



St. Albert's College (Autonomous)

An initiative of Archdiocese of Verapoly

Affiliated to Mahatma Gandhi University, Kottayam

(Accredited with "A" Grade by NAAC)

Programme Outcomes

Programme Specific Outcomes

Course Outcomes

Department of Botany

B.Sc. Botany (2016 Onwards)

Programme Outcomes

PO1. Knowledge and understanding of:

- ❖ The range of plant diversity in terms of structure, function and environmental relationships.
- ❖ Plant classification and the flora of Kochi, Kerala vs India and the World.
- ❖ Statistics as applied to biological data.
- ❖ Basic life science and fundamental process of plants and analyze any plant form.

PO2. Intellectual skills – able to:

- ❖ Assimilate knowledge and ideas based on wide reading, through books, journals, internet etc.
- ❖ Transfer of appropriate knowledge and methods from one topic to another within the subject.
- ❖ Construct and test hypothesis.
- ❖ Plan, conduct and write a report on an independent term project.

PO3. Practical skills in:

Students learn to carry out practical work, in the field and in the laboratory, with minimal risk. They gain introductory experience in applying each of the following skills and gain greater proficiency in a selection of them depending on their choice of optional modules.

- ❖ Interpreting plant morphology and anatomy and plant identification.
- ❖ Mastery of vegetation analysis techniques.
- ❖ A range of physiochemical analyses of plant materials in the context of plant physiology and biochemistry.
- ❖ Analyze data using appropriate statistical methods and computer packages.

PO4. Transferable skills in:

- ❖ Use of IT (word-processing, use of internet, statistical packages and databases).
- ❖ Ability to work as part of a team and communication of scientific ideas in writing and oral presentation
- ❖ Ability to use library resources and time management.
- ❖ Career planning and local resource management in terms of plants

PO5. Design/development of solutions in investigation and management of complex problems:

Design solutions from various requirements of the societal for problems like environmental degradation, disorders and disease of human beings etc. and chalk out appropriate remedial measures.

Use research-based knowledge and research methods including design of experiments, analysis and interpretation of data, and development of the information to provide valid conclusions.

PO6. Modern tool usage:

Create, select, and apply appropriate techniques, resources, and modern instruments and equipments for biochemical estimation, molecular biology, biotechnology, plant tissue culture experiments, cellular and physiological activities of plants with an understanding of the application and limitations.

PO7. The Botanist and Society:

Apply reasoning informed by the contextual knowledge to assess plant diversity, its importance for society, health, safety, legal and environmental issues and the consequent responsibilities relevant to the biodiversity conservation practice.

PO8. Environment and sustainability and ethics:

Understand the impact of the plant diversity in societal and environmental contexts, and demonstrate the knowledge of, and need for sustainable development with a right insight to apply ethical principles and commit to environmental ethics and responsibilities and formulate norms for biodiversity conservation.

PO 9. Project management and finance:

Demonstrate knowledge and understanding of the engineering and management principles and apply these to one's own work, as a member and leader in a team, to manage projects and in multidisciplinary environments.

PO10. Life-long learning:

Recognize the need for, and have the preparation and ability to engage in independent and life-long learning in the broadest context of technological change.

Programme specific objectives (PSOs)

On successful completion of the program the students will be able to-

- ❖ Demonstrate a scientific attitude to be open-minded, critical and curious.
- ❖ Able to understand the biodiversity of plants and explain basis plant of life, reproduction and their survival in nature.

- ❖ Demonstrate a good understanding on right laboratory practices and safety.
- ❖ Explain the various life processes of plants and the genetic basis of heredity.
- ❖ Develop a drive to experiment with various plant breeding and nursery techniques.
- ❖ Be made ready with a dynamic urge to pursue life as agri-based micro-entrepreneurs with an ability to work hard and be more useful for society.

Course Objectives

BOT1CRT01: Methodology and Perspectives of Science & An Introduction to the World of Plant Diversity

- ❖ Understand the methodologies followed in science.
- ❖ Get an idea of the plant diversity by learning about the major groups of plants and their key features.
- ❖ Understand the evolutionary trends in plant world.

BOT2CRT01: General Informatics and Methodologies in Plant Sciences

- ❖ Understand the use and relevance of information technology.
- ❖ Get an introduction to the basic tools used in computers.
- ❖ Understand the important techniques and chemicals used in microtechnique.
- ❖ Get an introductory idea of research by familiarising with basic instruments and statistical tools.

BOT3CRT01: Microbiology and Phycology

- ❖ Understand the world of microbes
- ❖ Understand the identifying characters of the lower groups of plants
- ❖ Have an idea on diverse groups of plants
- ❖ Understand the application of microbiology in different fields.

BOT4CRT01: Anatomy and Reproductive Botany of Angiosperms

- ❖ Impart an insight into the internal structure and reproduction of the most evolved group of plants, the Angiosperm.
- ❖ Identifies role of anatomy in solving taxonomic and phylogenetic problems.
- ❖ Understand the structural adaptations in plants growing in different environment.
- ❖ Understand the life cycle pattern of Angiosperms.
- ❖ Understand the morphology and development of reproductive parts.
- ❖ Get an insight in to the fruit and seed development.

BOT5CRT01: Mycology, Lichenology and Plant Pathology

- ❖ Understand the diversity of fungal and lichen world and its significance.
- ❖ Understand the various plant diseases and their impact on agriculture.
- ❖ Familiarize with the various measures adopted to control plant diseases

BOT5CRT02: Environmental Science and Ecotourism

- ❖ Acquaint the student with the significance of Environmental Science.
- ❖ Help the students to understand the extent, limitations and depletion of natural resources
- ❖ Help the student to design novel mechanism for the sustainable utilization of natural resources.
- ❖ Enable the students to understand the structure and function of the Ecosystems
- ❖ Make the students to identify the nature and interactions of populations in the ecosystem
- ❖ 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 the nature and structure of various environmental laws in India
- ❖ Make the students aware about the role of various movements in the protection of nature and natural resources.
- ❖ Make the students aware about the extent of the total biodiversity and their conservation.
- ❖ Make the students to assess the positive and negative impacts of Ecotourism and its role in the sustainable utilization of resources for tourism.

BOT5CRT03: Genetics, Plant Breeding and Horticulture

- ❖ Understand the basic principles of heredity
- ❖ Understand the inheritance pattern of nuclear and extra nuclear genes
- ❖ Understand the methods of crop improvement
- ❖ Understand the importance of horticulture in human welfare

BOT5CRT04: Cell Molecular Biology and Evolution

- ❖ Understand the Ultra structure and functioning of cell in the submicroscopic and molecular level.
- ❖ Get an idea of origin, concept of continuity and complexity of life activities.
- ❖ Familiarization of life process.
- ❖ 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.
- ❖ Understand the concept of evolution as the basis of biodiversity.

OPEN COURSE BOT5COT01: Agribased Microenterprises

- ❖ Have basic information about the business opportunities in plant sciences.
- ❖ Inform the student about sustainable agriculture and organic farming.
- ❖ Inculcate an enthusiasm and awareness about ornamental gardening, nursery management and mushroom cultivation.

BOT6CRT01: Plant Physiology and Biochemistry

- ❖ Understand the basic principles related to various physiological functions in plant life.
- ❖ Familiarize with the basic skills and techniques related to plant physiology.
- ❖ Understand the role, structure and importance of the bio molecules associated with plant life.
- ❖ Familiarize with the recent trends in the field of plant physiology.
- ❖ Familiarize with applied aspects of plant physiology in other fields like agriculture.

BOT6CRT02: Bryology, Pteridology, Gymnosperms & Paleobotany

- ❖ Understand the diversity in habits, habitats and organization of various groups of plants.
- ❖ Understand the evolutionary trends in plants.
- ❖ Identify the anatomical variations in lower groups of plants.
- 4. Understand the significance of Paleobotany.

BOT6CRT03: Angiosperm Morphology, Systematic Botany and Economic Botany

- ❖ Acquaint 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.
- ❖ Acquaint with the basic technique in the preparation of herbarium.
- ❖ Familiarizing with the plants having immense economic importance.

BOT6CRT04: Biotechnology and Bioinformatics

- ❖ Familiarize with the fundamental principles of biotechnology, various developments in biotechnology and potential applications.
- ❖ Make aware that the life forms and activities can be exploited for human advancement.
- ❖ Impart an introductory knowledge about bio informatics to the students.
- ❖ Use of computers to handle biological data base.

Core Course Choice Based - BOT6CBT01: AGRIBUSINESS

- ❖ 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.

COMPLEMENTARY COURSE

BOT1CMT01: Cryptogams, Gymnosperms and Plant Pathology

- ❖ 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.
- ❖ Foster and encourage an attitude of curiosity, appreciation and enquiry of various life forms of plants
- ❖ Understand the indentifying characters of the different types included in the syllabus
- ❖ Understand the diversity of microbes and plants with respect to Viruses, Bacteria, Algae, Fungi, Lichens, Bryophytes, Pteridophytes and Gymnosperms

BOT2CMT01: Plant Physiology

- ❖ Understand the mechanism of various physiological processes related to plant life.

BOT3CMT01: Angiosperm Taxonomy and Economic Botany

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

BOT4CMT01: Anatomy and Applied Botany

- ❖ Understand different types of plant tissues.
- ❖ Understand the internal structure of different plant organs with reference to their functions.
- ❖ Understand the process of normal and anomalous secondary thickening in plants.
- ❖ Know the morphological and anatomical adaptations of plants growing in different habitats.
- ❖ Understand the applications of botanical knowledge in the field of crop improvement for human prosperity.