



Course Specifications

Course Title:	Plant Anatomy
Course Code:	BIO342
Program:	Bachelor of Science in Biology
Department:	Department of Biology
College:	Faculty of Science
Institution:	University of Tabuk

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A. Course Identification

1. Credit hours:	3 (2 Theoretical + 1 Practical) hours			
2. Course type				
a.	University <input type="checkbox"/>	College <input type="checkbox"/>	Department <input checked="" type="checkbox"/>	Others <input type="checkbox"/>
b.	Required <input type="checkbox"/>	Elective <input checked="" type="checkbox"/>		
3. Level/year at which this course is offered:	Level 6, 7 or 8/Third or Fourth year			
4. Pre-requisites for this course (if any):	General Botany 2 (BIO341)			
5. Co-requisites for this course (if any):	None			

6. Mode of Instruction (mark all that apply)

No	Mode of Instruction	Contact Hours	Percentage
1	Traditional classroom	2	50%
2	Blended		
3	E-learning		
4	Distance learning		
5	laboratory	2	50%

7. Contact Hours (based on academic semester)

No	Activity	Contact Hours
1	Lecture	26
2	Laboratory/Studio	26
3	Tutorial	
4	Others (specify)	
	Total	52

B. Course Objectives and Learning Outcomes

1. Course Description

- This course includes introduction to plant cell, description of cell structure and function, The Plant tissues; meristematic tissues (structure of apical shoot and root), permanent tissues (dermal tissue system, ground tissue system and vascular tissue system, internal structure of root, stem and leaves, secondary growth and Anomalous, Phellogen and formation of periderm, secretory structures, and ecological effect on plant anatomical structure.

2. Course Main Objective

By the end of this course, the students should be able to:

- Provide students with modern information needed to reach a clear knowledge and understanding of the internal structure of the plant organs.
- Provide information on the plant tissue system (Epidermal, Ground and Vascular tissues), primary and secondary growth.
- Introduce students to the scientific concept of anatomical terms.



- Develop student's ability to learn and understand the relationship between the internal structure of the plants and the surrounding environment.
- Develop the skills to distinguish between monocot and dicot plants.

3. Course Learning Outcomes

CLOs		Aligned PLOs
1	Knowledge and Understanding	
1.1	Define the concepts, and terminology of Plant anatomy.	K1
1.2	Outline the internal structure of plant and its relation to plant development.	K1
2	Skills :	
2.1	Perform free hand/microtome sectioning, staining, slide preparation and examine under the microscope.	S5
2.2	Illustrate the differences between types of plant tissues, monocot/dicot plant root, stem, and leaf.	S4
2.3	Diagram scientific plant sections of different organs.	S5
3	Values:	
3.1	Appraise their time in self-study of the course materials.	V1

C. Course Content

No	(List of Topics (Theoretical part	Contact Hours
1	Introduction, Basic Concepts , The Plant cell: protoplast and The Plant cell: the cell wall	2
2	The Plant tissues: meristematic tissues Shoot apical meristem	2
3	The Plant tissues: meristematic tissues Root apical meristem	2
4	The Plant tissues: Permanent tissues - Dermal tissue system - Ground tissue system	2
5	The Plant tissues: Permanent tissues - Vascular tissue system a) xylem b) phloem	2
6	The Plant tissues: Permanent tissues - Dermal tissue system	2
7	The Plant tissues: Permanent tissues - Lateral meristem: Vascular cambium	2
	Midterm Exam	
8	Primary body: Stem	2
9	Primary body: Leaf	2
10	Primary body: Root	2
11	Secondary growth and Anomalous	2
12	Phellogen & formation of periderm, and Secretary structures	2



13	Ecological effect on plant	2
	Final Exam	
Total		26

No	(List of Topics (Practical part	Contact Hours
1	Free hand sectioning and Microtomy.	2
2	Staining and preparation of permanent slides.	2
3	Types of plant tissues and cells.	2
4	Root anatomy: Monocot root.	2
5	Root anatomy: Dicot root.	2
6	Stem anatomy: Monocot stem.	2
7	Stem anatomy: Dicot stem.	2
	Midterm Exam	
8	Leaf anatomy: Monocot leaf.	2
9	Leaf anatomy: Dicot leaf.	2
10	Secondary growth in thickening.	2
11	Secondary growth in thickening.	2
12	Secretory structures, trichomes and stomata.	2
13	Effects of the environment of plant anatomical structures.	2
	Final Exam	
Total		26

D. Teaching and Assessment

1. Alignment of Course Learning Outcomes with Teaching Strategies and Assessment Methods

Code	Course Learning Outcomes	Teaching Strategies	Assessment Methods
1.0	Knowledge and Understanding		
1.1	Define the concepts, and terminology for Plant anatomy.	- Lectures. - Activities and homework	- Quizzes. - Homework. - Midterm exam . - Final exam.
1.2	Outline the internal structure of plant and its relation to plant development.	- Lectures - Activities and homework	- Quizzes. - Homework. - Midterm exam. - Final exam.
2.0	Skills		
2.1	Perform free hand/microtome sectioning, staining, slide preparation and examine under the microscope.	- lab demonstration - individual or group presentation	- Assessment of lab reports and practical examination.
2.2	Illustrate the differences between types of plant tissues, monocot/dicot plant root, stem, and leaf.	- lab demonstration - individual or group presentation	- Assessment of lab reports and practical examination.



Code	Course Learning Outcomes	Teaching Strategies	Assessment Methods
2.3	Diagram scientific plant sections of different organs.	- individual or group presentation - individual or group presentation	- Assessment of lab reports and practical examination.
3.0	Values		
3.1	Appraise their time in self-study of the course materials	- individual or group presentation	- Interactive discussion and participation

2. Assessment Tasks for Students

#	*Assessment task	Week Due	Percentage of Total Assessment Score
1	Quizzes + Assignments + Class discussion	1-13	10%
2	Midterm Theoretical Exam	8	25%
3	Midterm Practical Exam	8	10%
4	Final Practical Exam	14	15%
5	Final Theoretical Exam	15	40%

*Assessment task (i.e., written test, oral test, oral presentation, group project, essay, etc.)

E. Student Academic Counseling and Support

Arrangements for availability of faculty and teaching staff for individual student consultations and academic advice :

- Office hours: 8 hrs / week.
- Academic Guidance for about 20 students as determined by admission and registration.
- Direct supervision of staff for lab works.
- Electronic communication through university web page and e-mail.

F. Learning Resources and Facilities

1. Learning Resources

Required Textbooks	- EG Cutter (1977) Plant Anatomy Part 1. Cells and Tissues. Edward Arnold, London.
Essential References Materials	- PH Raven, Evert RF, Eichhorn SE (1999) Biology of Plants, 6 th edition. WH Freeman, New York. - Campbell, Neil A.; Jane B. Reece (2002). Biology (6th Ed.). Benjamin Cummings. - Debbie Swarouth and C. Michael Hogan. 2010. Stomata. Encyclopedia of Earth. National Council for Science and the Environment, Washington DC.
Electronic Materials	- http://onlinelibrary.wiley.com/book/10.1002/0470047380?globalMes sage=0 - http://aob.oxfordjournals.org/cgi/content/abstract/79/6/667 . - http://www.biologie.uni-hamburg.de/b-online/e05/05a.htm .



Other Learning Materials	
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2. Facilities Required

Item	Resources
Accommodation Classrooms, laboratories, demonstration (rooms/labs, etc)	<ul style="list-style-type: none"> - Classrooms accommodate about 60 students/room. - Laboratories accommodate about 30 students/ Lab. - Anatomical slides for lab study.
Technology Resources AV, data show, Smart Board, software, (.etc)	<ul style="list-style-type: none"> - Well-equipped lab and lecture room with computers and display screens installed with curtains on the windows are required.
Other Resources Specify, e.g. if specific laboratory equipment is required, list requirements or (attach a list)	<ul style="list-style-type: none"> - A number of computers should be available for students.

G. Course Quality Evaluation

Evaluation Areas/Issues	Evaluators	Evaluation Methods
- Effectiveness of teaching and assessment.	- Students.	Indirect - Questionnaires.
- The extent of achieving the course learning outcomes.	- Program committee. - Staff members. - Students.	Direct - Questionnaires. - Reports. - Meetings
- Quality of learning resources.	- Program leaders. - Peer Reviewer.	Direct & Indirect - Questionnaires. - Reports. - Meetings

Evaluation areas (e.g., Effectiveness of teaching and assessment, Extent of achievement of course learning outcomes, Quality of learning resources, etc.)

Evaluators (Students, Faculty, Program Leaders, Peer Reviewer, Others (specify))

Assessment Methods (Direct, Indirect)

H. Specification Approval Data

Council / Committee	Biology Department Council
Reference No.	
Date	1/6/2022

