

Taxonomy of Angiosperms

BOT201

UNIT-I

origin and evolution of angiosperms, general principles of angiosperm phylogeny, evolutionary trends in angiosperms, ecads and ecotypes, concept of taxonomic characters

UNIT-II

international code of botanical nomenclature (icbn), some important rules of nomenclature, principles of taxonomic characters, merits and demerits of major systems of classification.

UNIT-III

Systems of classification, modern trends in plant taxonomy, taxonomic evidence: morphology, anatomy, palynology, embryology, cytology,

UNIT-IV

herbarium and botanical garden, purpose of modern herbarium, techniques of herbarium, description of flowering plant, major Indian herbaria and botanical gardens, relevance of taxonomy to conserve conservation, sustainable utilization of bio-resources and ecosystem research.

UNIT-V

origin and evolution of monocotyledon and dicotyledon flower, salient features, floral diversity of family and phylogeny of the orders; ranales, tubiflorae, glumiflorae, amentiferae, centrospermae.

Suggested Readings:

1. E.J.W. Barrington - General & comparative Endocrinology - Oxford, Clarendon Press
2. R.H. Williams - Text Book of Endocrinology - W.B. Saunders
3. C.R. Martin - Endocrine Physiology - Oxford University Press.
4. Molecular Cell Biology - J. Darnell, H. Lodish and D. Baltimore - Scientific American
5. Book USA

Plant physiology BOT202

UNIT-I

water ; structure and properties of water ,waterabsorption and conduction,loss of water from plants,stomatal physiology. Nutrients and their functions,active and passive absorption of waterand nutrients .

UNIT-II

signal transduction: overview,receptors and G – Proteins, phospholipid signaling,role of cyclic nucleotides . diversity in protein kinases and phosphatases, specific signaling mechanism,eg- two component sensor system in bacteria and plants,sensory photo receptors.

UNIT-III

Photosynthesis: photosynthetic apparatus, pigments and light harvesting complexes, photooxidation of water,calvin cycle, photorespiration,CAM,C3 AND C4 Cycle and its significance.

UNIT-IV

Plant growth regulators: physiological effects and general mechanism of action of plant harmones. Brief account on brassinosteroids,jasmonic acid,NO,And Salicylic acid. Photoperiodism and its significance,endogenous clock and its regulataion,vernalization.

UNIT-V

Stress physiology: Plant responses to biotic and abiotic stress, general mechanism of abiotic stress tolerance,drought and salinity stress and antioxidants systems in plants.

Suggested readings:

1. Taiz and Zeiger, 2010, Plant Physiology, 5th Edition , Sinurer Associates
2. Hopkins, W.G. and Huner N.P.A., 2009, Introduction to Plant Physiology, 4th Edition Wiley International Edition, John Wiley & Sons, USA
3. Jones, Russell L. Buchanan, Bob B. Guissem, Wilhelm., 2002, Biochemistry and Molecular Biology of Plants. American Society of Plant Physiologists.

Plant pathology BOT203

UNIT-I

Fundamentals of plant pathology- history of plant pathology; various levels of parasites, classification of plant diseases.

Pathogenesis- penetration and entry of plant pathogens, development inside host tissue.

UNIT-II

Agents Of Plant Diseases, General Characteristics and symptoms caused by- Agents of infectious diseases (fungi, bacteria, mycoplasma, virus and nematodes) and agents of non infectious diseases (air, pollution, chemicals, minerals, temperature)

UNIT-III

Plant diseases: causal organisms, symptoms and management of –

- 1, Downy mildew of grapes
- 2, karnel bunt of wheat
- 3 smut of bajra
4. late & early blight of potato

UNIT-IV

: Plant diseases: causal organisms, symptoms and management of –

- 1, yellow vein mosaic of bhindi
- 2, black rust of wheat
- 3, Blight of paddy
- 4, Tikka disease
- 5, Sandal spike

UNIT-V

Defence mechanism in plants : Structural induced and biochemical defense mechanism, hypersensitivity reaction .Detoxification of pathogen toxin- Application of molecular biology in diseases ,control strategies, plant quarantines.

Suggested readings:

1. Willey, J.M., Sherwood, L., Woolverton, C.J., 2010. Prescott's Microbiology. 8th edition, McGraw-Hill.
2. Agrios, G. N., 1988. Plant Pathology, Academic Press.
3. John A Lucas, 1998. Plant Pathology and Plant Pathogens, Wiley-Blackwell, CRC Press.
4. Dickinson, C. M., 2003. Molecular Plant Pathology, Bios Scientific Publisher

Plant Cell And Molecular Biology

BOT204

UNIT-I

Cell and cell wall- Ultrastructure of prokaryotic and eukaryotic cells; structure ,organization and function of plant cell wall,membrane structure and function of model membrane ,lipid bilayer membrane protein diffusion,osmosis,ion channels, electrical properties of membranes.

UNIT-II

Structural organization and function of intracellular organelles (mitochondria, plastid, endoplasmicreticulum,golgi bodies,ER,) Cell division and cell cycle, mechanism of programmed cell death.

UNIT-III

RNA synthesis& processing; transcription,d na replication, operon model, extrachromosomal replicons. conformation of nucleic acids(A,B,Z) RNA processing, RNA EDITING, Trna.

UNIT-IV

Prokaryotic transcription- Transcription units; RNA polymerase, structure and assembly, promoters, initiation, elongation and termination.

Eukaryotic transcription- RNA POLYMERASE , Structure and asse, bly, promoters,DNA damage andrepair.

UNIT-V

Translation; Translational mechanism.genetic code,Wobble hypothesis,mechanism of protein synthesis.Translational factors; Initiation ,elongation and termination.

Suggested readings:

1. Molecular Biology of Cell by Bruce Alberts, Alexander Johnson, Julian Lewis, Martin Raff, Keith Roberts, Peter Walter
2. Molecular Biology by Lodish Darnell and Baltimore
3. Molecular Biology of the Gene by Watson et al 4th ed.

Laboratory Practical -1

1- To get acquainted with tools and techniques related to the plant taxonomy

2- Morphological study of representative of Angiosperm

Laboratory Practical -2

1- Molecular Biology techniques. For conducting a successful molecular biology experiment: