هيئة تقويم التعليم والتدريب
Education & Training Evaluation Commission

اعتماد NCAAA T4 2020

Course Specifications

Course Title:	**Physiology of Environmental stresses**
Course Code:	**2014212-3**
Program:	**Bachelor in Botany**
Department:	**Biology**
College:	**Sciences**
Institution:	**Taif University**

Table of Contents

A. Course Identification

1. Credit hours: 3 hr.
2. Course type **a.** University ☐ College ☐ Department ☑ Others ☐ **b.** Required ☑ Elective ☐
3. Level/year at which this course is offered: 8th level / 4th year
4. Pre-requisites for this course (if any)**: Plant Physiology (2) 2013209-3**
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	6hr/Week	100%
2	Blended		
3	E-learning		
4	Distance learning		
5	Other		

7. Contact Hours (based on academic semester)

No	Activity	Contact Hours
1	Lecture	30
2	Laboratory/Studio	30
3	Tutorial	-
4	Others (specify)	-
	Total	60

B. Course Objectives and Learning Outcomes

1. Course Description:

This course is very important for all different biological studies students in Saudi Arabia due to most of the Kingdom of Saudi Arabia area's is a desert. This course will give them a good idea about the desert, Desertification, Sandy Dunes, Desert distribution in the world, Plants and Animals Adaptations.

2. Course Main Objective:

To identify the characteristics of plants under the environmental stress conditions, the changes that occur to the plants under these conditions. recognize the characteristic of various habitats, understand the symptoms and physiological response of plants under extreme conditions of environmental factors.

3. Course Learning Outcomes

CLOs	Aligned PLOs

CLOs		Aligned PLOs
1	**Knowledge and Understanding:**	
1.1	Define the various types of environment stresses	K1
1.3	Understand the morphological changes, negative effect of environmental stress on plants and the biochemical changes within plants under environmental stress.	K3
2	**Skills:**	
2.2	analyses among habit conditions affected plant growth and physiological activities	S2
2.3	Describe Physiological responses of halophytes and activation of tolerance	S3
3	**Values:**	
3.2	Develop plans to perform specific tasks independently and as a team member.	V2

C. Course Content

No	List of Topics	Contact Hours
1	**Chapter1**: **Introduction to Eco-physiology** Definition of Eco-physiology, biological stress, Stress injury. Stress resistance.	3L+3P
2	**Chapter2: Types of environmental stresses**. **Chapter3: Salt Stress** (definition of salt stress and its causes and recourses).	3L+3P
3	**Chapter4: Types of saline soils and characteristics of each one**. **Chapter5: Effect of salts on plants** (Salts and Seed germination, Plant growth, Roots, Stems, Leaves, Photosynthesis, Respiration)	3L+3P
4	**Chapter6: Salt Resistance** (Definition of salt resistance, methods of salt resistance in plants, classification of Plants according to salt resistance, the qualities required to produce plants resistant to salinity)	3L+3P
5	**Chapter7: Halophytes** (Definition of Halophytes, classification of Halophytes. **Chapter8: Regulate the saline content in plant**.	3L+3P
6	**Chapter9: Drought Stress** (The importance of water for plants, Definition of drought, effect of drought on water content in plants.	3L+3P
7	**Chapter10: Effect of drought on plant growth** (Roots, Stems, Leaves)**, drought and causes of growth inhibition.**	3L+3P
8	**Chapter11: Drought Resistance,** classification of Plants according to drought resistance	3L+3P
9	**Chapter12: Hydrophytes, Mesophytes and Xerophytes and its characteristics.**	3L+3P
10	**Chapter13: Temperature stress and plant resistance** (Cold and Freezing stress) (injury and freezing resistance)	3L+3P
Total		**30L+30P**

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 various types of environment stresses	Lectures	Midterm exam- Final exam
1.3	Understand the morphological changes, negative effect of environmental stress on plants and the biochemical changes within plants under environmental stress.	Concept maps	Midterm exam- Final exam
2.0	Skills:		
2.2	analyses among habit conditions affected plant growth and physiological activities	Brain storming	Midterm exam- Practical exam - Final exam
2.3	Describe Physiological responses of halophytes and activation of tolerance	Discovery learning	Midterm exam- Practical exam - Final exam
3.0	Values:		
3.2	Develop plans to perform specific tasks independently and as a team member.	Problem solving	Activities evaluation

2. Assessment Tasks for Students

#	Assessment task*	Week Due	Percentage of Total Assessment Score
1	Assignments and activities: 1- Written Assignment, Practical reports 2- Power-point presentation	 Variable Variable	 5 5
2	Mid-term Exam	8th	20
3	Periodic Exam	12th	10
4	Periodic Practical Exam	Continuous	15
5	Final Practical Exam	14th	5
6	Final Exam	16th	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:

6 hours per week for academic advice and consultations and the students know these hours according to the time of professor who teach the course.

F. Learning Resources and Facilities

1.Learning Resources

Required Textbooks	Fundamental of Plant Physiology)- V.K. Jain) 2- Plant Physiology, 3rd ed by Lincoln Taiz and Eduardo Zeiger 3- Salinity and Water Stress Improving Crop Efficiency

	M. Ashraf • M. Ozturk • H.R. Athar: Editors 4- Plant Adaptation: Molecular Genetics and Ecology Edited by Q.C.B. Cronk, J. Whitton, R.H. Ree, and I.E.P. Taylor NRC Research Press Ottawa 2004
Essential References Materials	Journal of Biological Sciences, (Saudi Biological Society). - Journal Of King Saud University (Science). - Scientific Journals Of the Saudi Universities (Biology).
Electronic Materials	Blackboard website
Other Learning Materials	Computer-based programs and professional software. A. Journal of Plant Hormone Science B. Data show, Power point. C. Plant growth regulators for laboratory and experiments.

2. Facilities Required

Item	Resources
Accommodation (Classrooms, laboratories, demonstration rooms/labs, etc.)	Classrooms for 40 students\lecture. - Laboratory for 20 students\ lab activity
Technology Resources (AV, data show, Smart Board, software, etc.)	Data show
Other Resources (Specify, e.g. if specific laboratory equipment is required, list requirements or attach a list)	• Slide projector. • Accurate top loading balance • Muffle Oven • Oven • Glasses • Chemicals • pH and EC meter • Filter paper GF/C Flame photometer

G. Course Quality Evaluation

Evaluation Areas/Issues	Evaluators	Evaluation Methods
1. Strategies for Obtaining Student Feedback on Effectiveness of Teaching - Written evaluation comments. - Small group discussion	Students	Direct
2. Other Strategies for Evaluation of Teaching by the Instructor or by the Department - Colleagues open discussion - Asking one of my colleagues to attend my lectures to get feedback on the teaching strategies and tactics	Staff members	Direct
3. Processes for Improvement of Teaching - Enhancing personalized learning. - Provide activities of sufficient variety and depth to allow different levels of learning to take place.	Staff members	Direct

Evaluation Areas/Issues	Evaluators	Evaluation Methods
- Differentiate by using various starting points and tasks for different ability levels. - Carefully plan realistic deadlines so that all students have a sense of achievement. - Continuously assess teaching groups and give feedback about their learning and their successes		
4. Processes for Verifying Standards of Student Achievement (e.g., check marking by an independent member teaching staff of a sample of student work, periodic exchange and remarking of tests or a sample of assignments with staff at another institution) - Randomly selected exam papers will be graded by one of my colleagues.	Staff members	Direct
5. Describe the planning arrangements for periodically reviewing course effectiveness and planning for improvement. - Consult colleagues who have taught the same or similar courses to learn from their strategies and their general impressions of the students who typically take the course. - To modify the goals for the course.	Staff members	Direct

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**
Reference No.	**Committee number 14 - Academic Year 1442-1443H**
Date	**22\5\2022G – 21\10\1443H**

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