PROGRAMME: MASTER OF SCIENCE BOTANY (MSCBOT20)
Year/ Semester: IIIrd semester
Course Code: MBOT-605(L)
Course Name: LABORATORY COURSE-III

Syllabus

CELL BIOLOGY AND GENETICS (Lab Course)

BLOCK – I: CELL BIOLOGY

Unit –1: Observation of cell and cell organelles
Unit –2: Squash preparation of onion root tips to study mitosis
Unit –3: Smear preparation of maize or onion flower buds to study meiosis
Unit –4: Karyotype analysis

BLOCK – II: GENETICS

Unit –5: Problems of monohybrid cross
Unit –6: Problems of dihybrid cross
Unit –7: Problems of trihybrid cross
Unit –8: Genetic mapping in Eukaryotes

MEDICINAL PLANTS (Lab Course)

BLOCK – I: MEDICINAL PLANTS-I

Unit –1: Analysis of morphological attributes in selected medicinal plants
Unit –2: Identification of crude drugs using anatomical characters
Unit –3: Identification of crude drugs using physical properties
Unit –4: Qualitative analysis of crude drugs for different phytochemicals

BLOCK – II: MEDICINAL PLANTS-II

Unit –5: Antimicrobial studies and determination of MIC (minimum inhibitory concentration)
Unit –6: Anatomical studies of medicinal plants
Unit –7: Histochemical analysis of medicinal plants
Unit –8: Collection of ethnobotanical information of local medicinal plants

APPLIED MYCOLOGY (Lab Course)

BLOCK-1: APPLIED MYCOLOGY-I

Unit-1: Sterilization Methods, Preparation of Media and Stains
Unit-2: Isolation Techniques
Unit-3: Single Spore Isolation, Pure Culture and Conservation of Fungal Germplasm
Unit-4: Fermentation Methods
Unit-5: Isolation of *Trichoderma viride* and *T.harzianum* and their evaluation as Biocontrol Agents

BLOCK-2: APPLIED MYCOLOGY-II

Unit-6: Collection and Identification of Ectomycorrhizae
Unit-7: VAM Fungal Root Colonization, Evaluation and Quantification in *Parthenium* and *Castor*
Unit-8: Isolation of Keratinophilic fungi
Unit-9: Observation of Hyperparasites and Common Entomogenous Fungi
Unit-10: Testing of Some Isolates of *Penicillium* species against Pathogenic Bacteria

PLANT MOLECULAR BIOLOGY (Lab Course)

BLOCK – I: MOLECULAR BIOLOGY-I

Unit –1: Isolation of plasmid DNA from bacteria and agarose gel electrophoresis of DNA
Unit –2: Production of competent cells and bacterial transformation
Unit –3: Isolation of plant genomic DNA
Unit –4: Restriction Endonuclease digestion of plasmid and genomic DNA
Unit–5: Isolation of plant RNA

BLOCK – II: MOLECULAR BIOLOGY-II

Unit –6: Quantification of DNA, RNA and reassociation kinetics of DNA
Unit –7: Polymerase Chain Reaction
Unit –8: Southern, Northern and Western Blotting
Unit –9: RAPD Analysis
Unit –10: Gene cloning