

Based on Unified Syllabus of Botany for U.P.State Universities

**(B.Sc. I, II, & III year)**

All syllabi are effective from July , 2018 Revised on 13.03.2018

Theory Paper's duration is of Three hours and duration of practicals is Four hours

<b>B.Sc. I Year</b>		
<b>Papers</b>	<b>Title of Paper</b>	<b>Max. Marks</b>
Paper I	Diversity of Viruses, Bacteria & Fungi	50
Paper II	Diversity of Algae, Lichens, & Bryophytes	50
Paper III	Diversity of Pteridophytes & Gymnosperms	50
Practical	Practical Syllabus based on theory papers	50
<b>B.Sc. II Year</b>		
<b>Papers</b>	<b>Title of Paper</b>	<b>Max. Marks</b>
Paper I	Diversity of Angiosperms: Systematics, Development & Reproduction	50
Paper II	Cytology, Genetics, Evolution & Ecology	50
Paper III	Plant Physiology and Biochemistry	50
Practical	Practical Syllabus based on theory papers	50
<b>B.Sc. III Year</b>		
<b>Papers</b>	<b>Title of Paper</b>	<b>Max. Marks</b>
Paper I	Plant Resource Utilization, Palynology, Plant Pathology and Biostatistics	50
Paper II	Molecular Biology & Biotechnology	50
Paper III	Environmental Botany	50
Practical	Practical Syllabus based on theory papers	50
Grand Total		600

At least one Field trip in B.Sc. II is compulsory.

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**Subject- Botany  
B.Sc. - First Year  
Practical**

**Time: 4.00 hrs**

**Max Marks: 50**

1- Temporary slide preparation & Identification (Fungi)/Bacteria)	08 Marks
2- Temporary slide preparation & Identification (Pteridophyte/Gymnosperm)	08 Marks
3- Temporary Mount & Identification (Algae/ Bryophyte)	08 Marks
4- Temporary mount of rhizoid/scale/spore; or Gram staining of Bacteria	04 Marks
4- Identify and Comment upon spots (1-6)	12 Marks
7- <i>Viva-Voce</i>	05 Marks
8- Practical class record	05 Marks
Total Marks	<b>50</b>

**Unified Syllabus of Botany for U.P.State Universities**

**Subject- Botany  
B.Sc. -Second Year  
Practical**

**Time: 4.00 hrs**

**Max Marks: 50**

1- Description, Identification and Classification of given Angiospermic Plant	08 Marks
2- To perform and write the observations, results & conclusion (Physiology)	08 Marks
3- Temporary slide preparation & Identification (Anatomy)/ Temporary Mount (Embryology)/ Biochemistry / Genetics Exercise	04 Marks
4- Cytology/Ecology Exercise	08 Marks
5- Identify and Comment upon spots (1-6)	12 Marks
6- <i>Viva-Voce</i>	05 Marks
7- Practical class record/ chart/ model/ herbarium	05 Marks
Total Marks	<b>50</b>

The course details are as follows:-

### B.Sc. I Year

**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 (Ainsworth), thallus organization and reproduction in fungi; economic importance of fungi.

#### Unit-II

**Viruses:** Genome organisation, replication of plant viruses (tobacco mosaic virus), bacteriophages and viroids; techniques in plant viruses - purification, serology and electron microscopy; Economic importance of viruses

#### Unit-III

**Bacteria:** Bacterial genome and plasmids; bacterial reproduction, techniques of sterilisation and staining; economic importance.

#### Unit-IV

**Fungi:** The outline life cycles of the following:

**Mastigomycotina:** *Albugo, Pythium*; **Ascomycotina:** *Saccharomyces, Aspergillus, Ascobolus*;

**Basidiomycotina :** *Ustilago, Puccinia, Polyporus, Agaricus*; **Deuteromycotina:** *Fusarium, Cercospora*.

**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. Ecological and economic importance of lichens.

**Unit-II**

The characteristics and life cycles of the following:-

**Cyanophyta**, *Oscillatoria*; **Chlorophyta** *Volvox*, *Hydrodictyon*, *Oedogonium*, *Chara*; **Bacillariophyta** *Navicula*; **Xanthophyta** *Vaucheria*; **Phaeophyta**; *Ectocarpus*, *Saragassum*, **Rhodophyta** *Polysiphonia*

**Unit – III**

Bryophytes, general characters, classification, reproduction and affinities. Gametophytic and sporophytic organization only of **Hepaticopsida** : *Riccia*, *Marchantia*.

**Unit - IV**

Gametophytic and sporophytic organization only of:

**Anthocerotopsida**: *Anthoceros*; **Bryopsida**: *Pogonatum*;

**Unit - I**

**Pteridophytes**: General features, classification, stelar system and its evolution. Heterospory and seed habit. Comparative study of morphology, anatomy, development, vegetative and reproductive systems of following:

**Lycopsida** - *Lycopodium*, *Selaginella*; **Psilopsida**- *Rhynia*

**Unit – II**

General and comparative account of gametophytic and sporophytic system only in

**Filicopsida** -*Pteridium*, *Equisetum*. *Marsilea*.

**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.

### Books Recommended:

1. Ganguly and Kar. College Botany Vo. II. Calcutta
2. Khan, M.1983 Fundamentals of Phycology. Bishen Singh Mahendra Pal Singh, Dehradun
3. Parihar, N.S. The Biology and Morphology of Bryophytes, Central Book Depo. Allahabad.
4. Puri, P. 1980. Bryophytes. Atma Ram & Sons, Delhi.
5. Sharma, O.P. A Text Book of Bryophyta.
6. Singh, V., Pandey, P.C. and Jain, D.K. A text book of botany Vashishta, B.R. Text Book of Algae. New Delhi
7. Parihar, N.S. 1996 Biology & Morphology of Pteridophytes. Central Book Depot, Allahabad.
8. Pandey, S.N. A Text book of Pteridophyta
9. Sharma, O.P. An Introduction to Gymnosperms, Pragati Prakashan, Meerut.
10. Vashishta, P.C. A Text book of Pteridophyta. New Delhi.
11. Vashishta, P.C. Text Book of Gymnosperm