



Sai College[®]

COURSE OUTCOMES
OF
BACHELORS OF SCIENCE

VISION

Our vision is to conduct teaching and outreach on the patterns and processes of life with a focus on plants and their environments.

MISSION

- Our mission is to foster an environment of excellence by attracting and supporting the outstanding students, faculty and staff needed to sustain our vision.
- We focus on the patterns and processes that enable predictive understanding of plants and their environments at local, regional, and global scales, leading to strengths in the areas of ecology, evolution, and systematics.

Course Objectives

The students completing the course is able to identify various life forms of plants, design and execute experiments related to basic studies on evolution, ecology, developmental biology, physiology, biochemistry, plant interactions with microbes and insects, morphology, anatomy, reproduction, genetics, microbiology and biotechnology.

DEPARTMENT OF BOTANY**SYLLABUS**

Paper	Paper Name
B.Sc. I	
Paper –I	Bacteria, Viruses,Fungi,Lichen And Algae
Paper-II	Bryophytes, Pteridophytes, Gymnosperms And Paleobotany
B.Sc. II	
Paper –I	Plant Taxonomy, Economic Botany, Plant Anatomy And Embryology

Paper- II	Ecology And Plant Physiology
B.Sc. III	
Paper –I	Analytical Technology, Plant Pathology, Experimental Embryology, Elementry Biostatistics, Environmental Pollution And Conservation
Paper- II	Genetics, Molecular Biology, Biotechnology And Biochemistry

Course Outcomes

At the end of this course, a student will have developed ability to:

Paper	Paper Name	Course Outcome
B.Sc. I		
Paper-I	Bacteria, Viruses,Fungi,Lichen And Algae	CO -01:- Study of general characteristics, types, structure and genetic material of viruses, Bacteriophage and cynophage. CO-02:- Understand the Characteristics, classification, fine structure, gram positive and negative Bacteria and their economics importance CO-03:- To learn the biodiversity, thallus organization, reproduction and economic

		importance of fungi CO-04:- Understand the biodiversity, nutrition and reproduction and economic importance of Algae. CO-05:- Study of characteristic, types, nutrition, reproduction and economic importance of lichen and Mycoplasma and BGA in nitrogen fixation in soil.
Paper-II	Bryophytes, Pteridophytes, Gymnosperms And Paleobotany	CO-01:- Study of characteristic, range of thallus organization, systematic position, morphology, anatomy and reproductive structure and ecological importance of Bryophytes. CO-02:- Study of general account, affinities, economic importance and classification stellar system in pteridophytes. CO-03:- Study of classification ,morphology, anatomy And reproductive structure Equisetum, Marsilea, Sileginella, Lycopodium. CO-04:- To study of general account, affinities, economic importance and classification morphology, anatomy And reproductive structure in Cycas, Pinus and Ephedra. CO-05:- understand the fossil and fossilization and geological time scale.
LAB COURSE		1. Algae- <i>Gleocapsa</i>, <i>scytonema</i>, <i>Gleotrichia</i>, <i>volvox</i>, <i>oedogonium</i>, <i>vaucheria</i>, <i>chara</i>, <i>Ectocarpus</i>, <i>Sargassum</i>, <i>Batrachospermum</i> 2. Gram staining. 3. Fungi- <i>Albugo</i>, <i>Aspergillus</i>, <i>Peziza</i>, <i>Agaricus</i>, <i>Puccinia</i>, <i>Alternaria</i>, and <i>cercospora</i> 4. Bryophyta- <i>Riccia</i>, <i>Marchantia</i>, <i>Pellia</i>,

		<i>Anthoceros, Sphagnum, Funaria</i> 5. Pteridophytes – <i>Lycopodium</i> , <i>Selaginella</i>, <i>equisetum</i>, <i>Marsilea</i> 6. Gymnospermum – <i>Cycas</i>, <i>Pinus</i>, <i>Ephedra</i>.
B.Sc. II		
Paper-I	Plant Taxonomy, Economic Botany, Plant Anatomy And Embryology	CO-01:- Study of classification systems, Binomial nomenclature, IUCN, numerical taxonomy and chemotaxonomy, Preservation of plant material and herbarium techniques and botanical garden. CO-02:- To learn systematic position, distinguishing features and economic importance of the different families. CO-03:- Study of uses of the following economically important plants- fiber yielding plants, timber yielding plants, medicinal plants, foods plants, fruits, spices, beverages and Ethnobotanical plants in C.G. CO-04:- Study of plant anatomy RAM and SAM the anatomy of dicot and monocot plants, Anatomically anomalies in the primary and secondary structure. CO-05:- Study of embryology, microsporogenesis, megasporogenesis, pollination, fertilization, polyembryony, apomixes and parthenocarpy.
Paper –II	Ecology And Plant Physiology	CO-01:- Understand ecology, ecological factors, soil profile and adaptation in hydrophytes and xerophytes. CO-02:- Study of ecosystem, population and community characteristics, succession, ecotone and edge effect, ecotypes, ecads and ecological niches.

		CO-03:- Study of plant water relationship – diffusion, permeability, osmosis, theories of ascent of sap, mineral nutrition and absorption, transpiration, stomatal movement CO-04:- Understand the photosynthesis- C₃, C₄ and CAM cycle and aerobic and anaerobic respiration. CO-05:- Study of plant growth hormones - Auxin, Gibberellin, cytokinin, ethylene and plant physiological activities.
Lab Course		1. Taxonomy: detailed description and identification of locally available plants of the families. 2. Economic Botany: identification and comment on the plants and plant product. 3. Preparation of Herbarium of local wild plants. 4. Quantitative vegetation analysis of a grassland ecosystem. 5. Anatomical characteristics of hydrophytes and xerophytes. 6. Demonstration of root pressure. 7. Demonstration of transpiration. 8. Demonstration of evolution of oxygen in photosynthesis. 9. Comparison of R.Q. of different respiratory substrates. 10. Demonstration of fermentation 11. Demonstration of mitosis.
B.Sc. III		
Paper-I	Analytical Technology, Plant Pathology, Experimental Embryology, Elementry Biostatistics, Environmental Pollution And Conservation	CO-01:- Structure, principle and application of analytical instrumentation- chromatography, oven, incubator, autoclave, centrifuge and spectroscopy. CO-02:- Study of plant tissue culture techniques & Analytical techniques:

		microscopy. CO-03:- General principles of plant pathology, general symptoms of fungal, bacterial, and viral disease and epidemiology and etiology. CO-04:- Introduction to pollution, green house gases, ozone depletion, D.O, B.O.D, C.O.D, Concept of biodiversity and conservation strategies and concept of sustainable development. CO-05:- Elementry biostatics: Introduction and application of biostatistics and Measure of central tendency and dispersal.
Paper-II	Genetics, Molecular Biology, Biotechnology And Biochemistry	CO-01:- Study of cell and cell organelles, chromosomes, cell division, Mendels law, genetic interaction, linkage, chromosomal aberration, polyploidy, sex linked inheritance CO-02:- Understand the nucleic acid, DNA and genetic code and it's properties, Mechanism of transcription and translation in prokaryotes. CO-03:- To learn Recombinant DNA technology and application of biotechnology. CO-04:- Study of chemical composition, structure, properties of Carbohydrates, protein, lipids. CO-05:- study of enzymes: Nomenclature and classification, theories of enzyme action, enzyme kinetics (Michelis-Menten constant).

LAB COURSE		1. Study of host parasite relationship of plant diseases listed above. 2. Demonstration of preparation of Czapek's Dox medium and potato dextrose agar medium, of culture medium and pouring. 3. Inoculation in culture tubes and petriplates. 4. Gram Staining. 5. Microscopic examination of Curd. 6. Study of plant diseases as listed in the theory paper. 7. Biochemical test of carbohydrate and protein. 8. Instrumentation techniques.
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