Lesson Plan: Feb. 2024- May 2024 Class B.Sc 1 year 2nd sem.

Name of Assistant Professor: **Amit** Subject:- Botany

Paper- **Plant Taxonomy and Ecology**

Week	Topics
Week 1	**Botanical nomenclature** and major rules of ICBN and ICN; Keys to identification of plants. General introduction and importance of herbaria and botanical gardens.
Week 2	Documentation of Floristic Diversity: Brief idea about floras, monographs and journals. Brief idea of taxonomic evidences, Types of inflorescence, flower and parts of flower.
Week 3	**Artificial,** natural and phylogenetic classifications. Bentham and Hooker system of classification (upto series), Angiosperm Phylogeny Group-general account.
Week 4	Diagnostic features and economic importance of the following families: Ranunculaceae, Brassicaceae, Malvaceae, Euphorbiaceae
Week 5	Rutaceae, Leguminosae, Apocynaceae, Lamiaceae,
Week 6	Solanaceae, Asteraceae, Poaceae and Orchidaceae
Week 7	**Ecology**: Definition; scope and importance; levels of organization. Environmental factors- climatic factors, edaphic factors, topographic; and Biotic factors. Population Ecology: Basic concept; characteristics; biotic potential, growth curves; ecotypes and ecads.
Week 8	Community Ecology: Concepts; characteristics (qualitative and quantitative-analytical and synthetic); methods of analysis; ecological succession.
Week 9	**Ecosystem**: Structure and functions (trophic levels, food chains, food webs, ecological pyramids and energy flow). Phyto-geography: Phyto-geographical regions of India; vegetation types of India (forests)
Week 10	Environmental Pollution: Sources, types and control of air and water pollution. Global Change: Greenhouse effect and greenhouse gases; impacts of global warming; carbon trading.
Week 11	**Biodiversity**: levels, types, significance, threats and conservation.
Week 12	Revision and Test

Lesson Plan: Jan 2024- April 2024 Class B.Sc 2 year 4th sem.

Name of Assistant Professor: **Amit** Subject:- Botany

Paper- BIOLOGY AND DIVERSITY OF SEED PLANTS-II & PLANT EMBRYOLOGY

Week	Topics
Week 1	Taxonomy and Systematics, fundamental components of taxonomy (identification, classification, description, nomenclature and phylogeny).
Week 2	Role of chemotaxonomy, cytotaxonomy and taximetrics in relation to taxonomy. Botanical Nomenclature, principles and rules, principle of priority Test
Week 3	Type concept, taxonomic ranks. Keys to identification of plants.
Week 4	Flower and Types of Inflorescence.
Week 5	Salient features of the systems of classification of angiosperms proposed by Bentham & Hooker and Engler & Prantl
Week 6	Diversity of Flowering Plants: Diagnostic features and economic importance of the following families: Ranunculaceae, Brassicaceae, Malvaceae, Euphorbiaceae,
Week 7	Euphorbiaceae, Rutaceae, Leguminosae, Apiaceae, Asclepiadaceae
Week 8	Lamiaceae, Solanaceae, Asteraceae, Liliaceae and Poaceae
Week 9	Flower-a modified shoot; functions of various floral parts. Microsporangium, its wall and dehiscence mechanism. Microsporogenesis, pollen grains and its structure (pollen wall).
Week 10	Pollen-pistil interaction; self incompatibility. Pollination (types and agencies); pollen germination (microgametogenesis). Male garnetophyte
Week 11	Structure of Megasporangium (ovule), its curvatures; Megasporogenesis and Megagametogenesis. Female gametophyte (mono-, bi- and Tetrasporic). Double fertilization. Endosperm types and its biological importance.
Week 12	Embryogenesis in Dicot and Monocot; polyembryony. Structure of Dicot and Monocot seed. Fruit types; dispersal mechanisms in fruits and seeds.
Week 13	Final Revision & Test

Lesson Plan: Jan. 2024- April 2024 Class B.Sc 3rd year 6th sem.

Name of Assistant Professor: **Amit** Subject:- Botany

Paper- **Biochemistry and Plant Biotechnology & Economic Botany**

Week	Topics
Week 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.
Week 2	**Growth and development:** Definitions; phases of growth and development; Plant hormones- auxins, gibberellins, cytokinins, abscissic acid and ethylene, history of their discovery, mechanism of action;
Week 3	photo-morphogenesis; phytochromes and their discovery, physiological role and mechanism of action, **Lipid metabolism:** Structure and functions of lipids; fatty acid biosynthesis; B-oxidation; saturated and unsaturated fatty acids; storage and mobilization of fatty acids
Week 4	**Nitrogen metabolism:** Biology of nitrogen fixation; importance of nitrate reductase and its regulation; ammonium assimilation
Week 5	**Genetic engineering and Biotechnology:** Tools and techniques of recombinant DNA technology; cloning vectors; genomic and cDNA library; transposable elements;
Week 6	aspects of plant tissue culture; cellular totipotency, differentiation and morphogenesis; biology of Agro-bacterium; vectors for gene delivery and marker genes.
Week 7	Origin, distribution, botanical description, brief idea of cultivation and uses of the following: **Food plants- Cereals** (Rice, Wheat and Maize). **Pulses-** (Gram, Arhar and Pea)
Week 8	Origin, distribution, botanical description, brief idea of cultivation and uses of the following: **Vegetables-** (Potato, Tomato and Onion). **Fibers-** Cotton, Jute and Flax. **Oils-** Groundnut, Mustard and Coconut
Week 9	Morphology of plant part used, brief idea of cultivation and uses of the following: **Spices-** Coriander, Ferula, Ginger, Turmeric, Cloves. **Medicinal Plants-** *Cinchona*, *Rauwolfia*, *Atropa*, *Opium*, *Cannabis*, Neem.
Week 10	Botanical description and processing of: **Beverages-** Tea and Coffee. **Rubber-** *Hevea*. **Sugar-** Sugarcane
Week 11	General account and sources of timber; energy plantations and bio-fuels.
Week 12	Revision Test