هيئة تقويم التعليم والتدريب
Education & Training Evaluation Commission

T-104
2022

Course Specification

Course Title:	**Plant Water and Soil Relationships**
Course Code:	**BOTN 341**
Program:	**Biology**
Department:	**Biology**
College:	**Science**
Institution:	**Jazan University**
Version:	**T-104**
Last Revision Date:	**20 March 2023**

Table of Contents:

A. General information about the course:

Course Identification					
1. Credit hours:					
2. Course type					
a.	University ☐	College ☐	Department☐	Track☐	Others☐
b.	Required ☒	Elective☐			
3. Level/year at which this course is offered: Level 8 – 3rd Year					
4. Course general Description This course concentrates on the ecological importance of water, water and solution properties, colloidal systems, mechanisms of water transport within the soil-plant system, and plants relation with soil's chemical and physical properties. The course also discusses plant nutrition and plant responses to stresses related to soil and water physical and chemical properties.					
5. Pre-requirements for this course (if any): **Plant Morphology and Anatomy (BOTN 241)**					
6. Co- requirements for this course (if any): None					
7. Course Main Objective(s) The aim of the course is to give essential understanding of the following: - Water, soil, solution and colloidal properties. - Entry, retention, and movement of water into and through the soil-plant system (Including permeability, diffusion, imbibition, and osmosis). - Transpiration and water stress. - Plant mineral nutrition and salt stress.					

1. Teaching mode (mark all that apply)

No	Mode of Instruction	Contact Hours	Percentage
1.	Traditional classroom	10	80%
2.	E-learning	-	
3.	Hybrid • Traditional classroom • E-learning	1	10%
4.	Distance learning	1	10%

2. Contact Hours (based on the academic semester)

No	Activity	Contact Hours
1.	Lectures	11

2.	Laboratory/Studio	22
3.	Field	-
4.	Tutorial	-
5.	Others (self-learning)	2
	Total	35

B. Course Learning Outcomes (CLOs), Teaching Strategies and Assessment Methods

Code	Course Learning Outcomes	Code of CLOs aligned with program	Teaching Strategies	Assessment Methods
1.0	Knowledge and understanding			
1.1	Know basic principles, concepts and terminology in plant-soil-water relationships.	K1.1	Lectures, self-directed study	Quiz and exams (MCQs)
1.2	Differentiate between different soil, water and plant properties and factors affecting their relationship.	K2.1	Lectures, self-directed study	Quiz and exams (short answer questions).
1.3	Deep understanding of processes, mechanisms and functions related to plant-soil-water relationship.	K2.2	Lectures	Exams (Essay questions)
2.0	Skills			
2.1	Debate/explain different theories, principles and processes related to plant-soil-water relationship.	S1.1	Lectures, Lab work, self-directed study	Exams (essay questions)
2.2	Apply theoretical knowledge and understanding in laboratory experiments and techniques related to plant-soil-water relationship.	S1.2	Lectures, Lab work, self-directed study	Quiz and exams (MCQs and short-answer questions)
2.3	Prepare well-organized scientific document related to plant-soil-water relationship using scientific resources and present it orally	S3.3	Group discussion	Assignment.

Code	Course Learning Outcomes	Code of CLOs aligned with program	Teaching Strategies	Assessment Methods
	or in a written form using appropriate media.			
3.0	Values, autonomy, and responsibility			
3.1	Develop competencies in critical thinking, delivering scientific information, reporting and data analysis related to laboratory experiments.	V3.2	Lab work	Lab work assessment and assignment
3.2				
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C. Course Content

No	List of Topics	Contact Hours
1.	Introduction; Water and solution properties; permeability.	3
2.	Plasmolysis and imbibition.	1
3	Soil: origin, formation, physical and chemical properties.	2
4	Ascent of sap, water absorption and movement in plants.	2
5	Water loss and transpiration.	1
6	Stress physiology; water and salt stresses.	2
7	Plant mineral nutrition and active transport.	Self-directed study
8	Cycling of mineral elements; hydroponic cultures.	Self-directed study
Total		11

D. Students Assessment Activities

No	Assessment Activities *	Assessment timing (in week no)	Percentage of Total Assessment Score
1.	Theory assignment	8	5
2.	Theoretical quiz	3	5
3.	Mid-term exam	5	10
4.	Practical quiz	6	5

No	Assessment Activities *	Assessment timing (in week no)	Percentage of Total Assessment Score
5.	Practical assignment	7	5
6.	Final practical exam	11	20
7.	Final Exam	12	50
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*Assessment Activities (i.e., Written test, oral test, oral presentation, group project, essay, etc.)

E. Learning Resources and Facilities

1. References and Learning Resources

Essential References	**أساسيات علم النبات** / عبدالعزيز السعيد البيومي، يسرى السيد صالح، اسامة هنداوي سيد, 1420 هـ، 2000 م
Supportive References	Kirkham M.B. (2005) Principals of Soil and Water relations. Elsevier, Amsterdam. Hopkins W.G. (2012) Introduction to Plant Physiology. Wiley, London
Electronic Materials	YouTube video links, pictures and photos related to the course will be uploaded in Blackboard few times during the semester to strengthen student knowledge and understanding.
Other Learning Materials	-

2. Required Facilities and equipment

Items	Resources
facilities (Classrooms, laboratories, exhibition rooms, simulation rooms, etc.)	1 Lecture room(s) for groups of 50 students. 1 Laboratory for group of 25 students.
Technology equipment (projector, smart board, software)	AV, data show, Smart Board
Other equipment (depending on the nature of the specialty)	Light microscopes, glassware, chemicals, consumables.

F. Assessment of Course Quality

Assessment Areas/Issues	Assessor	Assessment Methods
Effectiveness of teaching	Students, Faculty	Direct (Questionnaire)
Effectiveness of students assessment	Peer Reviewer	Direct (Cross Check marking)
Quality of learning resources	QA. Committee	Indirect (Benchmarking)
The extent to which CLOs have been achieved	Program Leader	Indirect (QA Committee)
Other		

Assessor (Students, Faculty, Program Leaders, Peer Reviewer, Others (specify)
Assessment Methods (Direct, Indirect)

G. Specification Approval Data

COUNCIL /COMMITTEE	Biology Department Board

REFERENCE NO.	BIO2214
DATE	20/9/2022AD