

College of Engineering

Department of Civil Engineering

جامعة
الملك سعود
King Saud University



CE 568 Structural Dynamics

Credit and Contact hours	3 / 3 (Lectures), 0 (Tutorials), 0 (Laboratory)												
Required, or Elective	Required for a MSCE degree												
Course Description	Vibrations and dynamic response of structures; free and forced vibration, response to foundation excitation. Response spectrum concept. Single-degree & multi-degree of freedom systems with lumped and consistent mass. Seismic design load.												
Prerequisites or Co-requisites	None												
Course Learning Outcomes	<p>Students completing this course successfully will be able to</p> <table border="1"><thead><tr><th>Course Learning Outcomes</th><th>Related Program Outcomes</th></tr></thead><tbody><tr><td>CLO1: Recognize and identify the dynamic properties of structures idealized as Single-Degree-of Freedom systems</td><td>K1</td></tr><tr><td>CLO2: Recognize and identify the dynamic properties of structures idealized as Multi-Degree-of Freedom systems</td><td>K1</td></tr><tr><td>CLO3: Analyze free and forced vibration response of Single-Degree-of Freedom systems</td><td>S1</td></tr><tr><td>CLO4: Analyze free and forced vibration response of Multi-Degree-of Freedom systems</td><td>S1</td></tr><tr><td>CLO5: Analyze dynamic response of structures using advanced computer programs, and compare their results with analytical solutions.</td><td>S1</td></tr></tbody></table>	Course Learning Outcomes	Related Program Outcomes	CLO1: Recognize and identify the dynamic properties of structures idealized as Single-Degree-of Freedom systems	K1	CLO2: Recognize and identify the dynamic properties of structures idealized as Multi-Degree-of Freedom systems	K1	CLO3: Analyze free and forced vibration response of Single-Degree-of Freedom systems	S1	CLO4: Analyze free and forced vibration response of Multi-Degree-of Freedom systems	S1	CLO5: Analyze dynamic response of structures using advanced computer programs, and compare their results with analytical solutions.	S1
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CLO5: Analyze dynamic response of structures using advanced computer programs, and compare their results with analytical solutions.	S1												
Student Outcomes related to this Course	K1. Recognize advanced engineering knowledge, concepts and techniques to identify, interpret and analyze complex and real-life engineering problems.												

	S1. Provide solution for complex and real-life engineering problems through critical thinking and using modern engineering tools and identify its impact on social and ethical issues.	
Topics Covered	List of Topics	
	1. Vibrations and dynamic response of structures	CLO1
	2. Free and forced vibration	CLO2
	3. Response to foundation excitation	CLO2
	4. Response spectrum concept	CLO5
	5. Single-degree of freedom systems with lumped and consistent mass	CLO3
	6. Multi-degree of freedom systems with lumped and consistent mass	CLO4
	7. Seismic design load	CLO5
Textbook(s) and Other Required Material	<ul style="list-style-type: none"> Dynamics of Structures: Theory and Applications to Earthquake Engineering by Anil K. Chopra, 4th SI Edition, Pearson-Prentice Hall, 2014 	
Grading System	Assignments	15%
	Mini Project and Oral Presentation	15 %
	Midterm Exams	30%
	Final Exam	40%
Instructors	Dr. Ahmet Tuken, Office: 2A 90, E-mail: atuken@ksu.edu.sa	
Date of Review	February, 2021	