

LESSON PLAN
 BSc 2nd sem
 BOTANY
 Paper - 1 and Paper - 2
 2022-2023
 Assistant Professor- Poonam sharma

Month	Topic
February	Paper - 1 Bryophyta- General characters, classification (upto classes), alternation of generations, evolution of sporophytes and economic importance
February	Bryophyta: Structure and reproduction (excluding development) of Marchantia (Hepaticopsida), Anthoceros (Anthocerotopsida) and Funaria (Bryopsida) Pteridophyta- General characters, classification (upto classes), alternation of generations, heterospory, apospory, apogamy and economic importance; General account of stellar evolution
March	Pteridophyta: Structure and reproduction (excluding development) of Rhynia (Psilopsida), Selaginella (Lycopsida), Equisetum (Sphenopsida) and Pteris (Pteropsida) Paper -2 Genetic Material: DNA - the genetic material, DNA structure and replication, DNA- Protein interaction, The Nucleosome Model, Genetic Code, Satellite and Repetitive DNA.
April	Genetic Inheritance: Mendelism: Laws of Segregation and Independent Assortment; Linkage Analysis; Allelic and non-allelic interactions. Extra-nuclear Inheritance: Presence and function of Mitochondrial and Plastid DNA; Plasmids. Genetic Variations: Mutations - spontaneous and induced; transposable genetic elements; DNA damage and repair.
May	Gene Expression: Modern concept of gene; RNA; Ribosomes; Transfer of genetic information - transcription and translation; Structure of proteins; Regulation of gene expression in prokaryotes and eukaryotes

LESSON PLAN
 BSc 4th sem
 BOTANY
 Paper - 1 and Paper - 2
 2022-2023
 Assistant Professor- Poonam sharma

Month	Topic
February	Paper -1 Taxonomy and Systematics, fundamental components of taxonomy (identification, classification, description, nomenclature and phylogeny), Role of chemotaxonomy, cytotaxonomy and taxometrics in relation to taxonomy, Botanical Nomenclature, principles and rules, principle of priority, Keys to identification of plants.
March	Type concept, taxonomic ranks, Salient features of the systems of classification of angiosperms proposed by Bentham & Hooker and Engler & Prantl, Floral Terms and Types of Inflorescence Diversity of Flowering Plants: Diagnostic features and economic importance of the following families: Ranunculaceae, Brassicaceae, Malvaceae, Euphorbiaceae, Rutaceae, Fabaceae, Cucurbitaceae
April	Diversity of Flowering Plants: Diagnostic features and economic importance of the families: Apiaceae, Asclepiadaceae, Lamiaceae, Solanaceae, Asteraceae, Liliaceae and Poaceae Paper -2 Flower-a modified shoot, Microsporangium, its wall and dehiscence mechanism. Microsporogenesis, pollen grains and its structure (pollen wall).
May	Pollen germination (microgametogenesis), Male gametophyte, Pollen-pistil interaction; self incompatibility, Pollination: types and agencies Structure of Megasporangium (ovule), its curvatures; Megasporogenesis and Megagametogenesis, Female gametophyte (mono, bi and tetrasporic), Double fertilization, Endosperm types and its biological importance.
May	Embryogenesis in Dicot and Monocot; Polyembryony, Structure of Dicot and Monocot seed, Fruit types; Dispersal mechanisms in fruits and seeds.

LESSON PLAN
 BSc 6th sem
 BOTANY
 Paper - 1 and Paper - 2
 2022-2023
 Assistant Professor- Poonam sharma

Month	Topic
February	Paper -1 Basics of Enzymology: Discovery and nomenclature; characteristics of enzymes; concept of holoenzyme, apoenzyme, coenzyme and co-factors; regulation of enzyme activity; mechanism of action.
February	Respiration: ATP – the biological energy currency; aerobic and anaerobic respiration; Krebs cycle; electron transport mechanism (chemiosmotic theory); redox -potential; oxidative phosphorylation; pentose phosphate pathway Lipid metabolism: Structure and functions of lipids; fatty acid biosynthesis; β -oxidation; saturated and unsaturated fatty acids; storage and mobilization of fatty acids. Nitrogen metabolism: Biology of nitrogen fixation; importance of nitrate reductase and its regulation; ammonium assimilation
March	Genetic engineering and Biotechnology: Tools and techniques of recombinant DNA technology; cloning vectors; genomic and cDNA library; transposable elements; aspects of plant tissue culture; cellular totipotency, differentiation and morphogenesis; biology of Agrobacterium; vectors for gene delivery and marker genes. Paper -2 Vavilov's centres of origin of crop plants, Origin, distribution, botanical description, brief idea of cultivation and economic uses of the following: Food plants - cereals (rice, wheat and maize), pulses (gram, arhar and pea), vegetables (potato, tomato and onion).
April	Origin, distribution, botanical description, brief idea of cultivation and economic uses of the following: Fibers- cotton, jute and flax. Oils- groundnut, mustard, sunflower and coconut. Morphological description, brief idea of cultivation and economic uses of the following: Spices- coriander, ferula, ginger, turmeric, cloves. Medicinal plants- Cinchona, Rauwolfia, Atropa, Opium, Cannabis, Azadirachta, Withania.
May	Botanical description, processing and uses of: Beverages- tea and coffee; Rubber - Hevea; Sugar- sugarcane General account and sources of timber; energy plantations and bio-fuels.