Jordan University of Science and Technology

Faculty of Agriculture

Natural Resources & Environment Department

NR701 Advanced Soil Physics - JNQF Level: 9
First Semester 2024-2025

Course Catalog
3 Credit Hours. This course focuses on the physical properties of soils and their behavior under various environmental and land-use conditions. It examines soil-water relations, the movement of water, heat, and gases, and their implications for agriculture and environmental systems. Advanced concepts in soil physics are linked with real-world applications such as irrigation, soil erosion, and pollutant transport.
Teaching Method: On Campus

Text Book	
Title	Soil physics
Author(s)	Jury W.A. and R. Horton
Edition	6th Edition
Short Name	Ref #2
Other Information	2004

Course References

Short name	Book name	Author(s)	Edition	Other Information
Ref #1	Environmental Soil Physics	Hillel, D	3rd Edition	1998

Instructor	
Name	**Dr. Ammar Albalasmeh**
Office Location	C1L2
Office Hours	
Email	aalbalasmeh@just.edu.jo

Class Schedule & Room
Section 1: Lecture Time: Sun : 14:00 - 17:00 Room: G2123

Tentative List of Topics Covered		
Weeks	**Topic**	**References**
Weeks 1, 2	Introduction and Review of Basic Soil Properties	From **Ref #1**

Weeks 3, 4	Soil Water Content and Potential	From **Ref #2**
Weeks 5, 6, 7	Water Flow in Soils	From **Ref #2**
Weeks 8, 9, 10	Soil-Plant-Atmosphere Continuum (SPAC)	From **Ref #2**
Weeks 11, 12	Soil Heat Flow	
Weeks 13, 14	Gas Flow in Soils	From **Ref #2**
Weeks 15, 16	Applications of Soil Physics in Environmental and Agricultural Management	From **Ref #2**

Mapping of Course Outcomes to Program Outcomes and NQF Outcomes	**Course Outcome Weight (Out of 100%)**	**Assessment method**
Describe and analyze soil physical properties [10MPLO1-K, 10MPLO2-K] [20L9K1]	20%	
Evaluate soil water movement and retention mechanisms [10MPLO1-K, 10MPLO2-K] [20L9K1]	20%	
Interpret soil moisture and water potential data [10MPLO3-S, 10MPLO4-S] [10L9S1, 10L9S2]	20%	
Utilize advanced data analysis and modeling techniques to predict soil physical behavior under various environmental scenarios [10MPLO3-S, 10MPLO4-S] [10L9S2, 10L9S3]	20%	
Collaborate effectively to address soil physics challenges [10MPLO5-C, 10MPLO6-C] [10L9C3, 10L9C6]	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
									20	20	20	20	10	10

Relationship to NQF Outcomes (Out of 100%)					
L9K1	L9S1	L9S2	L9C3	L9S3	L9C6
40	10	20	10	10	10

Policy	
Exams	All exams are closed book and notes. Incomplete exams need approval from the department head/dean. The exams will include a variety of questions including computational and short answer questions.
Cheating	Prohibited; and in case of cheating the student will be subject to punishment according to the Jordan University of Science and Technology regulations.
Attendance	Mandatory according to the Jordan University of Science and Technology policy.
Participation	Participation in class discussions and activities is expected.

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