

## **B.Sc Botany**

### **Programme Outcomes**

Undergraduate Botany course offered by Department of Botany, Nirmala College, Muvattupuzha follows the syllabus prescribed by M.G. university, Kottayam. The course is combination of general and specialised education, simultaneously introducing the concepts of breadth and depth in learning. It also stresses learning to learn rather than learning of specific lessons. The attempt is to prepare the students for lifelong learning by drawing attention to the vast world of knowledge of plants and introducing him/her to the methodology of systematic academic enquiry. With this in mind, we aim to provide a firm foundation in every aspect of Botany and to explain a broad spectrum of modern trends in Botany and to develop experimental, observational, computational skills also which lead him as an ambassador of sustainable development of our country.

1. Know the importance and scope of the discipline
2. Inculcate interest in and love of nature with its myriad living forms
3. Impart knowledge of Science as the basic objective of Education
4. Develop a scientific attitude to make students open minded, critical and curious
5. Develop an ability to work on their own and to make them fit for the society
6. Expose themselves to the diversity amongst life forms
7. To develop skill in practical work, experiments, equipments and laboratory use along with collection and interpretation of biological materials and data
8. Make aware of natural resources and environment and the importance of conserving it.
9. Develop ability for the application of the acquired knowledge in the fields of life so as to make our country self reliant and self sufficient
10. Appreciate and apply ethical principles to biological science research and studies.

## Course Outcomes

### **SEMESTER I, Core Course 1 BO1CRT01**

#### **METHODOLOGY OF SCIENCE AND AN INTRODUCTION TO BOTANY**

By completing this course student would have understood the universal nature of science

§ Able to understand the use scientific method in the experimentation

§ develop a strong foundation in the area of plant science

§ Would be able to classify the organisms present in the living kingdom according to their character

§ They would develop a culture to appreciate the world of organisms and its course of evolution and diversity.

§ Develop basic skills to study the subject Botany in a systematic and detailed manner

### **SEMESTER II Course 2 BO2CRT02**

#### **MICROBIOLOGY, MYCOLOGY AND PLANT PATHOLOGY**

By completing this course student would be able to understand the world of microbes, fungi and lichens and they will appreciate the adaptive strategies of the microbes, fungi and lichens. It also helps to understand the economic and pathological importance of microorganisms

### **Semester III Course-3 B03CRT03**

#### **PHYCOLOGY AND BRYOLOGY**

By completing this course each student would be able to recognize the evolutionary importance of algae leads to the development of land plants. They will familiarize the general characters of algae and bryophytes and would be able to identify them and they also get a clear picture about the morphology, internal structure and reproduction of different types of algae and bryophytes.

### **Semester IV Course-4 B04CRT04**

#### **PTERIDOLOGY, GYMNOSPERMS AND PALEOBOTANY**

By completing this course student would be able to understand the diversity in habits, habitats and organization of various groups of plants and an insight would be developing among students into the modern classifications in lower forms of plants. Imparting this course would also help to understand the evolutionary trends in Pteridophytes and Gymnosperms. Students would be able to recognize the variations in the anatomical characters of vascular plants. They also understand the significance of Paleobotany and its applications

### **Semester V Course-5 B05CRT05**

#### **ANATOMY, REPRODUCTIVE BOTANY AND MICROTECHNIQUE**

By completing this course student would be able to distinguish the internal structure of most evolved groups of plants, Angiosperms and also be able to understand the different reproductive methods in the Angiosperm. They would be able to understand the individual cells and also tissues simultaneously. Students would understand the structural adaptations in plants growing in different environment and understand the morphology and development of reproductive parts. They recognize the way of fruit and seed development and clear knowledge would develop to preserve and study plant materials.

**Semester V                      Course 6                      B05CRT06**  
**RESEARCH METHODOLOGY, BIOPHYSICS AND BIOSTATISTICS**

The aim of the course is to acquaint the students about various techniques in research and develop and research aptitude. The course also envisages to prepare the students for conducting independent research work (dissertation work) in the next semester and enable them to prepare research reports. The course of also envisages acquaint with different tools and techniques used in research work. □ To equip the students with basic computer skills necessary for conducting research. By including biostatistics, the course aims to enable the students to have handle numerical data and carry out accurate mathematical/statistical evaluation of results.

**Semester V                      Course 7                      B05CRT07**  
**PLANT PHYSIOLOGY AND BIOCHEMISTRY**

To development an understanding about 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.

**Semester V      Course 8      B05CRT07**  
**ENVIRONMENTAL SCIENCE AND HUMAN RIGHTS**

The aim of this course is to 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. The course with its human right component aims to impart and understanding of the rights and duties of the students towards society.

**Semester V      Open Course 1      B05OPT01**  
**AGRI-BASED MICRO-ENTERPRISES**

The course aims to provide basic information about the business opportunities in plant sciences. The course also aims to provide information about sustainable agriculture and organic farming.

The course also aims to acquaint the learner with the benefits and opportunities in pursuing organic and sustainable farming techniques. Inculcate an enthusiasm and awareness about ornamental gardening, nursery management and mushroom cultivation

**Semester VI Course 9 B05CR509**

**GENETICS, PLANT BREEDING AND HORTICULTURE**

The aim of the course is to impart a basic understanding about 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.

**Semester VI Course 10 B05CRT10**

**CELL AND MOLECULAR BIOLOGY**

The course aims to develop and understanding 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.

**Semester VI Course 11 B06CRT11**

**ANGIOSPERM MORPHOLOGY, TAXONOMY 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 7 with the plants having immense economic importance.

**Semester VI Course 12 B06CRT12**

**BIOTECHNOLOGY AND BIOINFORMATICS**

The course aims to develop an understanding about the development of the branch of biological science and its links to various other branches of Science. The course envisages to inculcate the learner about the immense potential of various techniques and processes in Biotechnology. The course also envisages to impart and develop an understanding of the current developments in the field of Biotechnology and Bioinformatics. The course also aims to equip the students with necessary skill sets to carry out plant tissue culture. The course also aims to introduce the vast repositories of biological data knowledge. Equip to access and analyze the data available in the database