PROGRAMME: MASTER OF SCIENCE BOTANY (MSCBOT20)
Year/ Semester: IVth semester
Course Code: MBOT-610(L)
Course Name: LABORATORY COURSE-IV

Syllabus

BIOSTATISTICS AND ECOLOGY (Lab Course)

BLOCK – I: BIOSTATISTICS

Unit –1: Designing of experiment and random sampling
Unit –2: Problems on means and variation
Unit –3: Problem on F-ratio and critical differences (CD)
Unit –4: Problem on chi-square test
Unit –5: Problem on ANOVA

BLOCK – II: ECOLOGY

Unit –6: Determination of minimum size quadrats by species area curve
Unit –7: Determination of quantitative characters by random quadrat methods
Unit –8: Evaluation of life form classes of local flora
Unit –9: Morphology and anatomy of common hydrophytes and xerophytes
Unit –10: Interpretation of environmental data and climatogram and plotting techniques.
Unit –11: Mechanical analysis of soil, soil pH, soil moisture and water holding capacity
Unit –12: Estimation of chlorides, carbonates, bicarbonates and dissolves oxygen in clean and polluted water

EMBRYOLOGY OF ANGIOSPERMS (Lab Course)

BLOCK – I: EMBRYOLOGY-I

Unit –1: Study of ovules and ovaries and their identification
Unit –2: Pollen grain analysis by acetolysis
Unit –3: Pollen germination studies
Unit –4: Estimation of pollen fertility

BLOCK – II: EMBRYOLOGY-II

Unit –5: Study of endosperm haustoria
Unit –6: Study of embryos
Unit –7: Study of protandry and protogyny
Unit –8: Study of heterostyly

BLOCK – III: EMBRYOLOGY-III

Unit –9: Fundamentals of microtome technique
Unit –10: Preparation of permanent slides
Unit –11: Anther culture
Unit –12: Callus culture

PLANT PATHOLOGY (Lab Course)

BLOCK-1: PLANT PATHOLOGY

Unit-1: Observation of Plant Disease Symptoms caused by Bacteria, Viruses and Fungi
Unit-2: Observation of Fungal Pathogens and their identification
Unit-3: Isolation of Plant Pathogens and Pure Culture Preparation
Unit-4: Establishing Koch's Postulates for Evaluation of Pathogenecity
Unit-5: Evaluation of Disease Index and Crop Loss
Unit-6: Evaluation of culture filtrates for cellulose, pectinase and protease and amylase
Unit-7: Estimation of Protein and Amino Acids
Unit-8: Spawn Preparation of Edible Mushrooms (Oyster), Bed Preparation and Mushroom Production
Unit-9: Evaluation of Fungicidal Efficacy
Unit-10: Collection of Materials with Diseases

BIOTECHNOLOGY (Lab Course)

BLOCK – I: BIOTECHNOLOGY-I

Unit –1: Preparation of media, surface sterilization and inoculation of explants
Unit –2: Initiation of callus and suspension cultures
Unit –3: Plant regeneration from callus cultures
Unit –4: Micropropagation of plants
Unit –5: Protoplast isolation and culture

BLOCK – II: BIOTECHNOLOGY-II

Unit –6: Genetic transformation of plants using *Agrobacterium tumerfaciens*
Unit –7: Induction of hairy root culture using *Agrobacterium rhizogenes*
Unit –8: Direct gene transformation of plants using biolistic gun
Unit –9: Sequence alignment
Unit –10: Exploring genebank database and blast search