



Jordan University of Science and Technology
Faculty of Agriculture
Plant Production Department

PP224 Plant Physiology

First Semester 2021-2022

Course Catalog

3 Credit Hours. The main objective of this course is to help students gain a solid foundation in the fundamental concepts of plant physiology through studying and understanding the different evidences and real facts about the physiological and biochemical processes the plant going through in the different environments. Also help students understand the logical flow of concepts and information essential to understand the plant form and function. Also to help understand the importance of sunlight as ultimate sources of energy and to underscore the critical dependence of water relations, growth, development and metabolism on the fundamental principles of energy flow. As well as understanding the stress physiology in different environments based on real world evidences.

Text Book

Title	Introduction to plant physiology
Author(s)	Hopkins WG and Hunter NPK
Edition	4th Edition
Short Name	REF#1
Other Information	

Course References

Short name	Book name	Author(s)	Edition	Other Information
REF#2	Plant physiology and Development	Taiz L, Zeiger E., Moller I., and Murphy A	6th Edition	

Instructor

Name	Prof. Ghazi Al-Karaki
Office Location	M1L2

Office Hours	Sun : 10:30 - 11:30 Mon : 10:30 - 11:30 Tue : 10:30 - 11:30 Tue : 13:30 - 14:30 Wed : 10:30 - 11:30 Wed : 12:30 - 13:30
Email	gkaraki@just.edu.jo

Class Schedule & Room	
Section 1:	Lecture Time: Sun : 11:30 - 12:30 Room: C5023
Section 2:	Lecture Time: Tue : 11:30 - 12:30 Room: C5023

Prerequisites		
Line Number	Course Name	Prerequisite Type
622021	PP202 Principles Of Plant Science	Prerequisite / Study
961030	BT103 General Biology	Prerequisite / Pass

Tentative List of Topics Covered		
Weeks	Topic	References
Week 1	Introduction and Course overview	From REF#1 , From REF#2
Weeks 1, 2	Plant Cells and Water	From REF#1 , From REF#2
Weeks 3, 4	Whole Plant Water Relations - Transpiration	From REF#1 , From REF#2
Week 5	Energy Conservation in Photosynthesis: Harvesting Sun Light	Class notes From REF#1 , Class notes From REF#2
Week 6	Energy Conservation in Photosynthesis: CO ₂ Assimilation	From REF#1 , From REF#2
Weeks 7, 8	Allocation, Translocation of the Photoassimilates	From REF#1 , From REF#2
Weeks 9, 10	Respiration	From REF#1 , From REF#2
Weeks 10, 11	Plants Nutrients	From REF#1 , From REF#2

Weeks 12, 13	Plant Hormones	From REF#1, From REF#2
Week 14	Plant Movements	From REF#1, From REF#2
Weeks 15, 16	Plant stress physiology ? Plant Environment Interactions	From REF#1, From REF#2

Mapping of Course Outcomes to Program Student Outcomes	Course Outcome Weight (Out of 100%)	Assessment method
Acquire, integrate, and apply knowledge of plant science to crop production systems. (a) Use multiple sources, including current and older literature, to find, evaluate, organize, and manage information related to field crops and horticultural production systems. (b) Explain the structure and function of cells, tissues, organs and their organization in the whole plant and explain the mechanistic basis of plant growth and development and physiological responses to biotic and abiotic factors. (c) Identifies and applies, as appropriate, quantitative methods for defining and responding to plant production problems, and apply scientific methods to test hypotheses. (d) Demonstrate competence with both laboratory and field-based technologies used in modern agriculture. (e) Apply concepts of plant biology, plant physiology, systematics, ecology, and genetics to manage and improve plants and their products. [20PLO1]	20%	
Demonstrate interdisciplinary knowledge and competency in managing crop production systems. (a) Apply methods of plant propagation, training and pruning used in horticultural crops production. (b) Apply methods of production of vegetable crops, fruit crops and ornamental plants in the field and in protected environments. (c) Apply different plant production operations including: land preparation using farm machinery, irrigation techniques, fertilization, pest management, harvesting and post-harvest handling, and marketing of agricultural produce. (d) Recognize a number of plant diseases by sight; and explain how diseases develop and demonstrate skills to diagnose common plant diseases and disorders. (e) Identify the potential impact of different insect species on agriculture and discuss potential control strategies. (f) Identify economically important weeds and their life cycles, locations and factors influencing their harmful nature and impact on major crops.	20%	
Synthesize knowledge and use insight and creativity to better understand and improve plant production systems. (a) Anticipate and recognize problems, identify causes of those problems, quantify potential impacts, analyze options, identify viable solutions to the problems, and evaluate actions and consequences of treatments and interventions. (b) Develop, identify, and employ best agricultural practices that lead to sustainable solutions and outcomes. (c) Describe the expression and inheritance of traits. (d) Understand how global issues including climate change, energy use, water availability, and/or food safety impact the sustainability of crop production systems locally, nationally, and globally. (e) Recommend appropriate, effective and integrated approaches to produce and maintain high-quality food and ornamental crops.	20%	

<p>Appreciate and communicate the diverse impacts of crop production on people. (a) Communicate effectively with various audiences using oral, written, and visual presentation skills, and contemporary networking/social media technologies. (b) Describe and assess the influence of plants and their management on environmental sustainability and restoration. (c) Quantify the economic importance of plants in managed ecosystems and the impact of crop production in food systems. (d) Describe the social, spiritual, and cultural importance of plants to historical and contemporary communities of people.</p>	20%	
<p>Demonstrate professionalism and proficiency in skills that relate to plant production systems. (a) Demonstrate leadership and the ability to collaborate and work in teams (b) Demonstrate a high level of personal and social responsibility (c) Develop a plan for life-long learning as it relates to career choice and professionalism (d) Develop thoughtful, clear, and consistent perspectives on ethical and moral issues related to agriculture. (e) Plan, engage, and learn from actions that demonstrate civic responsibility to community and society.</p>	20%	

Relationship to Program Student Outcomes (Out of 100%)						
PLO1	PLO2	PLO3	PLO4	PLO5	PLO6	PLO7
20						

Evaluation	
Assessment Tool	Weight
exam 1	25%
exam 2	25%
Final exam	25%
Lab work	25%

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