



Department of Biology

College of Education

University of Salahaddin-Erbil

Subject: Theoretical Plant Anatomy

Lecturer's name: Dr. Shilan Abdulaziz Husain

Academic Year: Second Semester 2023/2024

Course Book

1. Course name	Theoretical Plant Anatomy
2. Lecturer in charge	Shilan Abdulaziz Husain
3. Department/ College	Biology/Education
4. Contact	e-mail: shilan.husain@su.edu.krd Tel: (optional)
5. Time (in hours) per week	Theoretical: 2
6. Office hours	
7. Course code	
8. Teacher's academic profile	<p>There is no doubt that the teacher as a main factor of the teaching process, has a very good and important role in performance the teaching program and preparing the students, teacher is the follower of the results of teaching process and try to progress this process. The teacher is an affected factor among the teaching factors, and has effect on the student's characters and their future, therefor; the teacher must beware in her treatment with the students and the teaching staff. For all the progress that take place in the world, in all the fields, such as cultural, social, scientific, technology, etc. ... , the teacher must suit herself with all these changes and benefit from them in order she can finally to reach these benefits to all peoples that he treat with them.</p>
9. Keywords	
10. Course overview:	<p>Plant anatomy is the study of plant tissues and cells in order to learn more about the way these organisms are constructed and how they work. These studies are very important because they lead to a better understanding of how to care for plants and fight plant diseases. Plant anatomy is also known as phytotomy. A plant is a complex structure that consists of a number of parts which constitute the whole plant. If you learn to identify each individual part, you will gain a much greater understanding as to how the plant works as a whole. This can be helpful to aromatherapists who need to be aware of the part of the plant an essential oil was derived from because there is often a connection between the oils location in a plant and its therapeutic action. Understanding plant anatomy also helps everyone appreciate the art of distillation and extraction. Plant anatomy plays an important role in the understanding of plant biology. A realistic interpretation of morphology, physiology, and phylogeny must be based on a thorough knowledge of the structure of cells and tissues. Furthermore, the knowledge of plant structure is also essential to solve many important everyday problems such as the identification of unknowns, food contaminants, and forensic problems. The aim of this laboratory exercise is to introduce students to some useful techniques in the study of plant structure. At the same time, they will also learn the basic anatomical organization of plant organs, as well as cell and tissue characteristics.</p>

11. Course objective:

- 1- List and describe the major plant organs their structure and function
- 2-List and describe the major types of plant cells and their functions
- 3-List and describe the major types of plant tissues, identify their locations and describe their functions.
- 4- learn about primary and secondary growth of stem and root
- 5-Identify and describe the distribution of tissues in the stem, root, and leaf of a monocot and dicot plant.
- 6-Identify, describe, and explain the changes that occur in a dicot stem as it matures.
- 7-Explain the relationship between the distribution of tissues in the leaf and the functions of these tissues.
- 8-To learn the formation of bark and wood.

12. Student's obligation

The obligations of students and their throughout the academic year include:

1. Quizzes and daily activities.
2. Discussion.
3. 1st examination
4. 2nd examination
5. Final examination.

13. Forms of teaching

Different forms of teaching will be used to reach the objectives of the course: definitions, discussions and conclusions, plates and shapes by using Data-show (in power point) as well as using the white board to illustrate the lecture or sides of the lecture for the students.

14. Assessment scheme

Exam (Evaluation)

15 theory + 35 practical = 50

Final examination theory =50

15. Student learning outcome:

The objective of the course is to present a foundation of the approach, methods, research goals, evidence, and terminology of plant anatomy and to summarize information on the most recent knowledge of plants. The student may learn to recognize and know the basic features of the plant cell and cell wall components, plant tissues and types of plant tissues, the internal structure of plant organs. The differences between dicotyledonous and monocotyledonous root and the differences between dicotyledonous and monocotyledonous stem, root and leaf. Understanding the healing of wounds and plant structure in relation to the environment. Understanding the structure of the flowers fruits and seeds.

16. Course Reading List and References:

- 1- Kurshed, M.Q. (2010). Course Book of plant anatomy for the biology department.
- 2- 2. David, F. Culter, Ted, B., and Dennis, W. Stevensen. (2007). Plant anatomy, an applied approach.
- 3- ▪ Useful references:
- 4- 1- Charles B. Bech. (2010). An introduction to plant structure and development. 2nd edition. Cambridge University Press.
- 5- 2- David, W.M. (2005). Plant Anatomy and Morphology Reed, Texas A&M University.
- 6- 3- Dickison, W. C. (2002). Integrative Plant Anatomy. Academic Press.
- 7- 4- Evert, R. F. (2006). Esau's Plant Anatomy. Meristems, Cells, and Tissues of the Plant Body: Their Structure, Function, and Development. 3r edition. John Wiley & Sons, Inc.
- 8- 5- Rudall, P.G. (2007). Anatomy of flowering plants. An Introduction to Structure and Development. Cambridge University Press.

17. The Topics:**Lecturer's name****Week 1:**

-Conducting tissue system (complex tissues), Xylem tissue.

Week2:

- Conducting tissue system (complex tissues), Phloem tissue.

Week3:

-Special tissue (Secretory tissues)

Week4:

-Internal structure of the root

Week5:

-Internal structure of the Stem

Week6:

-The internal structure of the Leaves

Week7:

-The internal structure of the Flowers

Week8:

-Secondary Growth in Dicot Root

Dr. Shilan Abdulaziz
Husain
Every lecture takes
2 hrs.

Week9:

- Secondary Growth in Dicot Stem

Week 10

-Normal and anomalous secondary growth

Week 11

Anomalous or Abnormal behavior of cambium

Week 12

Anatomy of the flowers

Week 13

Mid Term Examination

18. Practical Topics (If there is any)

19. Examinations:

1. Compositional:

How annual rings form during stem growth?

Answer: Annual rings are formed due to unequal activity of vascular cambium. The activity of cambium does not remain same; it is changeable in the whole year. In winter or autumn season, the activity of the cambium is less and the secondary xylem or wood formed is not extensive through the vascular cambium. Cells formed during this period are small thick walled and have narrow lumens. This is called autumn wood or late wood. The vascular cambium is highly active in spring or summer season and secondary xylem formed during this period is extensive and cells of secondary xylem are larger, thin walled and have wider lumen. This wood is known as springwood or early wood. The spring wood is lighter in colour and exhibits low density whereas the autumn (or winter) wood is darker and has higher density

2. True or false type of exams: 1-Hypodermis of a monocot stem is made of sclerenchymatous cells. 2-The endarch condition is characteristic of stem.

Answer: 1 true and 2 false.

3. Multiple choices: 1- In the veins of leaves, the phloem is situated towards a. Upper epidermis b. Lower epidermis c. All around the xylem d. Lateral to xylem

2- Passage cells are found in which tissue?

a. metaxylem b. rhizodermis c. endodermis d. pericycle

Answer: 1(b), 2(c)

4. Fill blanks

1- A bicollateral vascular bundle has ----- on both sides of the xylem.

2- Lateral roots originate from the -----.

Answer: 1- phloem 2- pericycle

20. Extra notes:

21. Peer review This template is really excellent and rich because it covered all aspects; he did not leave any space but filled with useful information.