



Jordan University of Science and Technology
Faculty of Agriculture
Natural Resources & Environment Department

NR735 Advanced Soil Fertility - JNQF Level: 9

Second Semester 2022-2023

Course Catalog

3 Credit Hours. Chemistry of plant nutrients in soils. Absorption and utilization of nutrients by plants. Physical and biochemical processes of plant nutrition. Membrane and intercellular transport. Metabolism of selected nutrients in plants. Modeling of nutrient uptake by plants

Teaching Method: On Campus

Text Book

Title	Principles of plant nutrition.
Author(s)	Mengel, K. and E. Kirby
Edition	3rd Edition
Short Name	Ref# 1
Other Information	

Course References

Short name	Book name	Author(s)	Edition	Other Information
Ref# 2	Mineral nutrition in higher plants.	Marschner, H.	4th Edition	
Ref# 3	Soil Nutrient Bioavailability: A mechanistic approach.	Barber, S.	5th Edition	A Wiley-Interscience Publication. John Wiley & Sons, New York

Instructor

Name	Prof. Munir Al Rusan
Office Location	C4L2
Office Hours	
Email	mrusan@just.edu.jo

Class Schedule & Room

Section 1:
 Lecture Time: Wed : 10:30 - 13:30
 Room: LAB

Tentative List of Topics Covered

Weeks	Topic	References
Week 1	Chemistry of nutrients in the soil and other growth media	From Ref# 1, From Ref# 2, From Ref# 3
Weeks 2, 3	Plant roots in relation to plant nutrition Nutrient interaction in the root rhizosphere	From Ref# 1, From Ref# 2, From Ref# 3
Weeks 4, 5	Nutrient absorption, uptake, utilization, assimilation, translocation	From Ref# 1, From Ref# 2, From Ref# 3
Weeks 5, 6	Plant ? microbial interaction in relation to plant nutrition	
Weeks 7, 8	Plant nutrition under stress conditions Water ? nutrient interaction	From Ref# 1, From Ref# 2, From Ref# 3
Weeks 9, 10	Modeling of nutrient management in the soil-plant systems	From Ref# 1, From Ref# 2, From Ref# 3
Weeks 11, 12	Modeling of nutrient management in the soil-plant systems	From Ref# 1, From Ref# 2
Weeks 13, 14, 15, 16	Presentations	

Mapping of Course Outcomes to Program Outcomes and NQF Outcomes	Course Outcome Weight (Out of 100%)	Assessment method
To develop an understanding of advanced topics in mineral nutrition, including processes involved in nutrient acquisition, utilization, and assimilation by plants and factors influencing these processes. [50MPLO1-K] [20L9K1, 15L9K2, 15L9S2]	50%	
To develop a capability to review and evaluate the current literature in mineral nutrition. [20MPLO2-K] [10L9K1, 5L9K2, 5L9C2]	20%	
To develop data analysis, compilation, and presentation skills. [15MPLO3-S] [8L9S1, 7L9S2]	15%	
To develop writing skills. [15MPLO5-C] [5L9C4, 5L9C5, 5L9C6]	15%	

Relationship to Program Student Outcomes (Out of 100%)														
PLO1	PLO2	PLO3	PLO4	PLO5	PLO6	PLO7	PLO8	PLO9	MPLO1-K	MPLO2-K	MPLO3-S	MPLO4-S	MPLO5-C	MPLO6-C
									50	20	15		15	

Relationship to NQF Outcomes (Out of 100%)							
L9K1	L9K2	L9S1	L9S2	L9C2	L9C4	L9C5	L9C6
30	20	8	22	5	5	5	5

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