

Plant Anatomy

University of Jordan
Department of Biological Science

Plant Anatomy
Bio. 0304351

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Course Description

Prerequisites: General Biology (B. 251)
Credit Hour: Three
Contact Hours: Two lectures and three hours practical each week
Course period: Four months semester

Lecturer: Prof. Dawud M. Al-Eisawi
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OBJECTIVES

This course is basic biology course designed for the students at the B. Sc. Level. It is also suggested by other branches of agriculture sciences. The main objectives of this course are to link structure with function. Therefore, it concentrates on the organization of tissues from the embryo, then studying each type of fundamental tissue types, functions, characterizations, their locations. Then studying dermal tissue especially epidermis organization cell types, functions, developmental type and various trichomes types. Then a special concentration on the vascular tissue xylem, phloem and vascular cambium, especially cell types and their functions, developmental aspects and uses in identification of wood. Then Periderm characteristics, various types, cell types, functions and different Periderm aspects including lenticels, leaf abscission, wound healing and so on. Then study of roots stems and leaves, different types, tissues, primary, secondary and anomalous growth types. Then nodal anatomy and apical meristems organization of both shoot and root tips.

The practical part is the most important side of this course since it is based mostly on fresh preparation of wet mounts of various plant parts and tissue. The samples used for study are taken from local plants either wild or cultivated, picked by students every class from around the university. Plant parts, roots stems, periderm, lenticels, buds, fibers and other aspects are taught directly as a demonstration time taken from the class after the brief introduction which gives the students the chance to refresh themselves and to see thing actually rather than learning only from text books.

TEXT BOOK
Anatomy of Seed Plants
2nd ed. by: K. Esau, 1975

Tentative Schedule

Week No.

Lecture Topic

1. Introduction; Internal Organization of the plant body; Summary of cell types and tissues; Development of the seed plant.
2. The cell (Protoplasmic and non protoplasmic components)
3. Cell wall (Components, layers, intercellular spaces, pits and their types, original growth of cell wall)
4. Parenchyma and collenchyma
5. Sclerenchyma (sclereids and fibers)
6. Epidermis (composition, developmental aspects, cell wall stomata, trichomes)
7. Xylem (primary & secondary xylem), axial and radial systems growth layers, sap and heart wood
8. Xylem (coniferous, monocot & dicot wood), storied and nonstoried, annual rings tylosis, development of secondary wood

MIDTERM EXAM

9. Vascular cambium organization, developmental changes, patterns of cambial activity
10. Phloem (cell types, primary and secondary phloem)
11. Periderm (structure and related tissues, development, outer aspects of bark in relation to structure and lenticels).
12. Secretory structures (external and internal structures)
13. The root (types and variation, adventitious roots, primary and secondary growth, physiological aspects of secondary growth).
14. The stem (primary growth and development including initial layers and meristems)

15. The stem (types, growth and secondary structure)
16. The leaf (basic types and development, abscission, structure in relation to environment, monocots, dicots and gymnosperm leaves).

MARKS

First hour exam	15/100
Mid term Practical	30/100
Drawing Note Book	05/100
Subtotal	50/100
Final Practical	15/100
Final Exam	35/100
Subtotal	50/100

TOTAL **100/100**

OTHER REFERENCE:

- Cutler, D. F. (1978). *Applied Plant Anatomy*. Longman, London and New York. Pp. 103.
- Mauseth, J. D. (1988). *Plant Anatomy*. The Benjamin Cummings Publishing Company, Inc. Menlo Park, Reading, Don Mills, Wokingham, Amsterdam, Sydney, Singapore, Madrid, Bogotá, Santiago, San Juan. Pp. 560.
- Rudall, P. (1987). *Anatomy of Flowering Plants. An Introduction to Structure and Function*. Edward Arnold, London. Pp. 80.