St.George's College *Aruvithura*

Estd. 1965

OBE HANDBOOK

LEARNING OUTCOMES

PO, PSO &CO

DEPARTMENT OF BOTANY

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PROGRAMME OUTCOMES

On completion of the BSc Botany Programme, the students are expected to achieve the following outcomes

PO 1	Effective Communication – Speak, read, write and listen clearly in person and through electronic media in English and in one Indian language, and make meaning of the world by connecting people, ideas, books, media and technology
PO 2	Self-directed and Lifelong Learning – Acquire the ability to engage in independent and life-long learning in the broadest context socio-technological changes
PO 3	Effective Social Interaction – Elicit views of others, mediate disagreements and help reach conclusions in group settings
PO 4	Evaluative Thinking – Take informed actions after identifying the assumptions that frame our thinking and actions, checking out the degree to which these assumptions are accurate and valid, and looking at our ideas and decisions (intellectual, organizational, and personal) from different perspectives
PO 5	Ideal Citizenship – Demonstrate empathetic social concern and equity centred national development, and the ability to act with an informed awareness of issues and participate in civic life through volunteering
PO 6	Ethics – Recognize different value systems including your own, understand the moral dimensions of your decisions, and accept responsibility for them
PO7	Environment and Sustainability – Understand the issues environmental contexts and sustainable development
PO 8	Digital Knowledge System – Adequate training in the application of digital knowledge in higher education and workplace

BSC BOTANY: PROGRAM SPECIFIC OUTCOMES

PSO 1	Evaluate a flora and recognize its members position in the predominant classification systems and at phylogenetic level.
PSO 2	Apply 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.
PSO 3	Analyse ecological health parameters of a locality
PSO 4	Explain how Plants function at gene, genome, cellular and tissue, tissue system and Physiological level
PSO 4	Conduct review of literature, identify relevant works for a particular topic, and evaluate the scientific content of these works

Course Outcomes

Semester I

BO1CRT01:- METHODOLOGY OF SCIENCE AND AN INTRODUCTION TO BOTANY

CO1: Develop insight into the different types of classifications in the living kingdom,

CO2: Appreciate the world of organisms and its course of evolution and diversity.

CO3: Familiarise the Philosophy and approaches behind modern scientific research

CO4: Improve research methodology related to botany

CO5: Explain the biodiversity on earth through principles of evolution

BO2CRP01:- METHODOLOGY OF SCIENCE AND AN INTRODUCTION TO BOTANY & MICROBIOLOGY, MYCOLOGY AND PLANT PATHOLOGY (Practical)

CO1: Develop insight into the different types of classifications in the living kingdom,

CO2:- Appreciate the world of organisms and its course of evolution and diversity.

CO3: Improve research methodolgy related to botany

CO4: Understand scientific writing for publication of research data

CO5: Explain evolution of plants on earth

CO6: Understand the world of microbes, fungi and lichens,

CO7: Appreciate the adaptive strategies of the microbes, fungi and lichens

CO8: Explain classification of fungus

CO9: Understand the economic and pathological importance of microorganisms

Semester II

BO2CRT02:- MICROBIOLOGY, MYCOLOGY AND PLANT PATHOLOGY

CO1: Understand the world of microbes, fungi and lichens

CO2: Appreciate the adaptive strategies of the microbes, fungi and lichens

CO3: Explain classification of fungus

CO4: Understand the economic and pathological importance of microorganisms

BO2CRP01:- METHODOLOGY OF SCIENCE AND AN INTRODUCTION TO BOTANY & MICROBIOLOGY, MYCOLOGY AND PLANT PATHOLOGY (Practical)

CO1: Develop insight into the different types of classifications in the living kingdom,

CO2:- Appreciate the world of organisms and its course of evolution and diversity.

CO3: Improve research methodolgy related to botany

CO4: Understand scientific writing for publication of research data

CO5: Explain evolution of plants on earth

CO6: Understand the world of microbes, fungi and lichens,

CO7: Appreciate the adaptive strategies of the microbes, fungi and lichens

CO8: Explain classification of fungus

CO9: Understand the economic and pathological importance of microorganisms

Semester III

BO3CRT03:- Phycology and Bryology

CO1: Explore the evolutionary importance of Algae as progenitors of land plants

CO2: Realize the application of Phycology in different fields

CO3: Understand the unique and general features Algae and Bryophytes and familiarize it

CO4: Explain external morphology, internal structure and reproduction of different types of Algae and Bryophytes

BO4CRP02:- PHYCOLOGY AND BRYOLOGY & PTERIDOLOGY, GYMNOSPERMS AND PALAEOBOTANY (Practical)

CO1: Explore the evolutionary importance of Algae as progenitors of land plants

CO2: Realize the application of Phycology in different fields

CO3: Understand the unique and general features Algae and Bryophytes and familiarize it

CO4: Explain external morphology, internal structure and reproduction of different types of Algae and Bryophytes

CO5: Understand the diversity in habits, habitats and organization of various groups of plants

CO6: Explain modern classifications in lower forms of plants, to understand the evolutionary trends in Pteridophytes and Gymnosperms

CO7: Describe anatomical variations in vascular plants

CO8: Understand the significance of Paleobotany and its applications.

Semester IV

BO4CRT04:- PTERIDOLOGY, GYMNOSPERMS AND PALAEOBOTANY

CO1: Understand Evolution of vascular plants from non vascular plants

CO2: Understand the diversity in habits, habitats and organization of various groups of plants.

CO3: Explain modern classifications in lower forms of plants, to understand the evolutionary trends in Pteridophytes and Gymnosperms

CO4: Describe anatomical variations in vascular plants

CO5: Understand the significance of Paleobotany and its applications.

BO4CRP02:- PHYCOLOGY AND BRYOLOGY & PTERIDOLOGY, GYMNOSPERMS AND PALAEOBOTANY

CO1: Explore the evolutionary importance of Algae as progenitors of land plants

CO2: Realize the application of Phycology in different fields

CO3: Understand the unique and general features Algae and Bryophytes and familiarize it

CO4: Explain external morphology, internal structure and reproduction of different types of Algae and Bryophytes

CO5: Understand the diversity in habits, habitats and organization of various groups of plan

CO6: Explain modern classifications in lower forms of plants, to understand the evolutionary trends in Pteridophytes and Gymnosperms

CO7: Describe anatomical variations in vascular plants

CO8: Understand the significance of Paleobotany and its applications.

Semester V

BO5CRT05:- Anatomy, Reproductive Botany and Micro technique

CO1: Develop an insight into the internal structure and reproduction of the most evolved group of plants, the Angiosperm.

CO2: Understand the structural adaptations in plants growing in different environment,

CO3: Understand the morphology and development of reproductive parts, get an insight in to the fruit and seed development,

CO4: Explain techniques used to preserve and study plant materials.

BO5CRT05: RESEARCH METHODOLOGY, BIOPHYSICS AND BIOSTATISTICS

CO1: Apply methods to conduct independent research and prepare research reports,research.

CO2: Explain different tools and techniques used in research work

CO3: Undersatnd separation of biomolecules

CO4: Enable the students to have enough numerical skills necessary to carry out

BO5CRT07: PLANT PHYSIOLOGY AND BIOCHEMISTRY

CO1: Explain basic knowledge needed for proper understanding of plant functioning,

CO2: Develop the basic skills and techniques related to plant physiology,

CO3: Understand the role, structure and importance of the bio molecules associated with plant life.

BO5CRT08: ENVIRONMENTAL SCIENCE AND HUMAN RIGHTS

CO1: Explain significance of environmental Science.

CO2: Understand the extent of the total biodiversity and the importance of their conservation,

CO3: Design novel mechanisms for the sustainable utilization of natural resources,

CO4: Understand various kinds of pollution in the environment, their impacts on the ecosystem and their control measures,

CO5: Understand the structure and function of the ecosystems

BO5OPT02: HORTICULTURE AND NURSERY MANAGEMENT

CO1:Explain importance of horticulture in human welfare, the propagation and cultural practices of useful vegetable, fruits,

CO2: Understand the impact of modern technologies in biology on horticultural, the basic concepts of landscaping

CO3: Develop skills for plant propagation

CO4: Inculcate interest in landscaping, gardening and flower and fruit culture.

B06CRP03:- ANATOMY, REPRODUCTIVE BOTANY AND MICROTECHNIQUE & GENETICS, PLANT BREEDING AND HORTICULTURE (Practical)

CO1: Develop 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, get an insight in to the fruit and seed development

CO5: Explain techniques used to preserve and study plant materials.

CO6: Understand the patterns of inheritance in different organisms at nuclear and extra nuclear level

CO7: Familiarize skill in gardening technique among students.

CO8: Understand the importance of horticulture in human welfare

CO9: Understand the methods of crop improvement.

B06CRP04:- PLANT PHYSIOLOGY AND BIOCHEMISTRY & CELL AND MOLECULAR BIOLOGY (Practical)

CO1: Explain basic knowledge needed for proper understanding of plant functioning,

CO2: Develop the basic skills and techniques related to plant physiology,

CO3: Understand the role, structure and importance of the bio molecules associated with plant life.

CO4: Explain the ultra structure and functioning of cell in the sub-microscopic and molecular level

CO5: Explain origin, concept of continuity and complexity of life activities.

CO6: Familiarize life processes and understand DNA as the basis of heredity and variation.

CO7: Understand the basic and scientific aspect of diversity.

CO8: Understand the cytological aspects of growth and development.

B06CRP06:- RESEARCH METHODOLOGY, BIOPHYSICS AND BIOSTATISTICS & ANGIOSPERM MORPHOLOGY, TAXONOMY AND ECONOMIC BOTANY (Practical)

CO1: Apply methods to conduct independent research and prepare research reports,research.

CO2: Explain different tools and techniques used in research work

CO3: Undersatnd separation of biomolecules

CO4: Enable the students to have enough numerical skills necessary to carry out Reserch

CO5: Acquaint with the aims, objectives and significance of taxonomy.

CO6: Identify the common species of plants growing in Kerala and their systematic position.

CO7: Develop inductive and deductive reasoning ability.

CO8: Acquaint with the basic technique in the preparation of herbarium.

CO9: Familiarizing with the plants having immense economic importance.

B06CRP05:-ENVIRONMENTAL SCIENCE AND HUMAN RIGHTS & BIOTECHNOLOGY AND BIOINFORMATICS (Practical)

CO1: Explain significance of environmental Science

CO2: Understand the extent of the total biodiversity and the importance of their conservation,

CO3: Design novel mechanisms for the sustainable utilization of natural resources,

CO4: Understand various kinds of pollution in the environment, their impacts on the ecosystem and their control measures,

CO5: Understand the structure and function of the ecosystems

CO6: Understand the current developments in the field of Biotechnology and Bioinformatics,

CO7: Explain plant tissue culture

CO8: Understand the vast repositories of biological data knowledge

CO9: Familiarize to access and analyze the data available in the databases.

BO5OPT02:- OPEN COUESE: Horticulture and Nursery Management

CO1: Explain importance of horticulture in human welfare, the propagation and cultural practices of useful vegetable, fruits,

CO2: Understand the impact of modern technologies in biology on horticultural, the basic concepts of landscaping

CO3: Develop skills for plant propagation

CO4: Inculcate interest in landscaping, gardening and flower and fruit culture.

Semester VI

BO6CRT09: GENETICS, PLANT BREEDING AND HORTICULTURE

CO1:Understand the patterns of inheritance in different organisms at nuclear and extra nuclear level

CO2: Familiarize skill in gardening technique among students.

CO3: Understand the importance of horticulture in human welfare

CO4: Understand the methods of crop improvement

BO6CRT10: CELL AND MOLECULAR BIOLOGY

CO1: Explain the ultra structure and functioning of cell in the sub-microscopic and molecular level

CO2: Explain origin, concept of continuity and complexity of life activities.

CO3: Familiarize life processes and understand DNA as the basis of heredity and variation.

CO4: Understand the basic and scientific aspect of diversity.

CO5: Understand the cytological aspects of growth and development.

BO6CRT11:ANGIOSPERM MORPHOLOGY, TAXONOMY AND ECONOMIC BOTANY

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.

BO6CRT12: BIOTECHNOLOGY AND BIOINFORMATICS

CO1: Understand the current developments in the field of Biotechnology and Bioinformatics,

CO2: Explain plant tissue culture

CO3: Understand the vast repositories of biological data knowledge

CO4: Familiarize to access and analyze the data available in the databases.

BO6PET01: AGRIBUSINESS

CO1: Develop an idea about the business opportunities in the field of plant sciences

CO2: Develop an entrepreneurial mindset and also to stick on to the core subject among the Botany students,

CO3: Familiarize about the need of sustainable development and organic farming,and harnessing the opportunities in botany

CO4: Explain potentials in the field of ecotourism, processing technology and food sciences.

B06CRP03:- ANATOMY, REPRODUCTIVE BOTANY AND MICROTECHNIQUE & GENETICS, PLANT BREEDING AND HORTICULTURE (Practical)

CO1: Develop 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, get an insight in to the fruit and seed development

CO5: Explain techniques used to preserve and study plant materials.

CO6: Understand the patterns of inheritance in different organisms at nuclear and extra nuclear level

CO7: Familiarize skill in gardening technique among students.

CO8: Understand the importance of horticulture in human welfare

CO9: Understand the methods of crop improvement.

B06CRP04:- PLANT PHYSIOLOGY AND BIOCHEMISTRY & CELL AND MOLECULAR BIOLOGY (Practical)

CO1: Explain basic knowledge needed for proper understanding of plant functioning,

CO2: Develop the basic skills and techniques related to plant physiology,

CO3: Understand the role, structure and importance of the bio molecules associated with plant life.

CO4: Explain the ultra structure and functioning of cell in the sub-microscopic and molecular level

CO5: Explain origin, concept of continuity and complexity of life activities.

CO6: Familiarize life processes and understand DNA as the basis of heredity and variation.

CO7: Understand the basic and scientific aspect of diversity.

CO8: Understand the cytological aspects of growth and development.

B06CRP06:- RESEARCH METHODOLOGY, BIOPHYSICS AND BIOSTATISTICS & ANGIOSPERM MORPHOLOGY, TAXONOMY AND ECONOMIC BOTANY (Practical)

CO1: Apply methods to conduct independent research and prepare research reports,research.

CO2: Explain different tools and techniques used in research work

CO3: Undersatnd separation of biomolecules

CO4: Enable the students to have enough numerical skills necessary to carry out Reserch

CO5: Acquaint with the aims, objectives and significance of taxonomy.

CO6: Identify the common species of plants growing in Kerala and their systematic position.

CO7: Develop inductive and deductive reasoning ability.

CO8: Acquaint with the basic technique in the preparation of herbarium.

CO9: Familiarizing with the plants having immense economic importance.

B06CRP05:-ENVIRONMENTAL SCIENCE AND HUMAN RIGHTS & BIOTECHNOLOGY AND BIOINFORMATICS (Practical)

CO1: Explain significance of environmental Science

CO2: Understand the extent of the total biodiversity and the importance of their conservation,

CO3: Design novel mechanisms for the sustainable utilization of natural resources,

CO4: Understand various kinds of pollution in the environment, their impacts on the ecosystem and their control measures,

CO5: Understand the structure and function of the ecosystems

CO6: Understand the current developments in the field of Biotechnology and Bioinformatics,

CO7: Explain plant tissue culture

CO8: Understand the vast repositories of biological data knowledge

CO9: Familiarize to access and analyze the data available in the databases.

BO6PRP01:- Project Work

CO1: Applying the acquired knowledge of botany to identify and select research problem

CO2: Applying the skills to conduct a literature review on the research topic.

CO3: Acquire skills to undertake a research work in the field of botany.

CO4: Apply Practical skills in lab work and data interpretation to address a research problem

CO5: Preparing a well organised Project report based on acquired skills.

PO Calculation