

COURSE TITLE: ADVANCE BOTANY-II (PLANT ANATOMY)

CREDIT HOURS: 3

Introduction:

To introduce Basic Concept of Primary Plant Body a learning Idea of Root-Shoot Transition, Secondary Growth and Anomalies, Types of Stem, Root and Leaf

Learning Outcome: Student will understand basic anatomical concepts of Primary Structure of Root, Stem, Leaf and Flower. They will be able to discuss the idea of secondary growth.

Course Outline:

Secondary Xylem: Axial and Ray System, Growth Layers, Reaction Wood, Gymnosperm Wood, Angiosperm Wood, Differentiation in Secondary Xylem, Strength of Wood in Relation to Structure.

Stem: Tissue Systems, Leaf Traces, Leaf Gaps, Branch Traces and Branch Gaps, Vascular Bundles, Concept of Stele Delimitation of Vascular Region, Endodermis, Pericycle, Origin of Vascular Cambium, Common Forms of Secondary Growth.

Anomalous Secondary Growth: Secondary Growth in Monocots, Grafting and Wound Healing.

Types of Stems: Conifer. Woody Dicotyledons, Dicotyledonous Vine, Herbaceous Dicotyledons, Herbaceous Moncotyledons.

Leaf: Histology of Angiosperm, Leaf, Mesophyll, Vascular System, Bundle Sheaths, Supporting Structure, Secretary Structures, Petiole, Histology of Gymnosperm Leaf, Development of Leaf, Growth of Leaf Lamina, Monocotyledonous Leaf, Development of Vascular Tissues, Abscission of Leaves.

Root: Concept, Origin, Morphology, Primary Structure, Root Cap, Vascular Cylinder, Development of Histogens, Primary and Secondary Growth, Development of Lateral Roots, Development of Adventitious Roots, Development of Buds on Roots, Structure in Relation to Function. **Root-Shoot Transition:** Secretary Structures, Glands, Nectaries, Hydathodes, Internal Secretary Structures, Laticifers.

Flower: Concept, Structure, Vascular System, Different Parts, Sepals, Petals, Stamen, Carpel, Ovule, Organogenesis, Histogenesis, Abscission.

Evaluation Criteria

Examination	Type	Marks
Internal Examination	Sessional Work	15%
	Mid-Semester	25%
External Examination	Final Semester	60%

BOOKS RECOMMENDED:

Dickinson, W.C. (2000). *Integrative Plant Anatomy*. Academic Press. London.

Eames, E. (1990). *An Introduction to Plant Anatomy*. New York: McGraw Hill Book Co. Inc.

Esau, K. (2000). *Anatomy of Seed Plants*. New York: John Wiley and Sons.

Evert, R.F. and Easu, K. (2006). *Esau's Plant Anatomy*. New York: John Wiley and Sons.

Fahn, A. (2001). *Plant Anatomy (5th Ed.)*. Oxford.:Ergamon Press.

Robson, N.K.B., Cutler, D.F. and Gregory. M. (2000). *New Research in Plant Anatomy*. London.:
Academic Press.

TITLE: ADVANCE BOTANY-LAB-II (PLANT DIVERSITY)

CREDIT HOURS: 1

Introduction:

This course is designed to provide understandings about Primary and Secondary Plant Body, Secondary Growth and Primary and Secondary Anomalous Structures in plants, Leaf, Stem, Root and Flower Anatomy, Basic Structure of Root, Stem and leaf, and Wood Structure.

Learning Outcomes:

Student will be able to understand the Tissues Arrangement in Root, Stem, Leaf and Secondary Plant Body.

Course Outline:

Concept of Leaf Vascular Bundle, Mesophyll Tissue Distribution, Primary Structure of Root, Stem and Leaf, Structure of Wood. Study of Tissues from the Living and Preserved Material of Stems, Roots and leaves.

Evaluation Criteria

Examination	Type	Marks
Internal Examination	Sessional Work	15%
	Mid-Semester	25%
External Examination	Final Semester	60%

Dickinson, W.C. (2000). *Integrative Plant Anatomy*. Academic Press. London.

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