

DEPARTMENT OF BOTANY
NALLAMUTHU GOUNDER MAHALINGAM COLLEGE
(AUTONOMOUS)

Vision

Our dream is to make the college an institution of excellence at the national level by imparting quality education of global standards to make students academically superior, socially committed, ethically strong, spiritually evolved and culturally rich citizens to contribute to the holistic development of the self and society

Mission

Training students to become role models in academic arena by strengthening infrastructure, upgrading curriculum, developing faculty, augmenting extension services and imparting quality education through an enlightened management and committed faculty who ensure knowledge transfer, instil research aptitude and infuse ethical and cultural values to transform students into disciplined citizens in order to improve quality of life.

DEPARTMENT OF BOTANY

Vision

The Department of Botany aims to achieve high quality education and research relevant to local, regional and national needs and through knowledge sharing with leading researchers and educators across the country. We foster an exciting and intellectually stimulating atmosphere for all in a co-operative and positive environment.

Mission

To bring confidence in the lifestyle of any Botany student whose stay will ensure proficiency and competency in the subjects thought. We inculcate the habit of excellence in all the learning activities so as to ensure employability.

PROGRAMME OBJECTIVES

1. To impart quality education to meet the demands of higher education and research in Botany
2. To develop a competitive edge among the students to meet out their employability

PROGRAMME SPECIFIC OUTCOMES

- PSO1 To appreciate and understand the diversity of cellular forms, lower plants to higher plants
- PSO2 To introduce the theoretical knowledge and basic concepts on Biomolecules, Microbes, Plant Structure, Function and Evolution
- PSO3 To get hands-on training and practical knowledge in the preparation of microsections, herbarium, quantifying biomolecules and other basic techniques
- PSO4 To create interest in identification of plants using Floral characters, genetic traits and Molecular markers
- PSO5 To update the students with modern trends in Plant biology and introduce the interdisciplinary approach

Course code: 20UBY101	Course Title : PLANT DIVERSITY I (PHYCOLOGY,MYCOLOGY AND BRYOLOGY)
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Course Outcome

K1	CO1	To differentiate lower plants like Algae, Fungi, Lichens and Bryophytes
K2	CO2	To understand the morphology and lifecycle of Algae, Fungi, Lichens, Bryophyte
K3	CO3	To apply different classification systems to appreciate the diversity of lower plants
K4	CO4	To identify the economically important Algae, Fungi, Lichens and Bryophytes

Course code :20UZY1A1	Course Title : ANCILLARY BOTANY PAPER - I (PLANT DIVERSITY, ANATOMY, EMBRYOLOGY AND PLANT PATHOLOGY)
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Course Outcome

K1	CO1	To recollect the existing diversity among lower plants
K2	CO2	To understand the internal structure and embryology of angiosperms
K3	CO3	To analyze the economically important plant diseases and their control measures
K4	CO4	To obtain the skill of technically draw the plant tissues

Course code 20UBY202	Course Title :PLANT DIVERSITY II (PTERIDOPHYTES, GYMNOSPERMS AND PALAEOBOTANY)
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Course Outcome

K1	CO1	To appreciate the morphology and lifecycle of Algae, Fungi, Lichens, Bryophyte
K2	CO2	To understand the concepts of evolution, Palaeobotany and evolution of land plants
K3	CO3	To identify the economically important Pteridophytes and Gymnosperms
K4	CO4	To analyse the fossil slides and specimen

Course code : 20UBY203	Course Title : MAJOR PRACTICAL - I (PLANT DIVERSITY I & II)
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Course Outcome

K1	CO1	To revise the morphology and reproductive structures in Algae, Fungi, Lichens, and Bryophyte
K2	CO2	To get the picture of internal structures and spore bearing parts of selected plant forms
K3	CO3	To compare the life cycles of Algae, Fungi, Lichens, Bryophytes, Pteridophytes and Gymnosperms
K4	CO4	To prepare micro sections and to professionally draw plant sketches, to identify fossil specimen and slides

Course code 20UZY2A2	Course Title: ANCILLARY BOTANY PAPER - II (TAXONOMY OF ANGIOSPERMS, PHYSIOLOGY, HORTICULTURE, MEDICINAL BOTANY & PLANT BIOTECHNOLOGY)
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Course Outcome

K1	CO1	To appreciate the morphology and lifecycle of selected Angiosperms
K2	CO2	To understand the concepts of Plant functions, Plant propagation, Plant tissue culture
K3	CO3	To identify flowering plants and medicinal plants in their habit.
K4	CO4	To know-how different cutting, layering, grafting, budding methods to propagate different plants
K5	CO5	To learn the basic concept of Plant Biotechnology

Course code: 19UZY2A3	Course Title: ANCILLARY BOTANY PRACTICAL
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Course Outcome

K1	CO1	To recollect some selected lower plants and higher plants in their habit
K2	CO2	To understand the internal structure, embryology and physiology of angiosperms
K3	CO3	To analyze the economically important plant diseases and their control measures
K4	CO4	To prepare microsections and obtain the skill of technically draw the plant tissues
K5	CO5	To propagate plants using simple horticultural techniques

Course code: 20UBY304	Course Title : ANATOMY AND EMBRYOLOGY
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Course Outcome

K1	CO1	To know the theories on plant cell, tissues and cell division
K2	CO2	To understand the anatomy of various plant parts
K3	CO3	To analyze the internal structure and embryology of angiosperms
K4	CO4	To compare the growth and developmental pattern of dicots and monocots

Course code: 20UBY3N1	Course Title: SKILL BASED ELECTIVE (NON MAJOR):LANDSCAPE DESIGNING
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Course Outcome

K1	CO1	To know the Gardening types and features
K2	CO2	To understand the Landscape designing principles
K3	CO3	To analyze the uniqueness of indoor garden
K4	CO4	To create interest in making flower arrangements, kitchen garden and terrarium

Course code: 20UBY3N2	Course Title: SKILL BASED ELECTIVE (NON MAJOR):HERBAL COSMETICS
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Course Outcome

K1	CO1	To recollect the medicinal herbs and the need for herbal cosmetics
K2	CO2	To comprehend the principles behind herbal cosmetics
K3	CO3	To analyze the various personal care remedies using herbs
K4	CO4	To expose the students to prepare home recipes with available herbs

Course code: 20UBY405	Course Title: CELL BIOLOGY, BIOCHEMISTRY AND BIOPHYSICS
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Course Outcome

K1	CO1	To recollect the details about Plant cell, organelles, and their functions
K2	CO2	To revisit the structure and functions of biomolecules
K3	CO3	To understand the central dogma of molecular biology
K4	CO4	To understand the biophysical forces and laws of thermodynamics
K5	CO5	To know-how the quantification of biomolecules using selected optical techniques and to analyze the biomolecules using simple separation techniques

Course code: 20UBY406	Course Title: MAJOR PRACTICAL – II (CYTOLOGY, ANATOMY & EMBRYOLOGY & BIOCHEMISTRY AND BIOPHYSICS)
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Course Outcome

K1	CO1	To recollect the internal structure and functions of angiospermic plants
K2	CO2	To understand the working principle of selected instruments
K3	CO3	To analyze the developmental details of plant embryo
K4	CO4	To prepare permanent micro sections
K5	CO5	To obtain working knowledge in basic biochemical techniques

Course code: 20UBY4N3	Course Title: SKILL BASED ELECTIVE (NON MAJOR) – REMOTE SENSING AND NATURAL RESOURCE MANAGEMENT
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Course Outcome

K1	CO1	To list down the natural resources and biosphere reserves
K2	CO2	To understand the concept of Remote sensing
K3	CO3	To apply remote sensing techniques in Resource management
K4	CO4	To update the recent trends in remote sensing techniques

Course code: 20UBY4N4	Course Title: SKILL BASED ELECTIVE (NON MAJOR) -BIOINFORMATICS
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Course Outcome

K1	CO1	To introduce Bioinformatics and Biological databases
K2	CO2	To comprehend the origin of life and genetic code

K3	CO3	To know-how the gene finding, protein prediction and genetic algorithm
K4	CO4	To analyze the phylogeny between species using pattern recognition and homology

Course code: 20UBY507	Course Title : TAXONOMY OF ANGIOSPERMS
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Course Outcome

K1	CO1	To introduce and list down the technical terms used in taxonomy
K2	CO2	To understand the principle and classification of angiosperms
K3	CO3	To create interest in identifying flowering plants in and around the campus
K4	CO4	To get hands-on training in preparing herbarium
K5	CO5	To update the Botanical nomenclature, norms and digital taxonomy

Course code: 20UBY508	Course Title: MICROBIOLOGY AND PLANT PATHOLOGY
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Course Outcome

K1	CO1	To appreciate the diversity of microbes
K2	CO2	To understand the basic defence mechanism and concept of Immunology
K3	CO3	To analyse the food and water samples for contamination
K4	CO4	To get hands-on training in culturing microbes
K5	CO5	To learn economically important plant disease

Course code: 20UBY509	Course Title: GENETICS & EVOLUTION
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Course Outcome

K1	CO1	To revise the Mendelian Genetics
K2	CO2	To understand the concept of gene and molecular basis of heredity
K3	CO3	To learn the significance of Meiosis
K4	CO4	To analyse the causes of mutation and DNA repair mechanisms

Course code: 20UBY510	Course Title: BIOTECHNOLOGY & GENETIC ENGINEERING
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Course Outcome

K1	CO1	To understand the concept of totipotency, micropropagation and meristem culture
K2	CO2	To learn the principle of somatic embryogenesis, haploids, synthetic seeds
K3	CO3	To revisit the molecular tools and vectors in genetic engineering
K4	CO4	To understand the principle of gene transfer, blotting techniques and markers
K5	CO5	To update the knowledge on Transgenic plants, DNA finger printing and other applications

Course code: 20UBY511	Course Title: ELECTIVE I - MATHEMATICS FOR BIOLOGISTS
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Course Outcome

K1	CO1	To revise the basic arithmetic and number system
K2	CO2	To understand the role of mathematics in solving biological problems
K3	CO3	To introduce the statistical methods for analyzing a data
K4	CO4	To analyse and interpret a sample data using various methods
K5	CO5	To update the computer knowledge in presenting the data

Course code: 20UBY5S1	Course Title: SKILL BASED ELECTIVE (MAJOR) –NETWORK AND INFORMATION SECURITY
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Course Outcome

K1	CO1	To remember the basic concepts of network
K2	CO2	To understand the network hacking techniques
K3	CO3	To deploy information and network security
K4	CO4	To interpret the common threats today in computer network.

Course code: 20UBY5S2	Course Title: SKILL BASED ELECTIVE (MAJOR) – CYBER SECURITY – ETHICAL HACKING
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Course Outcome

K1	CO1	To remember the basic concepts of cyber security
K2	CO2	To understand the knowledge about ethical hacking
K3	CO3	To deploy the use of hacking tools
K4	CO4	To analyze the details about internet connection.

Course code: 20UBY612	Course Title: PLANT PHYSIOLOGY
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Course Outcome

K1	CO1	To know the Plant function and Plant movements
K2	CO2	To understand the concept of water potential, water transport
K3	CO3	To analyse the role of photosynthesis and respiration in plant function
K4	CO4	To enlist various plant growth regulators
K5	CO5	To know the stress physiology of plants and

Course code: 20UBY613	Course Title: ECONOMIC AND ETHNOBOTANY
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Course Outcome

K1	CO1	To revise the traditional system of medicine
K2	CO2	To understand the phytochemistry and medicinal principles of selected plants
K3	CO3	To analyse the distribution, cultivation, extraction and uses of economically important plants
K4	CO4	To prepare herbal formulations
K5	CO5	To create awareness in conserving medicinal plants

Course code: 20UBY614	Course Title: HORTICULTURE AND PLANT BREEDING
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Course Outcome

K1	CO1	To know the methods of vegetative propagation
K2	CO2	To understand the principle behind plant propagation
K3	CO3	To propagate plants using simple horticultural techniques
K4	CO4	To develop interest in flower arrangement, fruit preservation and vegetables

Course code:20UBY615	Course Title: ELECTIVE – II – BIOINFORMATICS
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Course Outcome

K1	CO1	To introduce the biological databases and computer languages
K2	CO2	To understand the sequence analysis techniques
K3	CO3	To analyse the structure of proteins with the help of computers
K4	CO4	To comprehend genomics and proteomics
K5	CO5	To know the role of computers in drug discovery

Course code: 20UBY616	Course Title: ELECTIVE – III – HABITAT ECOLOGY
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Course Outcome

K1	CO1	To appreciate the various habitats and their vegetation
K2	CO2	To understand the concept of habitats and succession
K3	CO3	To analyse the components of different ecosystems
K4	CO4	To know-how the methods of Environmental audits and Environmental Impact Assessment
K5	CO5	To inventor and manage the natural resources using Remote sensing techniques.

Course code: 20UBY617	Course Title: MAJOR PRACTICAL - III (for V sem theory papers)
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Course Outcome

K1	CO1	To appreciate the diversity of flowering plants and their identification in their natural habit
K2	CO2	To get hands-on training in culturing bacteria
K3	CO3	To identify economically important plant diseases
K4	CO4	To solve biological problems using mathematics
K5	CO5	To create interest in learning the applications of Genetic Engineering
K6	CO6	To obtain working knowledge in creating a word document, powerpoint, excel

Course code: 20UBY618	Course Title: MAJOR PRACTICAL - IV (for VI sem theorypapers)
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Course Outcome

K1	CO1	To compare the physiological functions of plants under different environmental conditions
K2	CO2	To know the economically important plants and their produces
K3	CO3	To create interest in rearing plants <i>in vitro</i>
K4	CO4	To learn the bioinformatics tools to analyse the protein structure
K5	CO5	To study the vegetation using Quadrat and line transect method

Course code: 20UBY6S3**Course Title: SKILL BASED ELECTIVE (MAJOR) – FOREST BOTANY****Course Outcome**

K1	CO1	To know the history and types of forests
K2	CO2	To understand the principle behind forest laws
K3	CO3	To propagate plants and conserve soil and forests
K4	CO4	To develop interest in marketing of forest products

Course code: 20UBY6S4**Course Title: SKILL BASED ELECTIVE (MAJOR) –MUSHROOM CULTIVATION****Course Outcome**

K1	CO1	To identify edible mushrooms from poisonous ones
K2	CO2	To understand the mushroom cultivation
K3	CO3	To know-how the mushroom culture techniques
K4	CO4	To create interest in preparing mushroom recipes

Course code**Course Title: VALUE ADDED COURSE (MAJOR) –ORGANIC FARMING****Course Outcome**

K1	CO1	To know-how make a compost using pit method
K2	CO2	To learn the preparation of manures, panchakavya
K3	CO3	To know- plant protection management
K4	CO4	To learn the procedure in organic crops certification

Course code**Course Title: VALUE ADDED COURSE (MAJOR) –MUSHROOM CULTIVATION****Course Outcome**

K1	CO1	To identify edible mushrooms from poisonous ones
K2	CO2	To understand the mushroom cultivation
K3	CO3	To learn the mushroom marketing techniques
K4	CO4	To create interest in preparing mushroom recipes