

DEVA MATHA COLLEGE, KURAVILANGAD

B. Sc. BOTANY

Course outcome

Sl. No	Core/ Complementary	Course	Course outcome
1	Core	Methodology of Science and an Introduction to Botany	<p>Understand the universal nature of science</p> <ul style="list-style-type: none"> ▪ Demonstrate the use of scientific method ▪ To lay a strong foundation to the study in Botany ▪ Impart an insight into the different types of classifications in the living kingdom. ▪ Appreciate the world of organisms and its course of evolution and diversity. ▪ Develop basic skills to study Botany in detail.
2	Core	Microbiology, Mycology and Plant Pathology	<p>Understand the world of microbes, fungi and lichens</p> <ul style="list-style-type: none"> ▪ Appreciate the adaptive strategies of the microbes, fungi and lichens ▪ To study the economic and pathological importance of microorganisms
3	Core	Phycology and Bryology	<ul style="list-style-type: none"> ▪ 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 ▪ Realize the application of Phycology in different fields
4	Core	Pteridology, Gymnosperms and Paleobotany	<ul style="list-style-type: none"> ▪ Understand the diversity in habits, habitats and organization of various groups of plants. ▪ To impart an insight into the modern classifications in lower forms of plants. ▪ Understand the evolutionary trends in Pteridophytes and Gymnosperms. ▪ Study the anatomical variations in vascular plants. ▪ Understand the significance of Paleobotany and its applications.
5	Core	Anatomy, Reproductive Botany, Microtechnique	<ul style="list-style-type: none"> ▪ Imparting an insight into the internal structure and reproduction of the most evolved group of plants, the Angiosperm.

			<ul style="list-style-type: none"> ▪ Understand the individual cells and also tissues simultaneously ▪ Understand the structural adaptations in plants growing in different environment. ▪ Understand the morphology and development of reproductive parts. ▪ Get an insight in to the fruit and seed development. ▪ Understand the techniques used to preserve and study plant materials.
6	Core	Research methodology, Biophysics and Biostatistics	<ul style="list-style-type: none"> ▪ 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.
7	Core	Plant Physiology and Biochemistry	<ul style="list-style-type: none"> ▪ 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 bio molecules associated with plant life.
8	Core	Environmental sciences and Human Rights	<ul style="list-style-type: none"> ▪ 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.
9	Core	Genetics, Plant Breeding and Horticulture	<ul style="list-style-type: none"> ▪ Imparting an insight into the principles of heredity ▪ Understand the patterns of inheritance in different organisms ▪ Understand the inheritance pattern of nuclear and extra nuclear genes ▪ Understand the methods of crop improvement

			<ul style="list-style-type: none"> ▪ Understand the importance of horticulture in human welfare ▪ Develop skill in gardening technique among students
10	Core	Cell and Molecular Biology	<ul style="list-style-type: none"> ▪ 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.
11	Core	Angiosperm morphology, Taxonomy and Economic Botany	<ul style="list-style-type: none"> ▪ 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.
12	Core	Biotechnology and Bioinformatics	<ul style="list-style-type: none"> ▪ 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.
13	Core	Plant Genetic Resources Management	<ul style="list-style-type: none"> ▪ Acquaint the student with the history and evolution of crop plants, and their diversity. ▪ Familiarize the student with the available plant genetic wealth and the measures adopted for the conservation of these resources. ▪ Help the student to identify the crop plants and their wild relatives. ▪ Help the student to explore the potentialities of various underutilized plants to project as the future food prospects. ▪ Understand the significance of modern technology to locate the distribution of endangered species.

14	Complementary	Cryptogams, Gymnosperms and Plant Pathology	<ul style="list-style-type: none"> ▪ 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 identifying characters of the different types included in the syllabus. ▪ Understand the diversity of plants with respect to Algae, Fungi, Lichens, Bryophytes, Pteridophytes and Gymnosperms.
15	Complementary	Plant Physiology	<ul style="list-style-type: none"> ▪ Make the students realize the importance of all physiological processes which take place in plants. ▪ Understand the mechanism of various physiological processes related to plant life.
16	Complementary	Angiosperm Taxonomy and Economic Botany	<ul style="list-style-type: none"> ▪ 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.
17	Complementary	Anatomy and Applied Botany	<ul style="list-style-type: none"> ▪ 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 how botanical knowledge could be applied for crop improvement.
18	Open course	Agri-based microenterprises	<ul style="list-style-type: none"> ▪ Provide 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.

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B. Sc. BOTANY –PROGRAMME OUTCOMES

Sl. No	Category	Outcome
1	Knowledge and understanding of	<ol style="list-style-type: none">1. The range of plant diversity in terms of structure, function and environmental relationships.2. The evaluation of plant diversity.3. Plant classification and the flora of Kerala.4. The role of plants in the functioning of the global ecosystem.5. A selection of more specialized, optional topics.6. Statistics as applied to biological data.
2	Intellectual skills – able to	<ol style="list-style-type: none">1. Think logically and organize tasks into a structured form.2. Assimilate knowledge and ideas based on wide reading and through the internet.3. Transfer of appropriate knowledge and methods from one topic to another within the subject.4. Understand the evolving state of knowledge in a rapidly developing field.5. Construct and test hypothesis.6. Plan, conduct and write a report on an independent term project.
3	<u>Practical skills:</u> 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.	<ol style="list-style-type: none">1. Interpreting plant morphology and anatomy.2. Plant identification.3. Vegetation analysis techniques.4. A range of physiochemical analyses of plant materials in the context of plant physiology and biochemistry.5. Analyze data using appropriate statistical methods and computer packages.6. Plant pathology to be added for sharing of field and lab data obtained.
4	Transferable skills	<ol style="list-style-type: none">1. Use of IT (word-processing, use of internet etc.).2. Communication of scientific ideas in writing and orally.3. Ability to work as part of a team.4. Ability to use library resources.5. Time management.6. Career planning.
5	Scientific Knowledge	<ol style="list-style-type: none">1. Apply the knowledge of basic science, life sciences and fundamental process of plants to study and analyze any plant form.
6	Problem analysis	<ol style="list-style-type: none">1. Identify the taxonomic position of plants, formulate the research literature, and analyze non reported plants with substantiated conclusions using first principles and methods of nomenclature and classification in Botany.
7	Design/development of solutions	<ol style="list-style-type: none">1. Design solutions from medicinal plants for health problems, disorders and disease of human beings and estimate the phytochemical content of plants which meet the specified needs to appropriate consideration for the public health

8	Modern tool usage	1. 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.
9	The Botanist and society	1. 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.
10	Environment and sustainability	1. Understand the impact of the plant diversity in societal and environmental contexts, and demonstrate the knowledge of, and need for sustainable development.
11	Ethics	1. Apply ethical principles and commit to environmental ethics and responsibilities and norms of the biodiversity conservation.
12	Individual and team work	1. Function effectively as an individual, and as a member or leader in diverse teams, and in multidisciplinary settings.
13	Life-long learning	1. 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.
14	Conduct investigations of complex problems	1. 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.