



Jordan University of Science and Technology
Faculty of Engineering
Water Diplomacy Department

WD765 Energy, Water Food, Ecosystems Nexus - JNQF Level: 9

Second Semester 2024-2025

Course Catalog

3 Credit Hours. The Water-Energy-Food (WEF) Nexus course introduces the principles of the Water-Energy-Food (WEF) interlinkages and their implications on the security and sustainability of WEF systems at different levels. The course provides a basic understanding of the interconnectedness of WEF by focusing on the sustainable management of such resources. It explores how these critical systems interact and the challenges posed by the population growth, climate change and scarcity of resources. The course will teach the students the development of customized holistic science-based solutions and strategies for achieving sustainable and integrated resources management. It will also learn how to critically evaluate policies and strategies for sustainable WEF governance.

Teaching Method: On Campus

Instructor

Name	Prof. Hani Abu Qdais
Office Location	C1 L3
Office Hours	
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Class Schedule & Room

Section 1:
Lecture Time: Mon, Wed : 12:00 - 13:30
Room: U

Tentative List of Topics Covered

Weeks	Topic	References
Week 1	1. Introduction to the Water-Energy-Food Nexus	
Week 2	2. Understanding Water Resource Challenges	
Week 3	3. Energy Systems and Resource Requirements	
Week 4	4. Food Security and Agricultural Systems	

Week 5	5. Case Studies in the WEF Nexus	
Week 6	6. Policy and Governance of the WEF Nexus	
Week 7	7. Sustainable Development Goals (SDGs) and the WEF Nexus	
Week 8	8. Climate Change and Resilience in the WEF Nexus	
Week 9	9. Climate Change and Resilience in the WEF Nexus	
Week 10	Trade-offs, Synergies, and Integrated Solutions	
Week 11	WEF Analysis Tool	
Week 12	The role of stakeholders: government, private sector, NGOs, and local communities	
Week 13	Multi-criteria decision-making and systems integration	
Week 14	Project Presentations	
Week 15	General Review of the Course Topics	

Mapping of Course Outcomes to Program Outcomes and NQF Outcomes	Course Outcome Weight (Out of 100%)	Assessment method
Explain the concept of the Water-Energy-Food (WEF) Nexus and its importance in addressing global sustainability challenges. [1L9S2]	20%	
Identify and describe the interdependencies among water, energy, and food systems. [1L9K1]	20%	
Evaluate the impact of various policies and interventions on the WEF Nexus. [1L9C4]	20%	
Analyze the complex relationships between water, energy, and food systems. [1L9K2]	20%	
Design and propose solutions that integrate water, energy, and food systems to address real-world problems. [1L9S3]	20%	

Relationship to NQF Outcomes (Out of 100%)				
L9K1	L9K2	L9S2	L9C4	L9S3
20	20	20	20	20

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