Course Description Form

1. Course Name:
Plant Anatomy
2. Course Code:
PLAN215
3. Semester / Year:
2024-2025
4. Description Preparation Date:
2025 /2/1
5. Available Attendance Forms:
in person
6. Number of Credit
Hours 2 theoretical + 3 practical (5) / Number of Units (3.5)
7. Course administrator's name (mention all, if more than one name)
Name: Lecturer Doctor Ahmed Abd-AlRaheem Mohammed Assist Lecturer Sahar Ali Khalow Email: **Ahmed79@uomosul.edu.iq** **Sahar_khalw@ uomosul.edu.iq**
8. Course Objectives
Enabling the student to understand and comprehend what is related to plant physiology and its relationship to other sciences **Enabling the student to know the most important scientific methods in learning about plant physiology** **Enabling the student to become familiar with the concept of plant physiology** **Enabling the student to be able to investigate plant cells and all phenomena related to plant physiology** **• The student can explain all aspects of plant life through plant physiology**
9. Teaching and Learning Strategies
- Interactive lecture - Brainstorming - Dialogue and discussion - Field Training

- Practical exercises
- Field project
- Self-education

10. Course Structure

Week	Hours	Required Learning Outcomes	Unit or subject name	Learning method	Evaluation method
1	2 Theoretica	Introduction to Plant Tissue Anatomy	A1: Identify the parts of plant and animal cells B2: Enumerates the cell types A2: Describes the components of plant and animal cells A4: Compares plant and animal cells A2: Describes prokaryotic and eukaryotic cells A4: Compares prokaryotic and eukaryotic cells A1: Describes the primary wall of the cell A4: Compares simple and braided pits	Interactive lecture, brainstorming, dialogu and discussion, self-learning,	semester test 1, final test
	3 Practical	Microscope and compound microscope	A2: The student learns about microscopes, their types, and the structure of the microscope A2: The student learns how to prepare slices for the purpose of examination, such as onion slices	Interactive lecture, brainstorming, dialogu and discussion, self-learning,	semester test 1, final test
2	2 Theoretica	The living contents of the cell	A1: Identify living components in cells A2: Describes the most plausible structure of the plasma membrane A2: Identifies endoplasmic reticulum, golgi apparatus, ribosome, and their functions, and determine the function of each component of the cell.	Interactive lecture, brainstorming, dialogu and discussion, self-learning,	semester test 1, final test
	3 Practical	Plant Cells	B3: Make sections of the plant cell B1: Viewing ready-made plastids from the cell wall	Interactive lecture, brainstorming, dialogu and discussion, self-learning,	semester test 1, final test
3	2 Theoretica	Supplement the living contents of the cell	A1: Recognizes the nucleus and its components, in addition to its functions, and distinguishes between DNA and RNA A1: Identify plastids and their components A2: Defines the function of each type of plastid	Interactive lecture, brainstorming, dialogu and discussion, self-learning,	semester test 1, final test

			A1: Learn about mitochondria, their structure and function A2: Determines the function of mitochondria A1: Recognizes spherical bodies, microbodies, and microtubules A2: Determines the function of the remaining components of the cells		
	3 Practical	Cellular division	A2: The student learns about the importance of cell division B2: The student explains the stages of division	Interactive lecture, brainstorming, dialogu and discussion, self-learning,	semester test 1, final test
4	2 Theoretica	Non-living contents in the plant cell	A1: Identify the vacuole, and its membrane structure, and determine its function A1: Identify the types of starch granules and their composition A1: Learn about proteins and oils and their functions	Interactive lecture, brainstorming, dialogu and discussion, self-learning,	semester test 1, final test
	3 Practical	Plant tissue-Tissue Meristematic	A2: The student learns about plant tissues and preparing slides About types of plant tissues	Interactive lecture, brainstorming, dialogu and discussion, self-learning,	semester test 1, final test
5	2 Theoretica	Plant tissues (meristematic or generative tissues)	A1: The student learns about the types of tissues that are involved in plant structure A1: Knows [illegible] meristematic tissues A1: The student learns about the types of primary and secondary meristematic tissues A4: Compares primary and secondary meristematic tissues A1: The student learns about the locations of meristematic tissues and the nature of the resulting growth A3: Displays the divisions of meristematic tissues and the nature of their growt	Interactive lecture, brainstorming, dialogu and discussion, self-learning,	semester test 1, final test
	3 Practical	Permanent tissues	A1: The student is introduced to the types of permanent tissues C3: Watch ready-made slides about the types of plant tissues	Interactive lecture, brainstorming, dialogu and discussion, self-learning,	semester test 1, final test
6	2 Theoretica	Plant tissues (permanent tissues)	A1: The student knows permanent tissues A2: Defines the types of simple and complex permanent tissues and gives examples of them A2: Defines simple permanent tissues and gives examples A1: The student learns about the characteristics, functions,	Interactive lecture, brainstorming, dialogu and discussion, self-learning,	semester test 1, final test

			and types of parenchymal, collinear, and sclerenchyma tissues. A4: Compares the characteristics of parenchymal, collinear, and sclerenchyma tissue types		
	3 Practical	Plant tissues - connective tissues	A2: The student learns about skinning the skin of various types of plants to observe the epidermal cells, stomata, and guard cells.	Interactive lecture, brainstorming, dialogu and discussion, self-learning,	semester test 1, final test
7	2 Theoretica	Epidermis texture	A1: The student knows the texture, structure, and functions of the epidermis A3: Shows the types of cells that make up skin tissue A3: The student describes the stomata and lenticels A3: The student explains the structure and parts of the stomatal system B2: The student enumerates the components of the stomatal system C2: Explains the mechanics of opening and closing stomata	Interactive lecture, brainstorming, dialogu and discussion, self-learning,	semester test 1, final test
	3 Practical	Discussing reports and following up on drawings	Discussing student reports	Interactive lecture, brainstorming, dialogu and discussion, self-learning,	semester test 1, final test
8	2 Theoretica	Non-secretory epidermis appendages and periderm tissue	A1: Identify the highest types of skin tags A1: Identify the tissue of the periderm and cork cambium and the factors affecting its activity A2: Determines the factors affecting the activity of cork cambium A2: The student determines the function of cork cells and the locations of their formation	Interactive lecture, brainstorming, dialogu and discussion, self-learning,	semester test 1, final test
	3 Practical	Plant tissues – transporter tissues	A2: The student learns about ready-made slices of xylem and phloem	Interactive lecture, brainstorming, dialogu and discussion, self-learning,	semester test 1, final test
9	2 Theoretica	Strictures of transporter tissue	A1: The student learns about the types of transmitting tissues in plants A1: Identify the structure of xylem B2: List the components of xylem A1: Identify the types of wood in plants and the reasons for the formation of each type A4: Compares the components of xylem between endosperms and gymnosperms	Interactive lecture, brainstorming, dialogu and discussion, self-learning,	semester test 1, final test

			A1: The student knows the texture of the bark B2: List the components of phloem tissue A1: Identify the types of bark in plants and the reasons for the formation of each type A4: Compares the components of phloem texture between encapsulated and gymnosperms		
	3 Practical	Vascular bundles	A2: The student learns about the structure of xylem, phloem, cork tissue, and cork cambium, with a ready-made slide note about the lenticels.	Interactive lecture, brainstorming, dialogu and discussion, self-learning,	semester test 1, final test
10	2 Theoretica	Anatomical structure of the root	A1: Identify the anatomical structure of each root area B2: Enumerate the different root zones A1: Identify the root tip and its growth zones A1: Identify the layers that make up the anatomical section of the root A1: Identify the anatomical structure of the roots of monocotyledons and dicotyledons A1: Identify the development of lateral and adventitious roots in plants	Interactive lecture, brainstorming, dialogu and discussion, self-learning,	semester test 1, final test
	3 Practical	Plant tissues - secretory tissues	A2: The student learns about the types of secretory tissues	Interactive lecture, brainstorming, dialogu and discussion, self-learning,	semester test 1, final test
11	2 Theoretica	The internal structure of the Stem	A1: Identify the anatomical structure of modern stems and their regions A2: Describes the tissues covering the	Interactive lecture, brainstorming, dialogu and discussion, self-learning,	semester test 1, final test
	3 Practical	Root anatomy	A2: The student learns about [illegible] of root zones, in addition to cross-sections of dicot and [illegible] roots.	Interactive lecture, brainstorming, dialogu and discussion, self-learning,	semester test 1, final test
12	2 Theoretica	Completing the internal structure of the stem	A1: Identify the stem layers of dicotyledons A1: Recognizes stem layers in monocotyledons B4: Compares the stem tissues of monocotyledons and dicotyledons	Interactive lecture, brainstorming, dialogu and discussion, self-learning,	semester test 1, final test
	3 Practical	Stem anatomy	A2: The student learns how to prepare slides about the stem areas	Interactive lecture, brainstorming, dialogu and discussion, self-learning,	semester test 1, final test
13	2 Theoretica	Anatomy of a leaf	A1: Identify the types of tissues in the dicotyledonous leaf A1: Learn about the anatomical structure of the	Interactive lecture, brainstorming, dialogu and discussion, self-learning,	semester test 1, final test

			leaf blade of a dicotyledon leaf A2: Determines the types of leaf blade tissue in monocots and dicotyledons		
	3 Practical	Anatomy of a leaf	A2: The student learns about making superficial sections of the epidermis of a plant leaf and observing ready-made slides of cross-sections of the leaves.	Interactive lecture, brainstorming, dialogu and discussion, self-learning,	semester test 1, final test
14	2 Theoretica	leaf anatomy	A1: Identify the types of tissues in monocot leaves A1: Identify the anatomical structure of the leaf blade A2: Identifies the types of leaf blade tissue in monocots	Interactive lecture, brainstorming, dialogu and discussion, self-learning,	semester test 1, final test
	3 Practical	Discussing report and following up on drawings	Discussing student reports	Interactive lecture, brainstorming, dialogu and discussion, self-learning,	semester test 1, final test
15	2 Theoretica	Anatomy of a flower	A1: Learn about the anatomical components of flower tissue A2: Identify the anatomical components of flower tissue	Interactive lecture, brainstorming, dialogu and discussion, self-learning,	semester test 1, final test
	3 Practical	Prepare slices	B3: Prepare a set of slides requested by the subject teacher to acquire practical skills	Interactive lecture, brainstorming, dialogu and discussion, self-learning,	semester test 1, final test

11. Course Evaluation

seq	Evaluation methods	Evaluation date (week)	Grade	Relative weight %
1	Report 1	fourth week	2.5	2.5
2	Report 2	fifth week	2.5	2.5
3	Short test (1)	sixth week	2	2
4	Quiz Short test (2)	fourteenth week	2	2
5	Quiz Short test (3)	fifteenth week	1	1
6	Semester test (1)	sixth week	7.5	7.5
7	Semester test (2)	eleventh week	7.5	7.5
8	Final theoretical test	Final semester exams	40	40
9	Practical field project	fifteenth week	5	5
10	Field evaluation	third and fifth week	2	2
11	Short test (1)	first week	1	1
12	Quiz Short test (2)	fourth week	0.5	0.5
13	Quiz Short test (3)	fourteenth week	2.5	2.5
14	Live drawings and homework	Weeks 6, 8, 9, 10, 11, 12 and 13	2.5	2.5
15	Final practical test	Final semester exams	2	2
	Total	100	100%	100%

12. Learning and Teaching Resources	
Main references (sources)	- Plant morphology and anatomy - Abdullah Rashid Al-Duaji and muhammad Abdo Al-Awdat - King Saud University Press, Deanship of Library Affairs, Riyadh (1992). - Plant Anatomy - Muhammad Suleiman - Kenouz Ishbilia Publishing and Distribution House, Riyadh (1424). - Practical plant anatomy, Abdullah Rashid Al-Duaji and Muhammad Abdo Al-Awdat - King Saud University Press, Deanship of Library Affairs, Riyadh (1992).
Plant physiology and development	Plant physiology and development
Electronic References, Websites	https://exa.unne.edu.ar/biologia/fisiologia.vegetal/PlantPhysiologyTaiz2002.pdf

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