



**VIVEKANANDA COLLEGE**

TIRUVEDAKAM WEST, MADURAI DISTRICT - 625 234, TAMIL NADU

**Vision & Mission and PEOs, PSO & POs**

**DEPARTMENT OF BOTANY**

**Choice Based Credit System (CBCS)**

**and**

**Learning Outcomesbased Curriculum Framework  
(LOCF)**

## DEPARTMENT OF BOTANY

### Vision

To meet the growing global needs by educating students to excel in botany with a human touch.

### Mission

The mission is to give very good learning experience in Understanding basics of botany and lab techniques with professional excellence and also produce academically proficient, professionally competent and socially responsible graduates in Botany.

### Programme Educational Objectives (PEOs)

Under graduates of B.Sc Botany program will be

PEO 1	know about the core concepts in the Course namely the plant kingdom and impart quality education to meet the demands of higher education and Research in Botany
PEO 2	Exhibit proficiency in selected laboratory skills
PEO 3	Using entrepreneurial skills with botanical Knowledge to shine in their profession
PEO 4	Develop a competitive edge among the students to meet out their employability
PEO 5	Make use of Knowledge in the field of horticultural, Mushroom, and Medicinal botany in their day today life.

### Programme Outcomes (POs)

On completion (after three years) of B.Sc Botany Programme, the students are expected to

P.No.	Programme Outcome	Description
PO1	Disciplinary Knowledge and Critical Thinking	Take informed actions after identifying the assumptions that frame our thinking and actions, checking out degree to which these assumptions are accurate and valid, and looking at our ideas and decisions (intellectual, organizational, and personal) from perspectives.
PO2	Effective Communication and Digital Literacy	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.
PO3	Social Interaction and Problem Solving	Elicit views of others, mediate disagreements and help reach conclusions in group settings.
PO4	Effective Citizenship and Social Responsibility	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 and life training.
PO5	Professional Ethics and Human Values	Recognize different value systems including your own, understand the moral dimensions of your decisions, and accept responsibility for them.
PO6	Environment and Sustainability	Understand the issues of environmental contexts and Sustainable development.
PO7	Self-directed and life-long learning	Acquire the ability to engage in independent and life-long learning in the broadest context socio- technological changes

## DEPARTMENT OF BOTANY

### Programme Specific Outcomes (PSOs)

<b>PSO 1</b>	To Provide Knowledge regarding Plant kingdoms from primitive to Advance
<b>PSO 2</b>	Inculcate the importance of biodiversity conservation and sustainable use of biodiversity to the students
<b>PSO 3</b>	To highlight the potential of plant science to become an entrepreneur
<b>PSO 4</b>	Kindle the interest of higher studies and research in Botany
<b>PSO 5</b>	To facilitate the students for taking up and shaping a successful career in botany

### Course Outcomes (Cos)

PART – III : Core Theory	Course Code: <b>08CT11</b>
Course Title: <b>ALGAE AND BRYOPHYTES</b>	

On the successful completion of the course, students will be able to

No	Course Outcome	Knowledge Level (according to Bloom's Taxonomy)
CO1	Explain the general Characteristics and Classification based on Fritsch Class level only, and Economic aspects of importance of Algae	K1/K3
CO2	Discuss the importance of algae family Structure and reproduction	K2
CO3	Structure and reproduction of Algae	K2
CO4	Define the basic concepts and classification of Bryophytes based on Smith – Structure and reproduction	K1
CO5	Structure and reproduction of Musci - <i>Funaria</i>	K2

**K1-Remembering**

**K2-Understanding**

**K3-Applying**

PART – III : Core Theory	Course Code: <b>08CT12</b>
Course Title: <b>FUNGI AND PLANT PATHOLOGY</b>	

On the successful completion of the course, students will be able to

No.	Course Outcome	Knowledge Level (according to Bloom's Taxonomy)
<b>CO 1</b>	Classify the Fungi and know its economic importance	K, K2 & K3
<b>CO2</b>	Knowledge about the fungi based on structure and reproduction	K1, K2
<b>CO3</b>	Understanding the fungal structure and reproduction	K1, K2
<b>CO 4</b>	Distinguish the Lichens and Understanding their economic importance	K1, K2 & K3
<b>CO 5</b>	Identify various plant pathogenesis (Virus, Bacteria, Fungi and Mycoplasma) and Applying their control measures.	K2 & K3

**K1-Remembering**

**K2-Understanding**

**K3-Applying**

PART – III : Core Theory	Course Code: <b>08CT21</b>
Course Title: <b>PTERIDOPHYTES, GYMNOSPERMS &amp; PALEOBOTANY</b>	

On the successful completion of the course, students will be able to

Number	Course Outcome	Knowledge Level (according to Bloom's Taxonomy)
CO1	Explain the general Characteristics and Classification based on Sporne classification- Pteridophytes	K1
CO2	Discuss the about life cycle of Pteridophytes	K2
CO3	Define the basic concepts and classification of Gymnosperm based on Chamberlain (1935) - Structure and reproduction	K2
CO4	Explain the geological era - Formation of fossils – types of fossils	K1
CO5	Detailed study of the fossils plants	K2 & K3

**K1-Remembering**

**K2-Understanding**

**K3-Applying**

PART – III : Core Theory	Course Code: <b>08CT22</b>
Course Title: <b>PLANT ANATOMY AND MICROTECHNIQUES</b>	

On the successful completion of the course, students will be able to

Number	Course Outcome	Knowledge Level ( According to Bloom's Taxonomy)
CO1	Explain the unique features of cell wall To know the chemical nature of cell wall Acquire the basic Knowledge about internal tissues of higher plants	K1
CO2	To compare the general and specific internal characteristics of dicot & monocot stem and root	K1 & K2
CO3	To know the concept of secondary thickening and anomalous secondary growth in stem and roots	K2
CO4	To Understanding the internal structure of dicot leaf, node and root formation	K2
CO5	Training the students in various staining technique and handling of microscope To Make temporary microscopic slides	K3

**K1-Remembering**

**K2-Understanding**

**K3-Applying**

<b>PART – III : Core Theory</b>	Course Code: <b>08CT31</b>
Course Title: <b>BIOCHEMISTRY, BIOPHYSICS &amp; BIOMETRICS</b>	

On the successful completion of the course, students will be able to

No.	Course Outcome	Knowledge Level (according to Bloom's Taxonomy)
CO 1	Know about carbohydrate, lipids and nucleic acids and its application	K1, K2, K3
CO2	Distinguish the protein, amino acids and enzymes and their functions	K1, K2, K3
CO3	Understanding and Applying the photobiology	K1, K2, K3
CO 4	Understanding the relations between light and biological organisms	K1, K2, K3
CO 5	Applying the biological data analysis	K2, K3

**K1-Remembering**

**K2-Understanding**

**K3-Applying**

<b>PART – III : Core Theory</b>	Course Code: <b>08CT32</b>
Course Title: <b>GENETICS AND BIOINFORMATICS</b>	

On the successful completion of the course, students will be able to

Number	Course Outcome	Knowledge Level ( According to Bloom's Taxonomy)
<b>CO1</b>	Acquire Knowledge on hereditary laws, its deviations, types of crosses in Mendelian inheritance.	K1
<b>CO2</b>	To identify the process of sex determination, multiple and polygenic inheritance and deviation of Mendel's law through linkage and crossing over.	K1 & K2
<b>CO3</b>	To Understanding various types of inheritance, its deviation diseases, molecular modifications, its regulation and human genome project.	K2
<b>CO4</b>	To have deeper Understanding in biological databases, its application in gene comparison tools in phylogenetic tree construction.	K2
<b>CO5</b>	Trace the prokaryotic and eukaryotic genome isolation, identification, proteome, its products and development.	K3

**K1-Remembering**

**K2-Understanding**

**K3-Applying**

<b>PART – III : Core Theory</b>	Course Code: <b>08CT41</b>
Course Title: <b>CELL BIOLOGY AND EMBRYOLOGY</b>	

On the successful completion of the course, students will be able to

<b>Number</b>	<b>Course Outcome</b>	<b>Knowledge Level (According to Bloom's Taxonomy)</b>
<b>CO1</b>	Explain the unique features of cell structure and its components	K1
<b>CO2</b>	To know the concepts of cell cycle, types of divisions and its significance	K1 & K2
<b>CO3</b>	To acquire Knowledge on male reproductive structure and developments	K2
<b>CO4</b>	To Understanding the female reproductive structure and developments	K2
<b>CO5</b>	To Understanding structure and development of endosperm and embryo.	K3

**K1-Remembering**

**K2-Understanding**

**K3-Applying**

<b>PART – III : Core Theory</b>	Course Code: <b>08CT42</b>
Course Title: <b>PLANT ECOLOGY</b>	

On the successful completion of the course, students will be able to

<b>Number</b>	<b>Course Outcome</b>	<b>Knowledge Level (according to Bloom's Taxonomy)</b>
CO1	Explain the ecological factors- the climatic factors, Biotic factors, Edaphic factor and conservation soil	K1/K3
CO2	Study on ecological groups and succession of succession – Xerosere and Hydrosere	K1 K2
CO3	Analysis on the vegetation in quadrat method and vegetation of India and Tamil Nadu	K3
CO4	Study on eco - toxicology on hazards of pesticides – on animal, plants and human life.	K3
CO5	Discuss the phytogeography -distribution of plants – continuous and discontinuous distribution – Continental drift - Endemism – Age and Area hypothesis.	K1 K2

**K1-Remembering**

**K2-Understanding**

**K3-Applying**

PART – III : Allied Theory	Course Code: <b>08AT01</b>
Course Title: <b>PLANT DIVERSITY</b>	

On the successful completion of the course, students will be able

Number	Course Outcome	Knowledge Level ( According to Bloom's Taxonomy)
<b>CO1</b>	To Understanding the morphology, structure, life cycle of the selected forms of Algae To distinguish the variation of different classes of Algae To Applying the uses of Algae in day to day life	K1,K2 & K3
<b>CO2</b>	To appreciate the morphology, structure, life cycle of the selected forms of Fungi To realize the interrelationship between symbiotic life of Lichens To Applying the uses of fungi in their day to day life	K1,K2 & K3
<b>CO3</b>	To know and realize the various forms, characteristics and reproduction of Bryophytes	K1,K2 & K3
<b>CO4</b>	To know and realize the various forms, characteristics and reproduction of Pteridophytes	K1,K2 & K3
<b>CO5</b>	To know and realize the various forms, characteristics and reproduction of Pteridophytes To Understanding the various forms of plant diversity among Lower group of plant kingdom	K1,K2 & K3

**K1-Remembering**

**K2-Understanding**

**K3-Applying**

PART – III : Allied Theory	Course Code: <b>08AT02</b>
Course Title: <b>TAXONOMY OF ANGIOSPERMS &amp; PLANT PHYSIOLOGY</b>	

On the successful completion of the course, students will be able

Number	Course Outcome	Knowledge Level ( According to Bloom's Taxonomy)
<b>CO1</b>	To Understanding and distinguish the morphology of angiosperms To identify the higher plants	K1 & K2 K3
<b>CO2</b>	To appreciate and differentiate the morphology of selected angiosperms To Applying the uses of economic important higher plants in their day to day life	K1 & K2 K3
<b>CO3</b>	To know and Understanding the biological mechanisms of water absorption and transpiration	K1 & K2
<b>CO4</b>	To know and Understanding the biological mechanisms of food and energy synthesis in plants	K1 & K2
<b>CO5</b>	To know and realize the growth and flowering of higher plants To Applying the techniques of growth and flowering in their higher studies and research	K1 & K2 K3

**K1-Remembering**

**K2-Understanding**

**K3-Applying**

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<b>PART – III : Core Theory</b>	Course Code: <b>08CT51</b>
Course Title: <b>TAXONOMY OF ANGIOSPERMS &amp; ECONOMIC BOTANY</b>	

On the successful completion of the course, students will be able to

<b>Number</b>	<b>Course Outcome</b>	<b>Knowledge Level (according to Bloom's Taxonomy)</b>
CO1	To study about botanical nomenclature and principles of classification	K1,K2,K3
CO2	To Understanding the herbarium preparation techniques	K1,K2,K3
CO3	Distinguish the features and economic importance of Angiosperm families	K1,K2,K3
CO4	Distinguish features and economic importance of the Angiosperm families	K1,K2,K3
CO5	To study and Understanding the economically importance of plant	K1,K2,K3

**K1-Remembering                      K2-Understanding                      K3-Applying**

<b>PART – III : Core Theory</b>	Course Code: <b>08CT52</b>
Course Title: <b>PLANT PHYSIOLOGY</b>	

On the successful completion of the course, students will be able to

<b>No.</b>	<b>Course Outcome</b>	<b>Knowledge Level (according to Bloom's Taxonomy)</b>
<b>CO 1</b>	Knowledge of plants and water relations	K1, K2, K3
<b>CO2</b>	Understanding the system of photosynthesis and respiration in plants	K1, K2, K3
<b>CO3</b>	Understanding and application of nitrogen and lipid metabolism in plants	K1, K2, K3
<b>CO 4</b>	Knowledge of plant nutrients and their application for their development	K1, K2, K3
<b>CO 5</b>	Understanding the Knowledge of plant growth development such as hormone function, physiology of flowering and seed germination	K1, K2, K3

**K1-Remembering                      K2-Understanding                      K3-Applying**

<b>PART – III : Core Theory</b>	Course Code: <b>08CT53</b>
Course Title: <b>MICROBIOLOGY</b>	

On the successful completion of the course, students will be able to

Number	Course Outcome	Knowledge Level ( According to Bloom's Taxonomy)
<b>CO1</b>	Know the contributions of microbiologists learn about the structure microbes	K1, K2& K3
<b>CO2</b>	Develop Understanding on the concept of microbial nutrition Measure the growth of microbes	K1, K2& K3
<b>CO3</b>	Applying the concept of microbial control	K1, K2& K3
<b>CO4</b>	Understanding concepts of Industrial microbiology Applying the usage of microorganisms in industry Explain the concept of fermentation	K1, K2& K3
<b>CO5</b>	Gain the basic Knowledge of Immunology Understanding the concept of Immunological diagnostics	K1, K2& K3

**K1-Remembering**

**K2-Understanding**

**K3-Applying**

<b>PART – III : Elective Theory</b>	Course Code: <b>08EP5A</b>
Course Title: <b>MEDICINAL BOTANY</b>	

On the successful completion of the course, students will be able to

Number	Course Outcome	Knowledge Level (according to Bloom's Taxonomy)
CO1	To acquire the history and indigenous system of medicine	K1
CO2	To know the isolation techniques of secondary metabolites To Applying the use of medicinal plant in their day to day life	K2 K3
CO3	To explore their skills of collection and processing of crude drugs	K2 K3
CO4	To know the classical and technical aspects of medicinal plants	K2 K3
CO5	To know the classical and technical aspects of medicinal plants	K2/K3

**K1-Remembering**

**K2-Understanding**

**K3-Applying**

PART – III : Elective Theory	Course Code: <b>08EP5B</b>
Course Title: <b>ORGANIC FARMING</b>	

On the successful completion of the course, students will be able to

No.	Course Outcome	Knowledge Level (according to Bloom's Taxonomy)
<b>CO 1</b>	Acquire the Knowledge of Concept of organic farming	K1, K2, K3
<b>CO 2</b>	Understanding the organic plant nutrient management	K1, K2, K3
<b>CO 3</b>	Understanding the mechanism and importance of various organic plant protection	K1, K2, K3
<b>CO 4</b>	The Applying organic crop production practices methods	K1, K2, K3
<b>CO 5</b>	Development of organic farming for the entrepreneurship skill	K1, K2, K3

**K1-Remembering                      K2-Understanding                      K3-Applying**

PART – III : Core Theory	Course Code: <b>08CT61</b>
Course Title: <b>BIOTECHNOLOGY</b>	

On the successful completion of the course, students will be able to

No	Course Outcome	Knowledge Level (According to Bloom's Taxonomy)
<b>CO1</b>	Understanding the core concepts and fundamentals of plant biotechnology and genetic Engineering Analyze the enzymes and vectors for genetic manipulations Examine gene cloning and evaluate different methods of gene transfer	K1, K2& K3
<b>CO2</b>	Understanding the concepts of Fermentation technology Applying the fermentation techniques for industrial production of potential products	K1, K2& K3
<b>CO3</b>	Know the types of biofertilizer and Applying that to their field Examine the mechanism of nitrogen fixation	K1, K2& K3
<b>CO4</b>	Analyze the contribution of microbiology area of science in water treatment, bioremediation and phytoremediation. Analyze microbiology of waste water and its implications Reflect upon various sustainable environmental protection strategies	K1, K2& K3
<b>CO5</b>	Learn the techniques of gene therapy Gain the Knowledge of human health care products	K1, K2& K3

**K1-Remembering                      K2-Understanding                      K3-Applying**

<b>PART – III : Elective Theory</b>	Course Code: <b>08EP6A</b>
Course Title: <b>TISSUE CULTURE</b>	

On the successful completion of the course, students will be able to

<b>No.</b>	<b>Course Outcome</b>	<b>Knowledge Level (according to Bloom's Taxonomy)</b>
<b>CO 1</b>	Knowledge of plant tissue culture laboratory and Medium preparation	K1, K2, K3
<b>CO2</b>	Understanding the various regeneration system in plants	K1, K2, K3
<b>CO3</b>	Methods its application of protoplast and anther culture	K1, K2, K3
<b>CO 4</b>	Application of plant secondary metabolite production and its utilization	K1, K2, K3
<b>CO 5</b>	Application of transgenic plants in horticulture	K1, K2, K3

**K1-Remembering**

**K2-Understanding**

**K3-Applying**

<b>PART – III : Elective Theory</b>	Course Code: <b>08EP6B</b>
Course Title: <b>SEED SCIENCE AND TECHNOLOGY</b>	

On the successful completion of the course, students will be able to

<b>Number</b>	<b>Course Outcome</b>	<b>Knowledge Level ( According to Bloom's Taxonomy)</b>
<b>CO 1</b>	Knowledge of seed production of economically important plants	K1, K2, K3
<b>CO2</b>	Understanding the principles and methods of seed processing	K1, K2, K3
<b>CO3</b>	Gain the application of seed storage	K1, K2, K3
<b>CO 4</b>	Know and Understanding the seed health	K1, K2, K3
<b>CO 5</b>	Acquire the Knowledge of seed quality control	K1, K2, K3

**K1-Remembering**

**K2-Understanding**

**K3-Applying**

<b>PART – III : Elective Theory</b>	Course Code: <b>08EP6C</b>
Course Title: <b>BIODIVERSITY CONSERVATION AND MANAGEMENT</b>	

On the successful completion of the course, students will be able to

Number	Course Outcome	Knowledge Level ( According to Bloom's Taxonomy)
<b>CO1</b>	Explain the levels of biodiversity To know the preliminaries of biodiversity Provide a thorough Knowledge on Plant diversity	K1, K2& K3
<b>CO2</b>	Understanding the importance of Biodiversity and Bioresources. Acquire the basic Knowledge about how to use biodiversity resources	K1, K2& K3
<b>CO3</b>	Explain the concept of biodiversity losses Explain the relation between biodiversity and human life. Learn the conservation of threatened plants.	K1, K2& K3
<b>CO4</b>	Explain the concept of biodiversity and conservation strategies Learn the conservation of threatened plants.	K1, K2& K3
<b>CO5</b>	Gain Understanding on the biodiversity hotspots of the world and India	K1, K2& K3

**K1-Remembering**

**K2-Understanding**

**K3-Applying**

<b>PART – III : Elective Theory</b>	Course Code: <b>08EP6D</b>
Course Title: <b>BOTANICAL ENTREPRENEURSHIP</b>	

On the successful completion of the course, students will be able to

Number	Course Outcome	Knowledge Level ( According to Bloom's Taxonomy)
<b>CO1</b>	Explain the unique features of Nursery To know the techniques of nursery establishment Expertise in the field of organic manure preparation	K1, K2& K3
<b>CO2</b>	Gain Knowledge in floriculture Acquire the basic Knowledge of ornamental plants	K1, K2& K3
<b>CO3</b>	Familiarize in commercial vegetables and fruits Explain the relation between plants and human life.	K1, K2& K3
<b>CO4</b>	Create Understanding on various plant products the humanity depends on	K1, K2& K3
<b>CO5</b>	To make them to discern the marketing of medicinal plants Becomes an entrepreneur through gaining Knowledge in botanical techniques.	K1, K2& K3

**K1-Remembering**

**K2-Understanding**

**K3-Applying**