and multicellular organization; cell wall composition; nutrition (saprobic, biotrophic and symbiotic) reproduction (vegetative, asexual, sexual); heterothallism; heterokaryosis; parasexuality; recent trends in classification. Phylogeny of fungi; general account of Mastigomycotina, Zygomycotina, Ascomycotina, Basidiomycotina and Deuteromycotina; Mycorrhizae and Lichens.

UNIT-IV

Microbiology : Fungiin industry, medicine and food; Archaebacteria eubacteria and cyanobacteria : general account; ultrastructure, nutrition and reproduction; biology and economic importance; general account of Prions, Rickettsias, L-forms, Viroids etc. Viruses : Characteristics and ultrastructure of virions; isolation and purification of viruses; chemical nature, replication, transmission of viruses; economic importance.

Mycoplasma and Phytoplasma : General characteristics and role in causing plant diseases.

UNIT-V

Phytopathology : Scope and brief history of plant pathology, concept of disease and a general account of diseases caused by various plant pathogens. Important symptoms of plant diseases. Mechanism of host penetration and defense. A general account of physiological specialization, toxins and phytoalexins. Molecular basis of host-parasite interaction. Plant diseases management and fungi as biocontrol agents.

M.Sc. (PREVIOUS) BOTANY

PAPER-II
BIOLOGY AND DIVERSITY OF BRYOPHYTES, PTERIDOPHYTES AND GYMNOSPERMS

UNIT-I

General characters and classification :

Structure, reproduction, interrelationships of Bryophytes with special reference to:

1. Sphaerocarpales : *Sphaerocarpos*
2. Marchantiales : *Marchantia, Asterella*
3. Jungermanniales : *Pellia*
4. Calobryales : *Calobryum*
5. Anthocerotales : *Anthoceros* complex, *Notothylas*
6. Sphagnales : *Sphagnum*
7. Bryales : *Polytrichum*

UNIT-II

A systematic study of the distribution (present and past with special reference to India), structure, reproduction, evolution and inter-relationships of the Pteridophyta with special reference to :

1. Psilophytopsida : Psilophytales - general account

2. Psilotopsida : Psilotales - general account

3. Lycopsida : Lepidodendrales-*Lepidodendron;* Isoetales-*Isoetes;* Selaginellales-*Selaginella*

4. Sphenopsida : Sphenophyllales – *Sphenophyllum*; Calamitales-*Calamites*

5. Pteropsida : Eusporangiatae: Ophioglossales-*Ophioglossum*; Marattiales-*Marattia*; Osmundales-*Osmunda.*

UNIT-III

Pteridopsida : Leptosporangiate; Filicales - *Gleichenia, Cyathea*
Marsileales - general account
Salviniales - general account

6. Evolution of stelar system; cytology and the study of Prothallus in relation to taxonomy; soral evolution

7. Fossils : Conditions necessary for fossilization, types of fossils and methods of their study; nomenclature

UNIT-IV

8. Present and past distribution of gymnosperms with special reference to India.

Classification; morphology, anatomy, life history, phylogeny and relationships of the main groups of gymnosperms with special reference to :

9. Cycadofilicales – General account.

10. Glossopteridales, Caytoniales, Nilssoniales – general account

11. Bennettitales – general account with reference to *Bennettites*

12. Cycadales and Pentoxylales – general account and phylogeny

13. Cordaitales – general account – *Cordaites*, Platyspermic seeds

14. Ginkgoales - *Ginkgo*

UNIT-V

15. Coniferales – A comparative account of the morphology, anatomy and life history; evolution of the female strobilus and phylogeny

16. Ephedrales – *Ephedra*

17. Welwitschiales – *Welwitschia*

18. Gnetales – *Gnetum*