

3.3.2/1.3.3

M.Sc. I H-1001  
(BOTANY)

Course - I: Angiosperm Taxonomy, Plant Resources and Utilization 50 Hours

Unit- I 10 Hours

**Taxonomy of Angiosperms:**

1. History of plant Taxonomy.
2. International Code of Botanical Nomenclature (ICBN). Salient feature, important rules and recommendation, Binomial nomenclature, botanical gardens and herbaria.
3. Taxonomic evidences: Morphology, Plant anatomy, Palynology, Embryology, Cytology, Phytochemistry, Genome analysis and DNA hybridization technique in relation to taxonomy, numerical taxonomy, serotaxonomy.

Unit- II 10 Hours

4. The species concept: Taxonomic hierarchy, species, genus, family and other categories, Principles used in assessing relationship, delimitation of taxa and attribution of rank. Variation and specialization in plants.
5. Phylogenetic systems of classification: Hutchinson, Cronquist, Takhtajan and Dahlgren. Outlines, merits and demerits.
6. Basic knowledge of phylocode and A P G system.

Unit- III 10 Hours

7. Range of floral structure and phylogeny in:

I. Dicotyledons:

- a. Magnoliidae with special reference to Magnoliaceae, Lauraceae, Piperaceae,
- b. Hamamelidae with special reference to Moraceae, Juglandaceae and Casuarinaceae,
- c. Caryophyllidae with special reference to Cactaceae, Chenopodiaceae and Polygonaceae,
- d. Dilleniidae with special reference to Tiliaceae, Sterculiaceae, Violaceae,
- e. Rosidae with special reference to Lythraceae, Combretaceae,
- f. Asteridae with special reference to Boraginaceae, Scrophulariaceae, Bignoniaceae

II. Monocotyledons:

- f. Alismatidae,
- g. Commelinidae with special reference to Commelinaceae and Zingiberaceae,
- h. Arecidae with special reference to Araceae,
- i. Liliidae with special reference to Amaryllidaceae,

Unit- IV 10 Hours

8. Cradle of flowering plants.
9. Origin and evolution of crop plants with special reference to wheat, rice, maize, potato, tea and coffee.
10. Conservation of plants.
11. Biodiversity and hot spots of diversity of flowering plants.

Unit- V 10 Hours

**Plant resource utilization:**

12. Botanical names, families, Plant part used and uses of the important plants belonging to following categories:  
Fiber plants  
Spices and condiments  
Beverages  
Medicinal plants  
Non-wood plant products (NWPPs): rubber, dyes, resin, gums etc.

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

Subject- Botany  
B.Sc. -Second Year  
Practical

(B-501)

Time: 4.00 hrs

Max Marks: 50

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|--|----------|
| 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)/<br>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/ <u>herbarium</u>  | 05 Marks |
| Total Marks  | 50.      |

(Plant Collection)

Unified Syllabus of Botany for U.P.State Universities

Subject- Botany  
B.Sc. - Third Year  
Practical

(B-601)

Time: 4.00 hrs

Max Marks: 50

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|--|----------|
| 1- Biotechnology exercise (Tissue culture based)/ Plant diseases | 8 Marks  |
| 2- Environmental Pollution analysis/ Biostatistics exercise      | 8 Marks  |
| 3- Temporary Mount/ Diagram (Pollen grains)                      | 5 Marks  |
| 4- Structure of Different Molecules/soil types                   | 4 Marks  |
| 5- Identify and Comment upon spots (1-5)                         | 10 Marks |
| 6- <i>Viva-Voce</i>  | 5 Marks  |
| 7- Practical class record  | 5 Marks  |
| 8- Collection of Model, Chart, Project etc.                      | 5 Marks  |
| Total Marks  | 50       |

(Economic Botany)

H-3003

M.Sc. (Botany)

1.3.2/1.3.3

Course XI:

Plant Ecology and Phytogeography

50 Hours

Unit - I

10 Hours

1. Ecological factors (light, air, water, topographic, edaphic, biotic)
2. Ecological concepts of species: Genecology and Ecological niche.
3. Population Ecology: Basic concepts, characteristics of population and population structure.
4. Community Ecology: Composition, characters, structure, origin and development of community: methods of study of structure of community.

Unit - II

10 Hours

5. Ecological succession: Process concept and trends. Climax. (Xerosere, hydrosere)
6. Ecosystem Ecology: Structure and functions, with example of a natural and artificial ecosystem, Energy flow in ecosystem.
7. Production Ecology: Measurement methods and productivity in different ecosystems.

Unit - III

10 Hours

8. Preliminary Knowledge of I.B.P. (International Biological Programme), M.A.B (Man and Biosphere Programme).
9. Pollution: Kinds of pollution (Air, Water, Soil and Noise) and green house gases, Ozone hole, and global warming.

Unit - IV

10 Hours

10. Recycling of waste: Biogas, utilization and disposal of organic wastes and inorganic wastes.
11. Biodiversity and It's conservation.
12. Biogeochemical cycles of C,N,P,S, and Hydrological cycle, Nutrient sources, Nutrient budgets in terrestrial communities and aquatic communities.
13. Soil erosion and conservation, rainwater harvesting, chipko movement, van mahotsava, Afforestation, reforestation.

Unit - V

10 Hours

Phytogeography

14. Principles of phytogeography, vegetation types and Phytogeographical regions of India. Age and area hypothesis, continental drift, endemism, Hot spots, Plant exploration. Invasion and introduction.
15. Remote sensing: Concepts, principles, processes, tools, techniques in acquisition of R.S. data. Application in ecological and meteorological research