



Code	Subject Title	Cr. Hrs	Semester
BOT-103	Botany-II (Plant Systematic Anatomy & Development Theory)	3	II
Year	Discipline		
1	Botany, Zoology, Chemistry-I		

**Syllabus Outline:** Introduction to Plant Systematics, aims and objectives. History of classification, Introduction to nomenclature, International Code, Morphological Study of Families, Anatomical study of cell wall and the Internal Structure (Tissues) of the Plant Body, Simple and Complex Tissues Structure, Function and Relationship, Developmental Embryology.

**Course Outline:**

**Plant Systematics:**

Introduction to Plant Systematics: Aims, Objectives and Importance.

**Classification:** Brief History of Various Systems of Classification (Artificial, Natural and Phylogenetic) with emphasis on Takhtajan's System of Classification.

**Nomenclature:** Introduction: Importance of Latin Names and Binomial Nomenclature with an Introduction to International Code of Botanical Nomenclature (ICBN), St. Louis Code.

**Morphology:** Brief Account of various morphological characters of root, stem and leaf, Inflorescence, Flower, Placentation and Fruit Types.

**Diagnostic Characters:** Economic Importance and Distribution Patterns of the following Families:

- i. Ranunculaceae
- ii. Brassicaceae
- iii. Fabaceae
- iv. Rosaceae
- v. Euphorbiaceae
- vi. Solanaceae
- vii. Lamiaceae
- viii. Apiaceae
- ix. Asteraceae
- x. Liliaceae
- xi. Poaceae



**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, Stem and Root Apices, Secondary Meristem, Vascular Cambium and Periderm. Structure and Development of Primary Root and Stem, Structure of Leaf.

**Developmental Embryology:**

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

**Module Aims:** The course is designed to provide an insight to the basic concepts of Plant Systematics and its Role in Classification. Anatomy in relation to Basic Structure of Plants and their Developmental Biology.

**Learning Strategies:**

1. Lectures
2. Group Discussion
3. Laboratory work
4. Seminar/ Workshop

**Learning Outcome:** Students are expected to learn about the history of Plant Systematics and its role in classification. They are able to make use of this knowledge for the identification and grouping of different plants based on the anatomy.

**Assessment Strategies:**

1. Lecture Based Examination (Objective and Subjective)
2. Assignments
3. Class discussion
4. Quiz
5. Tests

**Books Recommended:**

1. **Raven, P.H., Evert, R.E. and Eichhorn, S.E. (2010).** *Biology of Plants*. W.H. Freeman and Company Worth Publisher.
2. **Stuessy, T.F. (2009).** *Plant Taxonomy*. Columbia University Press. USA.
3. **Lawrence, G.H.M. (2007).** *Taxonomy of Vascular Plants*. (2<sup>nd</sup> Ed.). MacMillan and Co. New York.
4. **Raymond, F. and Eichhorn, S.E. (2005).** *Esau's Plant Anatomy. Meristems cells and tissue of the plant body*, (3<sup>rd</sup> Ed.) John Wiley and Sons & Sons Inc.



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5. **Panday, B.P. (2004).** *A Text Book of Botany (Angiosperms)*. S. Chand & Co. New Delhi.
  6. **Moore, R.C., Clark, W.D. and Vodopich, D.S. (2003).** *Botany*. McGraw Hill Company, U.S.A.
  7. **Mauseth, J. D. (1998).** *An Introduction to Plant Biology: Multimedia Enhanced*. Jones and Bartlett Publisher. UK.
  8. **Fahn, A. (1990).** *Plant Anatomy*. Pergamon Press Oxford.
  9. **Maheshawari, P. (1971).** *Embryology of Angiosperms*. McGraw Hill. New York.
  10. **Esau, K. (1960).** *Anatomy of Seed Plants*. John Wiley and Sons, New York.
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