Faculty of Life Sciences

M.Sc. Botany

The living world; biological classification; plant kingdom

Viruses : Characteristics and classification, host-virus interaction; Bacteriophage – T4, Tobacco mosaic virus; viroids; prion.

Bacteria : Characteristics and classification, structure and reproduction; mycoplasma; economic importance.

Fungi : Characteristics and classification, structure and reproduction of Phytophthora, Rhizopus, Saccharomyces, Puccinia, Colletotrichum; economic importance.

Nematodes : Elementary idea of nematodes; role of nematodes in agriculture.

Diseases : General account of diseases caused by plant pathogens including viruses (tobacco mosaic virus), bacteria (citrus – canker), mycoplasma (little leaf of brinjal), fungi (early and late blight of potato, stem gall of coriander, stem rust of wheat, loose smut of wheat, green-ear disease of bajra, white rust of crucifers, wilt of pegion-pea, tikka disease of groundnut, powdry mildews of cucurbits, redroot of sugarcane) and nematodes (ear – cockle of wheat, root-knot of okra).

Algae : Characteristics and classification; structure and reproduction of Nostoc, Chlamydomonas, Volvox, Vaucheria, Chara, Batrachospermum, Ectocarpus; economic importance.

Bryophytes : Characteristics and classification; structure and reproduction of Riccia, Marchantia, Anthoceros, Funaria; economic importance.

Pteridophytes : Characteristics and classification, structure and reproduction of Rhynia, Psilotum, Lycopodium, Selaginella, Marsilea, Equisetum and Pteris; Telome theory; stellar evolution; heterospory and seed habit.

Gynnosperms : Chateristics and classification, structure and reproduction of Cycas, Pinus and Ephedra.

Angiosperms : Characteristics and classification; description and economic importance of families of dicots (Ranunculaceae, Papaveracea, Capparidaceae, Caryophyllaceae, Malvaceae, Rutaceae, Cucurbitaceae, Apiaceae, Rubiaceae, Apocynaceae, Asclepiadaceae, Convolvulceae, Solanaceae, Acanthaceae, Lamiaceae, Euphorbiaceae, Moraceae) and monocots (Liliaceae, Arecaceae, Poaceae).

Anatomy : Tissues and tissue systems and their function, anatomy of root, stem and leaf of dicots and monocots, secondary growth.

Cell : Prokaryotic and enkaryotic cells, structure and functions, cell cycle and cell division.

Physiology : Plant water relations; mineral nutrition; photosynthesis; translocation of food material; respiration; nitrogen and nucleic acid metabolism; growth and development.

Reproduction : A sexual and sexual reproduction; structure and functions of flower, microsporogenesis, megasporogensis, pollination, fertilization, development of embryo, endosperm and seed; apomixes.

Genetics : Mendel's principles of inheritance, gene interactions, quantitative genetics, gene mapping; two and three point test crosses; cytoplasmic inheritance, descriptive statistics. Molecular genetics – Composition and roles of different forms of nuceic acids; DNA replication, transcription, translation; gene regulation in prokaryotes and eukaryotes.

Bio-technology : Principles and processes, application of bio-technology in agriculture.

Ecology : Organisms and environment, population, biotic community and succession; ecosystem – structure and function; natural resources and biodiversity and their conservation; environmental issues.