Jordan University of Science and Technology

Faculty of Engineering

Civil Engineering Department

CE566 Soil Stabilization - JNQF Level: 9

Second Semester 2020-2021

Course Catalog
3 Credit Hours. Introduction to the theory of motion and vibration, basic principles of dynamics of linear systems as applied to analysis of structures, single and multiple degrees of freedom system, excitation by applied forces and by ground motions, response spectrum concepts, wave propagation in one and two dimensions, stress-strain behavior of soils during transient and repeated loading, strength degradation and liquefaction, bearing capacity and settlement under dynamic loading, analysis of machine foundations.
Teaching Method: On Campus

Text Book	
Title	Geotechnical Earthquake Engineering,
Author(s)	Kramer, S (1996)
Edition	1st Edition
Short Name	1
Other Information	Prentice-Hall. ISBN 0-13-374943-6.

Instructor	
Name	**Dr. Samer Rababah**
Office Location	C2 L-1
Office Hours	
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Class Schedule & Room

Section 1:
Lecture Time: Sun, Tue : 10:00 - 11:30
Room: متزامن الحضور منصة الكترونية

Section 2:
Lecture Time: Sun, Tue : 11:30 - 13:00
Room: متزامن الحضور منصة الكترونية

Prerequisites		
Line Number	**Course Name**	**Prerequisite Type**
234641	CE464 Foundation Engineering	Prerequisite / Study

Tentative List of Topics Covered		
Weeks	**Topic**	**References**
Weeks 1, 2	Fundamentals of Dynamics and Vibration	From **1**
Weeks 3, 4	Multi-Degree-of-Freedom Systems	From **1**
Week 5	Response of systems to applied forces and ground motions	From **1**
Weeks 6, 7	Wave Propagation in Soils and Applications to soil-structure interaction and site response analysis	From **1**
Weeks 8, 9	Soil Behavior Under Dynamic Loading	From **1**
Weeks 10, 11	Dynamic Bearing Capacity and Settlement	From **1**
Week 12	Response of Foundations to Dynamic Loads	
Weeks 13, 14	Advanced Topics in Dynamic Soil-Structure Interaction	From **1**
Week 15	Applications and Case Studies	From **1**
Week 16	Course Review and Final Assessment	

Mapping of Course Outcomes to Program Outcomes and NQF Outcomes	Course Outcome Weight (Out of 100%)	Assessment method
Identify fundamental principles of dynamics and vibration to analyze linear systems in geotechnical and structural contexts, including single and multiple degrees of freedom systems. [1SLO1] [1L9K3]	15%	
Analyze structural responses to dynamic excitations, such as applied forces and ground motions, and interpret response spectrum concepts for practical applications. [1SLO7] [1L9K2]	15%	
Recognize and model wave propagation phenomena in one and two-dimensional media and assess their implications for soil-structure interactions. [1SLO1] [1L9K3]	10%	

Evaluate the stress-strain behavior of soils under transient and repeated loading, considering strength degradation, liquefaction potential, and dynamic soil properties. [1SLO1] [1L9S3]	20%	
Assess bearing capacity and settlement of foundations under dynamic loading conditions, integrating theoretical and empirical approaches. [1SLO2] [1L9S3]	20%	
Design and analyze machine foundations, incorporating the effects of dynamic loads, soil properties, and vibration control techniques. [1SLO2] [1L9S3]	20%	

Relationship to Program Student Outcomes (Out of 100%)						
SLO1	SLO2	SLO3	SLO4	SLO5	SLO6	SLO7
45	40					15

Relationship to NQF Outcomes (Out of 100%)		
L9K2	L9K3	L9S3
15	25	60

Evaluation	
Assessment Tool	**Weight**
MID TERM	30%
Term Paper	30%
Final Exam	40%

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