**Syllabus for B.Sc. Botany**
**B.Sc. I year**
**Session - 2011-12**

There will be Three theory papers and a practical examination as follows:

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| Paper I | - Diversity of Viruses, Bacteria & Fungi | M. M.: 50 |
| Paper II | - Diversity of Algae, Lichens, & Bryophytes | M. M.: 50 |
| Paper III | - Diversity of Pteridophytes & Gymnosperms | M. M.: 50 |

(There will be 9 questions in each paper and candidate has to attempt only 5 questions. Q.1 will be compulsory based on units I - IV. Two questions will be set from each unit of which one question has to be attempted. All questions will carry equal marks.

Practicals: Based on papers I - III M. M.: 50

**The course detailes are as follows**:-

**Paper I**: Diversity of Viruses, Bacteria, & Fungi M.M. 50

Unit-I

History, nature and classification of Viruses, Bacteria and Fungi.

History of virology and bacteriology; prokaryotic and eukaryotic cell structure (bacteria, mycoplasma and yeast); structure, classification and nature of viruses; structure (gram positive and gram negative) and classification (based on cell structure) of bacteria; classification, thallus organisation and reproduction in fungi; economic importance of fungi.

Unit-II

**Viruses:**Symptoms of virus infection in plants; transmission of plant viruses; genome organisation, replication of plant virus (tobacco mosaic virus); techniques in plant viruses - purification, serology and electron microscopy; structure and multiplication of bacteriophages; structure and multiplication of viroids.

Unit-III

**Bacteria:**Nutritional types of bacteria (based on carbon and energy sources), metabolism in different nutritional types (basics only) and nitrogen cycle; bacterial genome and plasmids; bacterial cell division, variability in bacteria - mutation, principles of genetic recombination; techniques in sterilisation, bacterial culture and staining; economic importance.

Unit-IV

**Fungi:**The characteristics and life cycles of the following:

**Mastigomycotina**: *Albugo, Pythium,;* **Ascomycotina**: *Saccharomyces, Aspergillus; Ascobolus;*
**Basidiomycotina** : *Ustilago, Puccinia, Polyporus, Agaricus;* **Deuteromycotina**: *Fusarium.*

**Paper II** - Diversity of Algae, Lichens, and Bryophytes M.M. 50

Unit-I

General characters. Range of thallus organization, classification, ultrastructure of eukaryotic algal cell and cyanobacterial cell, economic importance of algae. Lichens, classification, thallus organization, reproduction, physiology and role in environmental pollution.

Unit-II

The characteristics and life cycles of the following:-
**Cyanophyta** *Microcystis, Oscillatoria :***Chlorophyta** *Volvox, Hydrodictyon, Oedogonium, Coleochaete, Chara;* **Bacillariophyta** *Navicula;* **Xanthopyta** *Vaucheria;* **Phaeophyta**; *Ectocarpus*
**Rhodophyta** *Polysiphonia*

Unit – III

Bryophytes, general characters, classification, reproduction and affinities. Gametophytic and soporophytic organization of:
**Bryopsida:** *Pogonatum;* **Anthocerotopsida:** A*nthoceros*

Unit - IV

Gametophytic and sporophytic organization of ***Hepaticopsida*** : Riccia, *Marchantia.*

**Paper III** – Diversity of Pteridophytes, Gymnosperms and elementary Palaeobotany M.M. 50

Unit - I

**Pteridophytes**: General features, classification, stellar system and its evolution. Comparative study of morphology, anatomy, development, vegetative and reproductive systems of following:
**Lycopsida** - L*ycopodium, Selaginella;****Psilopsida-*** *Rhynia*

Unit – II

General and comparative account of gametophytic and sprophytic system in
**Filicopsida -**Pteridium, *Nephrolepis. Marsilea.*
Heterospory and seed habit.

Unit - III

**Gymnosperms**: General characters, classification. Comparative study of morphology, anatomy, development of vegetative and reproductive parts in:
**Cycadales:** *Cycas*

Unit –IV

Study of morphology, anatomy, development and reproductive parts in:
**Coniferales** – *Pinus* ; **Gnetales -** *Ephedra*
Affinities and relationship of Gymnosperms, evolutionary significance.
Elementary Palaeobotany: general account, types of fossils, methods of fossilization and geological time scale.