant organs with reference to their functions.
- CO3-** Understand the process of normal and anomalous secondary thickening in plants.
- CO4-** Know the morphological and anatomical adaptations of plants growing in different habitats.
- CO5-** Understand how botanical knowledge could be applied for crop improvement.