

Theory**Course Outline:**

1. Introduction to Plant taxonomy, aims and objectives.
2. History of classification,
3. Introduction to nomenclature,
4. International Code,
5. Morphological Study of Families,
6. Anatomical study of cell wall and the Internal Structure (Tissues) of the Plant Body,
7. Simple and Complex Tissues Structure,
8. Functions and Relationships,
9. Developmental Embryology.

Course Detail:**1. Taxonomy:**

- Introduction to Plant Taxonomy: Aims, Objectives and Importance.
- Classification: Systems of Classification (Artificial, Natural and Phylogenetic) with emphasis on Takhtajan's System of Classification.
- Nomenclature: Introduction: Importance of Latin Names and Binomial Nomenclature
- Morphology: Brief Account of various morphological characters of root, stem, leaf, Inflorescence, Flower, Placentation and Fruit Types.
- Diagnostic Characters: Economic Importance and Distribution Patterns of the following Families: Brassicaceae, Fabaceae, Rosaceae, Euphorbiaceae, Cucurbitaceae, Solanaceae, Lamiaceae, Apiaceae, Asteraceae, Poaceae.

2. Anatomy:

- Cell Wall: Cell Wall Structure and Chemical Composition. Simple Tissues: Parenchyma, Collenchyma, Sclerenchyma. Epidermis: Epidermis and Epidermal Appendages including Stomata. Complex Tissues: Xylem, Phloem. Meristem: Types of Meristem, Structure of Root, Stem and Leaf.

3. Developmental Embryology:

- *Capsella bursa-pastoris*: Structure of Anther, Microsporogenesis, Microgametophyte, Structure of Ovule, Megasporogenesis, Megagametophyte, Endosperm Formation.

Practicals:

- Identification of Families with the help of keys
- Description of Flowers (in technical terms) of following Families: Brassicaceae, Fabaceae, Rosaceae, Euphorbiaceae, Cucurbitaceae, Solanaceae, Lamiaceae, Apiaceae, Asteraceae, and Poaceae.
- Field tours shall be undertaken to study and collect local plants. Students are required to submit Forty (40) fully identified herbarium specimens.
- Study of Epidermis, Stomata and Trichomes.
- Study of Simple Tissues from fresh material and prepared slides as well.
- Study of Complex Tissues (Xylem), Maceration and Study of Xylem from Macerated Material.
- Study of a Transverse Section of Stem and Leaf of Angiosperm

Teaching-Learning Strategies

Teaching will be a combination of class lectures, class discussions, and group work. Short videos/films will be shown on occasion.

Assignments

The sessional work will be a combination of written assignments, class quizzes, presentation, and class participation/attendance.

Assessments and Examination

Sessional Work: 25 marks

Midterm Exam: 35 marks

Final Exam: 40 marks

Recommended Readings:

1. P.H. Raven, R.E. Evert & S.E. Eichhorn (2010). *Biology of Plants*. W.H. Freeman and Company Worth Publisher.
2. G.H.M. Lawrence (2007). *Taxonomy of Vascular Plants*. (2nd Ed.). MacMillan and Co. New York.
3. F. Raymond & S.E. Eichhorn (2005). *Esau's Plant Anatomy. Meristematic cells and tissue of the plant body*, (3rd Ed.) John Wiley and Sons Inc. New York.
4. B.P. Pandey (2004). *A Text Book of Botany (Angiosperms)*. S. Chand and Co. New Delhi.
5. R.C. Moore, W.D. Clark & Vodopich, D.S. (2003). *Botany*. McGraw Hill Company, U.S.A.
6. F. Foster (2002). *Practical Plant Anatomy*. John Wiley and Sons, New York.
7. J.D. Mauseth (1998). *An Introduction to Plant Biology: Multimedia Enhanced*. Jones and Bartlett Publisher. UK.
8. M.S. Zahur (1992). *The Taxonomy of Angiosperms*. Al-Hejaz Printers. Lahore.
9. A. Fahn (1990). *Plant Anatomy*. Pergamon Press Oxford.
10. P. Maheshwari (1971). *Embryology of Angiosperms*. McGraw Hill. New York.
11. K. Esau (1960). *Anatomy of Seed Plants*. John Wiley and Sons, New York.
12. G. Singh (2016). *Plant Systematics; An Integrated Approach* (3rd edition), University of Delhi, India.
13. M. G. Simpson (2018). *Plant Systematics* (3rd edition). Elsevier Academic Press, UK.
14. W.S. Judd, C.S. Campbell, E.A. Kellogg, P.F. Stevens & M.J. Donoghue (2015). *Plant Systematics; A phylogenetic Approach*, Sinauer, US.