

Course Code	Course Name	Credits
26BY511	ADVANCED ANGIOSPERM TAXONOMY AND ECONOMIC BOTANY	04

### Course Objectives

- Explain concepts of plant taxonomy, classification systems and nomenclature.
- Use ICN rules and taxonomic keys for plant identification.
- Compare artificial, natural and phylogenetic systems of classification.
- Assess economic importance of plants and document plant diversity (flora, herbarium).

### Learning Outcomes

Upon successful completion of this course it is intended that a student will be able to:

- Describe taxonomic hierarchy, nomenclature and plant families.
- Identify plants using diagnostic characters and taxonomic keys.
- Differentiate classification systems and modern taxonomic approaches.
- Evaluate plant uses and prepare herbarium records or simple floristic documentation.

### Unit 1 - Plant taxonomy and its concept (12 Hrs.)

Taxonomic hierarchy, Systems of classification: Artificial system: Linnaeus; Natural system de Candolle, Bentham & Hooker; Phylogenetic system: Engler and Prantl, Hutchinson and Takhtajan; brief account of Angiosperm Phylogeny Group (AGP IV), merits and demerits of AGP, Herbarium methods and its functions, Preparation of key, Documentation of Floras, Botanical Gardens, Botanical survey of India (BSI).

### Unit 2- Botanical nomenclature (12 Hrs.)

ICBN: broad outline of the latest ICN, Principles of the code, Rank of taxa, Type method and Typification, Principles of priority and their limitation, Effective and valid publication, Author citation, conservation and rejection of names.

### Unit 3 - Modern Taxonomy (12 Hrs.)

Chemotaxonomy, Phenetics, Biosystematics, Taxonomy in relation to anatomy, embryology, palynology and cytology. Molecular taxonomy-RFLP.

### Unit 4- Study of diagnostic characters of the following family (12 Hrs.)

Dicot: Asteraceae, Apocynaceae, Bignoniaceae, Brassicaceae, Combretaceae, Fabaceae, Magnoliaceae, Meliaceae and Solanaceae. Monocot: Orchidaceae, Liliaceae, Musaceae, Arecaceae and Poaceae.

### Unit 5 - Economic Botany (12 Hrs.)

Economic Importance of Plants with Special Reference to North-East: Medicinal, Timber, Vegetable, Fruit, Fibre, Spices and Condiments, Essential Oil, Cereal and Beverage.

### Reference Books:

1. Angiosperm Phylogeny Group. (2016). An update of the Angiosperm Phylogeny Group classification for the orders and families of flowering plants: APG IV. *Botanical Journal of the Linnean Society*, 181(1), 1–20. <https://doi.org/10.1111/boj.12385>
2. Sharma, O. P. (2012). *Plant taxonomy* (2nd ed.). McGraw Hill Education.
3. Singh, G. (2019). *Plant systematics: Theory and practice* (3rd ed.). Science Publishers.
4. Grant, W. F. (1984). *Plant biosystematics*. Academic Press.
5. Dikshit, A., Siddiqui, M. O., & Pathak, A. (2016). *Taxonomy of angiosperms: Basic concepts, molecular aspects & future prospects* (1st ed.). Studera Press.
6. Heywood, V. H., & Moore, D. M. (1984). *Current concepts in plant taxonomy*. Academic Press.
7. Jain, S. K. (1981). *Glimpses of Indian ethnobotany*. Oxford & IBH Publishing.
8. Jain, S. K., & Rao, R. R. (1977). *A handbook of field and herbarium methods*. Today and Tomorrow Publishers.
9. Mondal, A. K. (2011). *Advanced plant taxonomy*. New Central Book Agency.
10. Naik, V. N. (1990). *Introductory plant taxonomy*. Longman.
11. Nordenstam, B., El-Ghazaly, G., & Kassas, M. (2000). *Plant systematics for the 21st century*. Portland Press.
12. Kumar, & Suresh. (2002). *Economic botany*. Campus Books International.
13. Stace, C. A. (1989). *Plant taxonomy and biosystematics* (2nd ed.). Edward Arnold.
14. International Association for Plant Taxonomy. (2018). *International code of nomenclature for algae, fungi, and plants (Shenzhen Code)*. Koeltz Botanical Books.