Department of Agricultural Biochemistry

Ph.D Programme

ABC 701 Biochemistry of Abiotic Stresses 2+1

Theory

Biochemical basis of abiotic stresses namely osmotic (drought, salinity), temperature, heavy metals, air and water pollutants, synthesis and functions of proline and glycine betaine in stress tolerance interaction between biotic and abiotic stresses; stress adaptation.

Reactive oxygen species and abiotic stress, antioxidants, enzymes defense system.

Practical

Measurement of lipid peroxidation and antioxidant potential under different systems of assay, assay of some antioxidative enzymes

ABC 702 Plant Biochemistry II 2+1

Theory

Biochemistry and significance of secondary metabolites- plant sulphur compounds including glucosinolates, cyanogenic glycosides, phenolic compounds, terpenoids, alkaloids, role of these compounds in relation to plant defense.

Practical

Estimation of Plant phenolics, alkaloids, carotenes, glucosinolates.

ABC 751 Biochemistry of Biotic Stresses 3+0

Theory

Plant-pathogen interaction and disease development; molecular mechanisms of fungal and bacterial infection in plants; changes in metabolism, cell wall composition and vascular transport in diseased plants.

Plant defence response, antimicrobial molecules; genes for resistance, hypersensitive response and cell death; systemic and acquired resistance.

Plant viruses, host-virus interactions, disease induction, virus movement, and host range determination; viroids, pathogen-derived resistance.

ABC 752 Biomembranes 2+0

Theory

Concept of biomembranes and their classification based on cellular organelles; physico-chemical properties of different biological and artificial membranes, cell surface receptors and antigen.

Membrane biogenesis and differentiation; membrane components-lipids, their distribution and organization; proteins, intrinsic and extrinsic, their arrangement; carbohydrates in membranes and their function.

Various membrane movements; transport across membrane and energy transduction.

Role of membrane in cellular metabolism, cell recognition and cell –to –cell interaction; signal transduction, recent trends and tools in membrane research.
