

MASTER OF SCIENCE (BOTANY) – FIRST SEMESTER

First Semester			
S. No.	Name of Subject	Credits	Total Marks
1	Phycology	5	100
2	Mycology	5	100
3	Introductory Microbiology	4	100
4	Introductory Plant Ecology	4	100
5	Practical	4	100
Total		22	

Subject Name: PHYCOLOGY

1. Principles and systems of classification.
2. Comparative account of algal pigments, food reserves, flagellation, chloroplasts and eye spots; their taxonomic importance and molecular phylogeny.
3. **Cyanophyta:** Cell structure and thallus organisation, heterocyst and akinete development and their role, chromatic adaptation and reproduction.
4. **Chlorophyta:** Range of thalli, methods of reproduction and perennation, life cycles and alternation of generation.
5. **Phaeophyta:** Range of thallus structure, reproduction, life histories and alternation of generation.
6. **Rhodophyta:** Range of thallus structure, reproduction, life histories and alternation of generation, post-fertilization development and sites of meiosis.
7. A brief account of Xanthophyta, Chrysophyta, Bacillariophyta, Pyrrophyta, Euglenophyta, Eustigmatophyta, Prasinophyta, Prochlorophyta and Phycoviruses.
8. **Algae and human affairs:** Edible algae, algal biofertilizers, phycocolloids, algal blooms and phycotoxins.

Subject Name: MYCOLOGY

1. Introduction, scope and general principles of classification of fungi.
2. Myxomycotina: Plasmodiophorales.
3. Mastigomycotina: Chytridiales, Blastocladales, Saprolegniales and Peronosporales.
4. Zygomycotina: Mucorales and Entomophthorales.
5. Ascomycotina: Endomycetales, Protomycetales, Taphrinales, Erysiphales, Eurotiales, Sphaeriales, Helotiales, Phacidiales and Pezizales.

6. Basidiomycotina: Uredinales, Ustilaginales, Lycoperdales, Nidulariales, Sclerodermatales, Phallales, Agaricales, Aphyllophorales, Tremellales and Auriculariales.
7. Dueteromycotina: Sphaeropsidales, Melanconiales, Moniliales and Mycelia sterilia.
8. Lichens: Thallus structure, reproduction and economic importance.

Subject Name: INTRODUCTORY MICROBIOLOGY

UNIT-I

Introduction to microbiology, scope of microbiology, microbiology in human welfare, bioterrorism. Microbial diversity: Microbial taxonomy and phylogeny. Major groups and their characteristics (Five kingdom system and three domain system of classification). Microscopy: Working principles of Light, Electron, Phase contrast and fluorescence microscopy.

UNIT-II

Bacterial- nutrition, growth, types of culture media, microbial growth, methods of isolation of pure culture, maintenance and preservation of microbial cultures, control of microorganisms,

UNIT-III

Genetics of bacteria: Genetic recombination - an overview; mechanisms of transformation, conjugation and transduction in bacteria; role of microorganisms in genetic engineering.

UNIT –IV

Virus-General characteristics; Classification and types of viruses, Viruses, Viroids, Virusoides, Prions, Replication of viruses – Lytic Cycle and Lysogenic Cycle (Bacteriophage), Transmission cycle of viruses

Subject Name: INTRODUCTORY PLANT ECOLOGY

UNIT-I

Definition, Principles and scope and significance of ecology, Vegetation patterns of the world: Life zones; major biomes and major vegetation types of the world, Biogeography, phytogeography; Ecosystem: Basic concept, scope and types; factor effecting ecosystem, Abiotic and Biotic components and their significance in ecosystem; Food chains and Food webs, Ecological pyramids, Energy flow.

UNIT-II

Plant Adaptations: Concept of limiting factors, Leibig's law of Tolerance, Law of Tolerance, Phenotypic plasticity, Ecotypes, Ecolines, Strategies of adaptation in plants.

UNIT-III

Population Ecology: Definitions, Attributes of population, Characteristics of population, Population growth density, Density dependent and Density independent factors, Age structure, Natality, Mortality, Biotic potential, Carrying capacity, Survivorship and age structure, Seasonal population fluctuation, Population dynamics, r and k selection.

UNIT-IV

Competition and coexistence, Intra-Specific Interactions, Interspecific Interactions, Mutualism and Commensalism, Prey-predator Interactions, Scramble and Contest Competition.

Ecological Succession: Types, Trends and Models of Succession; Concept of Climax Community; Theories on Climax, Ecotone and Edge Effect, Ecotypic differentiation, r and k strategies.

Subject Name: PRACTICAL