| Hashemite University | | Plant Anatomy<br>1801041253<br>Compulsory Course |
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| **Faculty of Science** | **Course Syllabus** | **Pre-requisite: 1801041251** |
| **Department of Biology and Biotechnology** | | **Credit Hours**: 3<br>(2 hrs. theory + 1hr. practical) |

| **Course Information** | |
|---|---|
| Lecture's Time | 8.30 – 9.30 Sunday & Tuesday<br>Practical Sessions: Tuesday 11.30 -1.30, 1.30 -30 .30 |
| Lecture Room | Biology Building 112<br>Practical Sessions lab.118 |
| Instructor | Rajaa Abueideh |
| Office Location | Herbarium Lab. at Herbarium building or<br>Biology Building 103 |
| Instructor's E-mail | raj@hu.edu.jo |
| Internet Home Page | staff.hu.edu.jo/rajaa |
| Office Hours | 9.30-10.30 Sunday, 9.30-11.30 Tuesday + Messages using Microsoft teams |

**Textbook**

**Esau's Plant Anatomy,** by Evert.R.F. John, 3rd edition. Wiley & Sons, Inc. New York 2006.

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| **References(s)** | - **Plant Anatomy, A Concept-Based Approach to the Structure of Seed Plants,** by R. Crang, S. Lyons- Sobaski & R. Wise. Springer, Switzerland, 2018**.**<br>- **Anatomy of Seed Plants,** by K. Esau, 2nd edition, John Wiley & Sons, Inc., New York, 1977.<br>- **Integrative Plant Anatomy,** by W**.** Dickison, 1st edition, John Wiley & Sons, Inc., New York, 2000.<br>- **Anatomy of flowering plants**, by P. Rudal, 3rd edition. Cambridge University Press, New York, 2007. |

## Grading Policy:

| **Theory** | | **Practical** | |
|---|---|---|---|
| 1st Exam | 20 % | Quizzes | 5 % |
| 2nd Exam | 20 % | Midterm | 10 % |
| Other | % | Reports & Activities | 5 % |
| Final Exam | 30 % | Final | 10 % |
| Total | 70 % | Total | 30 % |

## Course Objectives

1) To develop a basic understanding of internal structure of plants, including their cells, tissues, and organs.
2) To introduce students to basic microscopy techniques used in plant anatomy as sectioning and staining fresh plant material
3) To train students in the proper use of the compound light microscope and to give them experience in interpreting images that they see through the microscope in terms of how plant structure is related to function.
4) To identify the complexity of tissue organization that exists within plant bodies that allow plants to develop and live as integrated organisms in diverse environments.
5) To gain knowledge about growth and development of meristems (apical, primary and lateral)
6) To be able to compare between different plant organs (stem, root and leaf) with special emphasis on anatomy of gymnosperms and angiosperms.
7) To study wood structure and identification.
8) To identify the floral anatomy, embryogenesis and fruit structure Identify some common medicinal plants used in the World and Jordan specifically.

## Teaching and Learning Methods

**Theory classes**.
**Practical sessions**
**Scientific reports**
Group activities on selected laboratory sessions including preparation of certain plant tissues slides.
**Demonstrations of certain procedures.**
**Field trips** to the botanical garden at the university.

**Course Contents**

| Week | Topic |
|---|---|
| **1** | - Introduction to Plant Anatomy, The Cell Structure and Content **Lab. 1: Introduction, lab. Instructions & The microscope** |
| **2** | - The Cell Structure and Content<br>**Lab. 2: Primary Plant Body, Plant Cell Structure & Parenchyma tissue** |
| **3** | - The Cell Structure and Content<br>- The Cell Wall<br>**Lab. 3: Collenchyma & Sclerenchyma** |
| **4** | - The Cell Wall<br>- Permanent Tissues (Parenchyma, Collenchyma & Sclerenchyma)<br>- Epidermis<br>**Lab. 4 : Epidermis & Trichomes** |
| **5** | - Epidermis<br>- Secretory structures<br>**Lab. 5: Secretory structures, Vascular cambium & Periderm** |
| **6** | - **First- Hour Exam**<br>- Secretory structures<br>**Lab. 6: Xylem** |
| **7** | - Secretory structures<br>- Xylem<br>**Mid - Term Exam** |
| **8** | - Xylem<br>- Phloem<br>**Lab. 7: Phloem, Stele structure & Vascular bundles.** |
| **9** | - Phloem<br>- Meristematic Tissues & Periderm<br>**Lab. 9: The Root** |

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| **10** | - Meristematic Tissues & Periderm<br>- The Root<br>**Lab. 10: The Stem** |
| **11** | - The Root<br>- The Stem<br>**Lab. 11: The Leaf** |
| **12** | -The stem<br>- The Leaf<br>**- Second- Hour Exam**<br>**Lab. 12: Floral Anatomy Embryo, Seeds & Fruits** |
| **13** | - The Leaf<br>- Floral Anatomy, Reproductive Cycle, Embryo, Seeds & Fruits<br>**Lab. 13: - Mounting herbarium specimens & Visit to the Botanical Garden**<br>**-Revision** |
| **14** | Floral Anatomy, Reproductive Cycle, Embryo, Seeds & Fruits<br>**- Final Lab Exam** |
| **15 & 16** | **Final Exam** |