

SRI A S N M G D C (A) PALAKOL
DEPARMET OF BOTANY

Curriculum developed in relevance to local, regional needs in the subject

Semester	PAPERS	Modules relevant to local needs	Modules relevant to regional needs
I	: Fundamentals of Microbes and Non-vascular Plants (Viruses, Bacteria, Fungi, Lichens, Algae and Bryophytes)		Origin of life and Viruses
		Special groups of Bacteria and Eubacteria	
		Algae	Fungi & Lichens
		Bryophytes	
II	Basics of Vascular plants and Phyto geography (Pteridophytes, Gymnosperms, Taxonomy of Angiosperms and Phytogeography)	Pteridophytes	General characteristics of Pteridophyta; classification of Smith (1955) up to divisions.
			Occurrence, morphology, anatomy, reproduction
		Gymnosperms	General characteristics of Gymnosperms; Sporne classification up to classes. Occurrence, morphology, anatomy, reproduction
		Basic aspects of Taxonomy	Aim and scope of taxonomy Plant nomenclature Herbarium and its techniques
		Systematic Taxonomy	Systematic description and economic importance of the following families: (a) Asteraceae (b) Asclepiadaceae (c) Euphorbiaceae (e) Arecaceae and (f) Poaceae Outlines of Angiosperm Phylogeny Group
		Phytogeography	Principles of Phytogeography Phytogeographic regions of World. Phytogeographic regions of India. Vegetation types in Andhra Pradesh.
III	: Plant Taxonomy and Embryology	SYSTEMATIC TAXONOMY-	INTRODUCTION TO PLANT TAXONOMY, CLASSIFICATION
		SYSTEMATIC TAXONOMY-	
		II	

			EMBRYOLOGY – IEMBRYOLOGY – II
I V	PLANTPHYSIO LGY AND METABOLISM	WATER POTENTIAL	Physical properties of water Diffusion, Imbibition and Osmosis
		Mineral Nutrition and Enzymes	Mineral nutrition Enzymes: General characters, mechanism of enzyme action and factors regulating enzyme action.
		Photosynthesis	Photosynthesis :Photo synthetic pigments photosynthetic lightreactions,pathways;C3,C4 and CAM.
		PlantMetaboliSm	Nitrogen metabolism- Biological Nitrogen fixation in Rhizobium, out lines of protein synthesis(Transcription and Translation) Respiration: Glycolysis, Anaerobic respiration,TCA cycle, Electron transport system. Mechanismm of oxidative Phosphorylation, Respiratory Quotient(RQ). Lipid metabolism and oxidation.
		Growth and Development	Phyto hormones: Introduction Physiological Effects of Phyto hormones- Auxins, Gibberellins ,Cytokines, ABA, Ethylenee and Brassino steroids
	PAPER -V	Cell Biology ----- Genetic Material -----	Restriction modification systems ,DNA modifying enzymes and their application,Cloning vectors dMetabolism:Typesoflipids,☐
			*Cell, the unit of life- Cell theory, Prokaryotic and eukaryotic cells; Eukaryotic cellcomponents. *Ultra structure and functions of cell wall and cell membranes *Chromosomes: morphology, organization of

V	Cell Biology, Genetics and Plant Breeding	Linkage and crossingover	DNA in a chromosome (Nucleosome model), Euchromatin and heterochromatin
		----- Plant Breeding -----	*DNA structure (Watson & Crick model) and replication of DNA in prokaryotes semi-conservative) *Types of RNA (mRNA, tRNA, rRNA), their structure and function.
		Breeding, Crop Improvement and Biotechnology	Linkage: concept, complete and incomplete linkage, coupling and repulsion
			Molecular breeding – use of DNA markers in plant breeding and crop improvement (RAPD, RFLP).
	PAPER-VI Plant Ecology & Phytogeography	ELEMENTS OF ECOLOGY	.
		ECOSYSTEM ECOLOGY & POPULATION	*Productivity of ecosystem- Primary, Secondary and Net productivity. * Biogeochemical cycles- Carbon, Nitrogen and Phosphorous. * Population- Definition, characteristics and importance, outlines- ecotypes.
		COMMUNITY ECOLOGY	*Plant communities: Characters of a community, outlines- Frequency, density, cover, life forms, competition. *Interaction between plants growing in a community.
		PHYTOGEOGRAPHY	Phytogeographic regions of India. 3. Phytogeographic regions of World. 4. Endemism- Types and causes.
		PLANT BIODIVERSITY AND ITS IMPORTANCE	Bio diversity hotspots- Criteria, Biodiversity hotspots in India. * Loss of biodiversity- Causes and conservation (<i>In-situ</i> and <i>ex-situ</i> methods). * Seed banks- Conservation of genetic resources and their importance

V I	VII(C)Plant Tissue Culture and Biotechnological Applications	PLANT TISSUE CULTURE-1	History of plant tissue culture research - basic principles of plant tissue callus culture ,meristems culture ,organ culture.
		Plant Tissue culture -2	Endosperm culture Embryo culture requirements – applications, embryo rescue technique.
		Recombinant DNA technology	Restriction Endo nucleases Cloning Vectors Gene cloning
		Methods of gene transfer	Methods of gene transfer Selection of transgenic plants
		Applications of Biotechnology	Applications of Plant Genetic Engineering Genetic modification – transgenic plants for pest resistant
	VIII-A1- CLUSTER PLANT DIVERSITY AND HUMAN WELFARE	Plant diversity and its scope	Genetic diversity ,Species diversity,Values and uses of biodiversity
		Loss of biodiversity	Loss of genetic diversity, Loss of species diversity, Loss of ecosystem diversity, Loss of agro biodiversity ,projected scenario for biodiversity loss.
		Contemporary practices in resource management	Environmental Impact Assessment Geographical Information System Solid and liquid waste management
		Conservation of biodiversity	Conservation of genetic diversity Social approaches to conservation
		Role of plants in relation to Human Welfare	Importance of forestry, their utilization and Commercial aspects A)Avenue trees, b)ornamental plants of India. c) Alcoholic beverages through ages. Fruits and nuts Important fruit crops their commercial importance, Wood, fiber and their uses. Ethno botany as an interdisciplinary science. The relevance of ethnobotany in the present context. Major and minor ethnic groups or Tribals of India, and their lifestyles. Plants used by the tribal populations
		Ethnobotany	

	VIII(A2)- ETHNOBOTANY AND MEDICINAL BOTANY		
		Role of ethno botany in modern Medicine	Role of ethno botany in modern medicine Medico-ethno botanical sources in India.
		Ethno botany as a tool to protect interests of ethnic groups	Sharing of wealth concept with few examples from India. Biopiracy, Intellectual Property Rights and Traditional Knowledge
		History, Scope and Importance of Medicinal Plants, indigenous Medicinal Sciences	Definition and Scope-Ayurveda Siddha: Origin of Siddha medicinal systemms, Basis of Siddha system, plants used in Siddha medicine.
		Conservation Of endangered and endemic medicinal plants	Endemic and endangered medicinal plants. Red list criteria
	VIII-A3: Pharmacognosy and Phytochemistry	Pharmacognosy	Classification of drugs - Chemical and Pharmacological, Drug evaluation methods
		Organoleptic and microscopic studies	Organoleptic and microscopic studies with reference to nature of active principles and common adulterants of Alstonia scholaris
		Secondary Metabolites	Definition of primary and secondary metabolites and their differences, major types -terpenes, phenolics, alkaloids, terpenoids, steroids
		Phytochemistry	Biosynthesis and sources of drugs Alkaloids: Different groups, biosynthesis, bioactivity. Volatile oils, aromatherapy
		Enzymes, proteins and amino acids as drugs	Vaccines, toxins and toxoids Vitamins, Antibiotics Pharmacological action of plant drugs Role of different enzyme inhibitors