

**Science Faculty :: Subject : BOTANY**  
**PHD BOT 303**  
**(In force from May, 2011)**

**Unit I: Advances in Botany-I**

1. Cyanophyta: Heterocyst - Ultrastructure, biochemistry, nif- gene regulation, ecology.
2. Phytoremediation: Principle, mechanism, process and applications.
3. Plant secondary metabolites: Definition, types, classification, properties, and uses.
4. Plant tissue culture: Basic concept of PTC, Clonal propagation, Organogenesis, and applications.

**Unit II: Advances in Botany-II**

1. Tools of Taxonomy: Functions of field, herbarium, botanic gardens, floras/literature, GIS (geographic information system).
2. Nomenclature: History of ICBN, aims and principles, rules (incl. fossils and cultivated plants) and recommendations, recent nomenclature of Plants.
3. Biodiversity: Concepts, levels (genetic, species, molecular diversity), hotspots, megadiversity centers, status (with special reference to India); Concerns- extinction and threats (IUCN categories), conservation-needs and methods, conservation of biodiversity and endangered species.
4. Palynology: Branches of palynology; Spore, pre-pollen and pollen morphology, wall chemistry.

**Unit III: Advances in Botany-III**

1. Physico-chemical properties of water, Plant water relationship.
2. Structure, biosynthesis, role and mechanism of action of auxin, gibberellins, cytokines, ethylene and abscisic acid.
3. Mechanism of enzyme action, enzyme kinetics, enzyme inhibition.

Genetically modified plants for improved tolerance to biotic abiotic stress.