هيئة تقويم التعليم والتدريب
Education & Training Evaluation Commission

Course Specifications

Course Title:	**Plant Physiology (2)**
Course Code:	**2013209-3**
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: 6th/ 3rd year
4. Pre-requisites for this course (if any)**: Plant Physiology (1) 2013106-3**
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	30

B. Course Objectives and Learning Outcomes

1. Course Description:

The course contains enzymes: (nomenclature, classification, the enzymatic reactions, how enzymes work, structure of enzymes, kinetics of enzymatic reactions, factors affecting the activity of enzymes). Photosynthesis: (Light dependent and independent reactions- C3 and C4 plants). Respiration: (the definition - types of respiration - stages of aerobic anaerobic respirations). Metabolism of carbohydrates, Nitrogen and protein and Lipid metabolism.

2. Course Main Objective:

By the end of this course the student will be able to:
1-Explain the function of plant cell organelles.
2-Study the metabolic pathways (function and site).
3-learn about how, where and when the bio-molecules are produced.

3. Course Learning Outcomes

CLOs	Aligned PLOs

CLOs		Aligned PLOs
1	**Knowledge and Understanding:**	
1.1	Describe the general aspects of metabolic pathway and outline the metabolic intermediates and disorders of metabolism	K1
1.3	Recognize the place of metabolites synthesis and recognize the organic catalysts.	K3
2	**Skills:**	
2.2	Analyse the metabolic pathways and function of plant cell organelles and explain the role of photosynthesis for life and production of foods.	S2
2.3	Describe the biosynthesis and catabolism of important classes of bio-molecules and evaluate the importance of respiration for life and production metabolic energy.	S4
3	**Values:**	
3.1	Work collaboratively and constructively.	V1

C. Course Content

No	List of Topics	Contact Hours
1	**Chapter1:** Definition of the e course contents, the purpose and importance of study, description of plant cell organelles.	3L+3P
2	**Chapter2:** A: Introduction of enzymes – nomenclature.	3L+3P
3	B: Specialization classification - the nature of the enzymatic reactions.	3L+3P
4	**Chapter3:** How enzymes work – structure of enzymes - the active site.	3L+3P
5	**Chapter4:** Kinetics of enzymatic reactions - Factors affecting the activity of enzymes.	3L+3P
6	**Chapter5:** Photosynthesis: A: Light reactions./ B: Dark reactions - C3, C4 and CAM plants.	3L+3P
7	**Chapter 6:** Respiration:	3L+3P
8	**Chapter 7:** Metabolism of carbohydrates:	3L+3P
9	**Chapter 8:** Lipid metabolism: A: Classification of lipid, anabolism and catabolism	3L+3P
10	**Chapter 9:** Nitrogen and protein metabolism: A: Source of nitrogen, assimilation of ammonia, synthesis of amino acids	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	Describe the general aspects of metabolic pathway and outline the metabolic intermediates and disorders of metabolism	Lectures	Midterm exam- Final written exam

Code	Course Learning Outcomes	Teaching Strategies	Assessment Methods
1.3	Recognize the place of metabolites synthesis and recognize the organic catalysts.	Lectures	Periodic exam- Final written exam
2.0	**Skills:**		
2.2	Analyse the metabolic pathways and function of plant cell organelles and explain the role of photosynthesis for life and production of foods.	Lab activities Open Discussions	practical exam
2.3	Describe the biosynthesis and catabolism of important classes of bio-molecules and evaluate the importance of respiration for life and production metabolic energy.	Student presentation Small group activities	Activities Evaluation
3.0	**Values:**		
3.1	Work collaboratively and constructively.	Student presentation Small group activities	Activities Evaluation

2. Assessment Tasks for Students

#	Assessment task*	Week Due	Percentage of Total Assessment Score
1	Assignments and activities: 1- Written Assignment	Variable	5
	2- Power-point presentation	Variable	5
2	Midterm 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).
Essential References Materials	Plant Physiology, 3rd ed by Lincoln Taiz and Eduardo Zeiger فسيولوجيا النبات
Electronic Materials	Blackboard website; Website of Saudi digital Library

Other Learning Materials	Computer-based programs and professional software

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)	- Permanent slides

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 Indirect
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 member	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. - 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.	Staff member	Direct
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 member	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	Staff member	Direct

Evaluation Areas/Issues	Evaluators	Evaluation Methods
impressions of the students who typically take the course. - To modify the goals for the course.		

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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