



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

NR744 Management Of Water Quality - JNQF Level: 9

First Semester 2024-2025

Course Catalog

3 Credit Hours. This course provides an in-depth exploration of water quality monitoring and management with a focus on addressing challenges in agricultural and environmental contexts. Students will engage with core principles of water quality, including standards, objectives, and criteria, and learn to apply these concepts in designing effective monitoring programs. Through comprehensive analysis of physical, chemical, and biological water parameters, students will evaluate ecosystem health, identify pollution sources, and understand the impacts of water quality on public health and the environment. To equip students with practical analytical skills, the course covers statistical and empirical tools essential for water quality assessment, including data visualization, pivoting techniques, and the application of water quality indices. By exploring case studies and real-world data, students will apply advanced research methodologies to analyze and interpret large datasets, supporting data-driven decision-making. A significant component of the course involves understanding the impact of agriculture on water quality. Students will assess issues like salinity, nutrient runoff, and infiltration, and develop targeted management strategies, such as irrigation practices and water blending, to mitigate pollution impacts. Emphasizing multidisciplinary collaboration, the course prepares students to apply critical thinking and adaptive management approaches in addressing complex environmental challenges, fostering sustainable agriculture, ecosystem resilience, and integrated resource management.

Teaching Method: On Campus

Text Book

Title	Selected chapters from different sources, E-Learning attached
Author(s)	NA
Edition	1st Edition
Short Name	RR
Other Information	NA

Course References

Short name	Book name	Author(s)	Edition	Other Information
Ref# 1	Statistical Methods for Environmental Pollution Monitoring	Richard O. Gilbert	1st Edition	
Ref# 2	Environmental Monitoring and Characterization	Janick F. Artiola, Ian L. Pepper and Mark L. Brusseau	5th Edition	

Instructor

Name	Prof. Mamoun Gharaibeh
Office Location	C1L2
Office Hours	
Email	mamoun@just.edu.jo

Class Schedule & Room

Section 1:
Lecture Time: Mon, Wed : 15:00 - 16:30
Room: G2123

Tentative List of Topics Covered

Weeks	Topic	References
Week 1	Introduction and Definitions	
Week 2	Water Quality Variables (Parameters)	
Week 3	Statistics in Pollution Science	
Weeks 4, 5	Statistical Methods for Environmental Pollution Monitoring	
Week 6	Point and non-point source pollution, Fertilizers as water pollutants, Pesticides as water pollutants	
Weeks 7, 8, 9, 10	Water quality assessment tools	
Weeks 11, 12, 13	Water quality for agriculture	
Weeks 13, 14, 15	Presentations	

Mapping of Course Outcomes to Program Outcomes and NQF Outcomes	Course Outcome Weight (Out of 100%)	Assessment method
Define and apply water quality standards: Demonstrate an understanding of water quality objectives, designated uses, criteria, and guidelines, applying these concepts to develop and evaluate water quality monitoring and management practices. [10MPLO1-K] [5L9K1, 5L9K2]	10%	
Analyze water quality variables: Assess and interpret physical, chemical, and biological water quality parameters, drawing conclusions about ecosystem health and identifying potential pollution sources based on parameter data [10MPLO2-K] [4L9K1, 3L9S1, 3L9S2]	10%	
Utilize statistical and empirical methods in water quality analysis: Apply statistical tools, water quality indices, and data visualization techniques to interpret large datasets, including creating summaries through data pivoting for efficient analysis and reporting. [60MPLO4-S] [30L9S1, 30L9S2]	60%	
Evaluate agricultural impacts on water quality and propose management solutions: Identify water quality challenges in agricultural settings, such as salinity and nutrient runoff, and recommend appropriate management strategies, including irrigation practices and water blending, to mitigate pollution impacts on water resources. [10MPLO5-C, 10MPLO6-C] [7L9C1, 6L9C3, 7L9C6]	20%	

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
									10	10		60	10	10

Relationship to NQF Outcomes (Out of 100%)

L9K1	L9K2	L9S1	L9S2	L9C1	L9C3	L9C6
9	5	33	33	7	6	7