Jordan University of Science and Technology
Faculty of Engineering
Civil Engineering Department

CE732 Structural Dynamics - JNQF Level: 9
Second Semester 2023-2024

Course Catalog
3 Credit Hours. Free and forced vibration of undamped and damped single degree of freedom system, free and forced vibration of multi-degree of freedom system including shear buildings, Spectral Analysis, dynamic analysis of beams, trusses, and frames using stiffness method, Dynamic Analysis of systems with distributed properties (beams, strings).
Teaching Method: On Campus

Text Book	
Title	Structural Dynamics: Theory and Computation
Author(s)	Mario Paz , Young Hoon Kim
Edition	6th Edition
Short Name	Ref # 1
Other Information	

Course References

Short name	Book name	Author(s)	Edition	Other Information
Ref # 2	Dynamics of Structures: Theory and Applications to Earthquake Engineering,	Anil K. Chopra	4th Edition	

Instructor	
Name	**Prof. Yousef Al Rjoub**
Office Location	-
Office Hours	Sun : 13:30 - 15:30 Mon : 13:30 - 14:30 Tue : 13:30 - 15:30 Wed : 13:30 - 14:30
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Class Schedule & Room
Section 1: Lecture Time: Mon : 14:30 - 17:30 Room: قاعة ندوات /مدني

Tentative List of Topics Covered		
Weeks	**Topic**	**References**
Week 1	Undamped Single Degree-of-Freedom system.	
Week 2	Damped Single Degree-of-Freedom system.	
Weeks 3, 4	Response of One-Degree-of-Freedom system to Harmonic loading	
Week 5	Response to General Dynamic loading.	
Week 6	Fourier Analysis and Response in the Frequency Domain	
Week 7	Generalized Coordinates for Single Degree-of-Freedom system.	
Week 8	Response Spectra.	
Weeks 9, 10	The multistory Shear Building, Free and forced Vibration of a Shear Building.	
Weeks 11, 12	Dynamic Analysis of trusses, beams and plane frames.	
Weeks 13, 14	Dynamic Analysis of systems with distributed properties (beams, strings).	

Mapping of Course Outcomes to Program Outcomes and NQF Outcomes	Course Outcome Weight (Out of 100%)	Assessment method
Students be able to analyze the free and forced vibration of single degree of freedom system [1L9K1]	20%	
Students be able to calculate the response of multi-degrees of freedom system including shear building [1L9K1]	30%	
Apply stiffness method to study the free and forced vibration of trusses, beams, and frames [1L9S2]	20%	
Students be able to analyze vibration of systems with distributed properties (beams, strings). [1L9K1]	20%	
Apply generalized coordinates to model rigid bodies and distributed mass as single degree-of-freedom system. [1L9S2]	10%	

Relationship to Program Student Outcomes (Out of 100%)											
PI-1a	PI-2a	PI-2b	PI-2c	PI-2d	PI-3a	PI-4a	PI-4b	PI-5a	PI-6a	PI-6b	PI-7a

Relationship to NQF Outcomes (Out of 100%)	
L9K1	L9S2
70	30

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