

BOTANY DEPARTMENT 2024-25

LESSON PLAN IST SEMESTER

SANJAY KUMAR

JULY-AUG	Bacteria: Structure, nutrition, reproduction and economic importance. Viruses: General account of Viruse including structure of TMV and Bacteriophages. Algae: General characters, Introductory classification; economic importance; and life cycle (excluding development) of <i>Nostoc</i> (Cyanophyceae), <i>Volvox</i>, (Chlorophyceae), <i>Vaucheria</i> (Xanthophyceae), <i>Ectocarpus</i> (Phaeophyceae) and <i>Polysiphonia</i> (Rhodophyceae). Fungi: General characters, Introductory classification; economic importance; and life-history of <i>Phytophthora</i> (Mastigomycotina), <i>Penicillium</i> (Ascomycotina), <i>Puccinia</i> (Basidiomycotina), <i>Colletotrichum</i> (Deuteromycotina).
SEP.	General account of Lichens, types, ecological and economic importance. Bryophyta: Bryophytes: General characteristics, classification upto classes (Smith, 1935), alternation of generations, structure and reproduction (excluding development) of <i>Marchantia</i> (Hepaticopsida), <i>Anthoceros</i> (Anthocerotopsida), <i>Funaria</i> (Bryopsida), ecological and economic importance of bryophytes.
OCT	Pteridophyta: General characters, classification upto classes (A. R. Smith, 2006), structure and reproduction (excluding development) of <i>Rhynia</i> (Psilopsida): Structure and reproduction (excluding development) of <i>Selaginella</i> (Lycopsida), <i>Equisetum</i> (Sphenopsida) and <i>Pteris</i> (Pteropsida). heterospory and seed habit, stelar evolution; Ecological and economic importance.
NOV.	Gymnosperms: General characteristics, classification upto classes (Smith 1955), morphology, anatomy and reproduction of <i>Cycas</i>, <i>Pinus</i>, <i>Ephedra</i> (developmental details not to be included); Distribution and economic importance; General account of paleobotany and Geological timescale.

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LESSON PLAN 3RD SEMESTER
SANJAY KUMAR

JULY- AUG	Plantwaterrelations:absorption,waterpotentialandtranspiration;roleof micro andmacro nutrients. Photosynthesis,Respiration.
SEPT.	Biosynthesis, mechanism of action and uses of auxin, gibberellin,cytokinin, abscisic acid, ethylene, Lipid metabolism and Nitrogenmetabolism
OCT.	Structure,functionandmechanismsofactionofphytochromes;stomatal movement;photoperiodismandbiologicalclocks;mechanismof flowering.
NOV.	Conceptsofplantgrowth;factorsaffectinggerminationanddormancyof seeds;physiologicalandbiochemicalchangesassociatedwithsenescenc eandabscission.

**B.Sc. III
(BOTANY)**

**LESSON PLAN 2024-25
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SEMESTER –V**

UNIT-I (JULY-AUGUST)

Plant-water Relations: Importance of water to plant life; physical properties of water; Imbibition, Diffusion, Osmosis and Plasmolysis; absorption and transport of water; transpiration-types, physiology of stomata, factors affecting transpiration, importance of transpiration.

Mineral Nutrition: Essential macro and micro elements and their role; mineral uptake; deficiency symptoms.

Transport of Organic Substances: Mechanism of phloem transport; source-sink relationship; factors affecting translocation.

UNIT-II (SEPT-OCT)

Photosynthesis: Significance; historical aspects; photosynthetic pigments; action spectra and enhancement effects; concept of two photosystems; Z-scheme; photo-phosphorylation; Calvin cycle; C4 pathway; CAM plants; photorespiration.

Respiration: ATP—the biological energy currency; aerobic and anaerobic respiration; Krebs cycle; electron transport mechanism (chemi-osmotic theory); redox - potential; oxidative phosphorylation; pentose phosphate pathway.

Seed dormancy; plant movements; the concept of photoperiodism; physiology of flowering; florigen concept; physiology of senescence; fruit ripening.

PAPER – II Ecology (NOV-DEC)

UNIT-I

Introduction to Ecology: Definition; scope and importance; levels of organization.

Environment: Introduction; environmental factors- climatic (water, humidity, wind, light, temperature), edaphic (soil profile, physico-chemical properties), topographic and biotic factors (species interaction).

Adaptations of plants to water stress and salinity (morphological and anatomical features of hydrophytes, xerophytes and halophytes).

Population Ecology: Basic concept; characteristics; biotic potential, growth curves; ecotypes and ecads.

