

OBJECTIVES: To enable students to

1. Understand the principles of taxonomy and the modern trends in Plant taxonomy
2. Realize the diversity of families of angiosperms
3. Understand various aspects of embryology of Plants

COURSE: PLANT TAXONOMY

UNIT – I: INTRODUCTION TO PLANT TAXONOMY

1. Fundamental components of taxonomy - identification, nomenclature, classification
2. Taxonomic resources: Herbarium- technique, functions & important herbaria, Botanical gardens, Flora, Keys- single access and multi-access.
3. Botanical Nomenclature- Principles and rules of ICBN - ranks and names; principle of priority, binomial system; type method, author citation, valid-publication.
4. Modern trends in Taxonomy – Chemotaxonomy, Cytotaxonomy and Numerical taxonomy

UNIT – II: TAXONOMIC CLASSIFICATION

1. Types of classification- Artificial, Natural and Phylogenetic.
2. Bentham & Hooker's system of classification- merits and demerits.
3. Engler & Prantle's system of classification- merits and demerits
4. Phylogeny – origin and evolution of Angiosperms, APG System (Brief account)

UNIT – III: DIVERSITY OF ANGIOSPERMS – I

Systematic study and economic importance of plants belonging to the following families:
Annonaceae, Brassicaceae, Rutaceae, Fabaceae, Caesalpiniaceae, Cucurbitaceae, Apiaceae

UNIT – IV: DIVERSITY OF ANGIOSPERMS – II

Asteraceae, Apocynaceae, Lamiaceae, Amaranthaceae, Euphorbiaceae, Orchidaceae, Arecaceae & Poaceae.

UNIT – IV: EMBRYOLOGY: History & Importance of Embryology

1. Anther: Structure and development of anther; Microsporogenesis, Development of male gametophyte.
2. Ovule: Structure, Types of ovules, Megasporogenesis, Female gametophyte – Structure, Types, development of Monosporic, Bisporic and Tetrasporic types of embryo sacs..
3. Pollination & Fertilization : Types of Pollination, A brief account of self-incompatibility; Fertilization
4. Endosperm : Types : Nuclear, Cellular and Helobial
5. Embryo : Embryogenesis; Development of Dicot and Monocot embryo; Polyembryony, Apomixis, Parthenocarpy

TEXT BOOK: A Text Book of Common Core Botany – Vol. II & III (2011) – Sri Vikas Publications – Guntur.

REFERENCE BOOKS:

1. Lawrence, G.H.M. (1953): Taxonomy of Vascular Plants, Oxford & IBH Publishers, New Delhi, Calcutta.
2. Jefferey, C.(1968) : An Introduction to Plant Taxonomy J.A. Churchill, London.
3. Mathur, R.C.(1970) : Systematic Botany (Angiosperms) Agra Book Stores- Lucknow, Ajmer, Allahabad, Delhi.
4. Maheswari,P(1963) :Recent Advances in the Embryology of Angiosperms(Ed.) International Society of Plant Morphologists- University of Delhi.
5. Swamy. B.G.L. & Krishnamoorthy. K.V.(1980):From flower to fruit Tata McGraw Hill Publishing Co., Ltd., New Delhi.
6. Maheswari, P.(1985):An Introduction to the Embryology of Angiosperms Tata McGraw Hill Publishing Co.,Ltd., New Delhi.
8. Bhojwani, S.S. & Bhatnagar, S.P. (2000) : The Embryology of Angiosperms (4th Edition) Vikas Publishing House(P)Ltd., UBS Publisher's Distributors, New Delhi.

OBJECTIVES:

1. Understand the angiospermic plant diversity and identify the members of the representative families through taxonomic observations.
2. To make the students understand and identify the different stages in reproduction leading to seed formation in angiosperms.

I. SYSTEMATICS OF ANGIOSPERMS:

1. Demonstration of herbarium techniques.
2. Study of Angiospermic plant diversity through taxonomic observations of locally available plant specimens belonging to the following families.

Dicotyledonae

3. **Polypetalae** : Annonaceae, Brassicaceae, Rutaceae, Fabaceae, Caesalpiniaceae, Cucurbitaceae, Apiaceae
4. **Gamopetalae** : Asteraceae, Apocynaceae, Lamiaceae.
5. **Monochlamydeae** : Amaranthaceae, Euphorbiaceae

Monocotyledonae :

6. Orchidaceae, Arecaceae, Poaceae.

II. ANGIOSPERMS - EMBRYOLOGY

Study of embryological stages through permanent slides or hand made preparations.

1. Stages in Microsporogenesis
2. Structure of pollen grains using whole mounts (*Catharanthus*, *Hibiscus*, *Acacia*, Grass and *Calotropis*).
3. Pollen viability test *in-vitro* germination (*Catharanthus*).
4. Ovule types and developmental stages of embryo sac using permanent slides /Photographs.
5. Embryo Sac
6. Pollen germination on stigma
7. Endosperm – Types: nuclear and cellular
8. Embryo Development – Dicot, Monocot using permanent slides / Photographs
9. Isolation and mounting of embryo (using *Symopsis* / *Senna* / *Crotalaria*)

III. FIELD WORK:

1. Field visits.
2. Study of local flora and submission of Field Note Book.

REFERENCES:

1. Practical Botany – Vol.II (2008). Bendre & Kumar Rastogi publications, Meerut.
2. Modern Practical Botany – Vol.II (2007). B.P.Pande S. Chand & Co., New Delhi.