

**JYOTI NIVAS COLLEGE AUTONOMOUS BANGALORE – 560 095**  
**DEPARTMENT OF BOTANY**  
**B.Sc. V SEMESTER BOTANY PAPER V SYLLABUS (2021 NEP BATCH)**  
**TAXONOMY AND ECONOMIC BOTANY**

<b>COURSE TITLE</b>	<b>TAXONOMY AND ECONOMIC BOTANY</b>
<b>COURSE CODE</b>	<b>21VBO5 (T)</b>
<b>COURSE CREDITS</b>	<b>04</b>
<b>TOTAL CONTACT HOURS</b>	<b>60 Hours</b>
<b>DURATION OF ESE</b>	<b>2 ½ Hours</b>
<b>CONTINUOUS INTERNAL ASSESSMENT (CIA)</b>	<b>40 Marks</b>
<b>END SEMESTER EXAMINATION (ESE)</b>	<b>60 Marks</b>

**COURSE OBJECTIVES:**

- Know the Classification of Angiospermic families.
- Understand the scope & importance of Taxonomy.
- Understand the methods of cultivation of different flowering plants.

**LEARNING OUTCOMES:**

- Identify the local angiosperms of the families prescribed to their genus and species level and prepare herbarium.
- Exhibit skills of preparing slides, identifying the given twigs in the lab and drawing figures of plant twigs, flowers and floral diagrams as they are.
- Prepare and preserve specimens of local wild plants using herbarium techniques.

**Learning Outcomes:**

<b>CO NO.</b>	<b>Course outcomes statement</b>	<b>Knowledge level</b>
1.	Understand and describe the physiological processes such as transpiration, photosynthesis, and respiration in plants.	K2
2.	Analyze and interpret the results of various plant physiology experiments.	K4

3.	Apply tissue culture techniques for the propagation and conservation of plants.	K3
4.	Identify common plant pathogens and understand their control measures.	K2
5.	Evaluate the ecological significance of plant diversity and the need for conservation.	K4
6.	Understand the principles of genetic variation and their role in plant evolution.	K2
7.	Analyze the role of secondary metabolites in plant defense and interaction with the environment.	K3

**K1 – Remember, K2 – Understand, K3 – Apply, K4 – Analyze, K5 – Evaluate, K6 – Create**

### Mapping of COs with Pos

	PO1	PO2	PO3	PO4	PO5	PO6	PO7	PO8	PO9	PO10
CO1	✓	✓								
CO2		✓		✓						✓
CO3	✓	✓		✓						✓
CO4	✓	✓								

Programme Objectives aligned with Graduate Attributes

- PO1: Knowledge
- PO2: Scientific thinking
- PO3: Entrepreneurial skills
- PO4: Analytical skills
- PO5: Communication skills
- PO6: Social commitment
- PO7: Research and Inquiry
- PO8: Conservation of Environment

- PO9: Digital awareness and literacy
- PO10: Academic orientation

## UNIT I: CLASSICAL TAXONOMY

17 hrs

Introduction aim and scope of taxonomy , Natural , Artificial and Phylogenetic system of classification Bentham and Hooker , Engler and Prantl , APG system of classification and their relative merits and demerits. Species concept: Taxonomic hierarchy, Species, genus and family.

Biosystematics : Plant nomenclature, Binomial system. ICBN – rules for their nomenclature, Taxonomic Tools, Herbarium and its techniques, Floras and importance, Botanical gardens and their importance (one state level, one Indian national level na done international level). (Examples: State : Lalbagh, National Botanical garden Sibpur, Calcutta, International: Royal Botanical garden, Kew, England). Chemotaxonomy, Cytotaxonomy, Numerical taxonomy and application of computer.

## UNIT II : TAXONOMY -I

17 hrs

Taxonomic studies of following families, according to Engler & Prantl system of classification and their economic importance. Monocotyledoneae families: Poaceae, Arecaceae, Musaceae and Orchidaceae. Dicotyledoneae families : Archichlamydeae : Magnoliaceae, Annonaceae , Brassicaceae, Rutaceae, Solanaceae, Leguminosae (sub familieies – Papilionoideae, Caesalpinioideae and Mimosoideae) Rosaceae and Euphorbiaceae

## UNIT III : TAXONOMY II AND ECONOMIC BOTANY

17 hrs

**Metachlamydeae:** Cucurbitaceae, Apiaceae, , Rubiaceae, Asteraceae, Apocynaceae , Acanthaceae and Lamiaceae.

**ECONOMIC BOTANY** – Study of the following plants with Botanical names, family, parts used economic uses.

Edible oil – Groundnut, Coconut and sesamum

**Sugar & Starch** – Sugarcane, Beet root, Potato and Tapioca

**Fibers** – Cotton, Jute, Musa & Coir **Paper & Pulp** –Bamboo & Eucalyptus **Beverages** – Coffee , Tea & Cocoa

**Spices** – Ginger, Cardamom, Clove, Cinnamon, Asafoetida, Turmeric, saffron and Nutmug

**Timber** – Teak and Rose wood

**Medicinal and aromatic plants** – Ashwagandha, Aloe vera, Indian pennywort, Holy basil Amla, Periwinkle, Margosa, patchouli, Mint and Lavender.

## UNIT IV: ETHANOBOTANY

9 hrs

Ethnobotany : Introduction and legal aspects.

Tools to protect interests of ethnic groups- sharing of wealth concept with few examples from India. People's Biodiversity Register, Biopiracy, Intellectual Property Rights and Traditional Knowledge.

## BOTANY PRACTICAL PAPER 5

<b>COURSE TITLE</b>	<b>TAXONOMY AND ECONOMIC BOTANY</b>
<b>COURSE CODE</b>	<b>21VBO5(P)</b>
<b>COURSE CREDITS</b>	<b>02</b>
<b>TOTAL CONTACT HOURS</b>	<b>4 hours/week</b>
<b>DURATION OF ESE</b>	<b>03 hours</b>
<b>CONTINUOUS INTERNAL ASSESSMENT (CIA)</b>	<b>25 marks</b>
<b>END SEMESTER EXAMINATION (ESE)</b>	<b>25 marks</b>

### PRACTICAL PAPER – V

1. Morphology of Angiosperms – Vegetative Structure and their modifications of root, & leaf. 1 Unit
2. Morphology of Angiosperms – Inflorescence and flower 1 Unit
3. Morphology of Angiosperms– Fruits (Simple, aggregate & multiple) 1 Unit
4. Methods of identification of plants with technical terms. 1 Unit
5. Study of taxonomic characters of families included in theory (Minimum one genus from each family) 6 Units
6. Study of economically important plants covered in theory to identify with Botanical names, families, parts used and Economic uses. 2Units
7. Herbarium techniques. 1 Unit
8. Study of local flora by arranging local collection trips.
9. Record & Submission of 6 Herbaria with field notes of plants included in theory.

### REFERENCES

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