


College of Engineering																	
Department of Civil Engineering																	
<b>CE 360 Structural Analysis-1</b>																	
<b>Credit and Contact hours</b>	4/ 4 (Lectures), 1 (Tutorials), 0 (Laboratory)																
<b>Required, or Elective</b>	Required for a BSCE degree																
<b>Course Description</b>	Classification of structures; loads and structural design. Geometric stability and determinacy. Analysis of statically determinate frames: Computations of reactions, axial force, shear force and bending moment diagrams. Deformation of beams, frames and trusses using virtual work method. Influence lines for beams. Analysis of statically indeterminate beams frames and trusses using Force Method. Moment Distribution Method for beams and nonsway frames. Introduction to computer applications.																
<b>Prerequisites or Co-requisites</b>	CE 302 (Mechanics of Materials)																
<b>Course Learning Outcomes</b>	<p>Students completing this course successfully will be able to</p> <table border="1" style="width: 100%; border-collapse: collapse;"> <thead> <tr> <th style="text-align: center;">Course Learning Outcomes</th> <th style="text-align: center;">Related Student Outcomes (SO)</th> </tr> </thead> <tbody> <tr> <td><b>CLO1.</b> Determine magnitude of different types of loads using the relevant Codes.</td> <td style="text-align: center;"><b>SO1</b></td> </tr> <tr> <td><b>CLO2.</b> Identify the determinacy, stability of structures and different types of floor systems.</td> <td style="text-align: center;"><b>SO1</b></td> </tr> <tr> <td><b>CLO3.</b> Determine the internal forces in determinate beams and frames using classical and computer-based methods.</td> <td style="text-align: center;"><b>SO1</b></td> </tr> <tr> <td><b>CLO4.</b> Calculate displacements of determinate structures by energy methods.</td> <td style="text-align: center;"><b>SO1</b></td> </tr> <tr> <td><b>CLO5.</b> Analyze the determinate structures for moving loads by using influence lines</td> <td style="text-align: center;"><b>SO1</b></td> </tr> <tr> <td><b>CLO6.</b> Determine the internal forces in indeterminate structures using classical and computer-based methods.</td> <td style="text-align: center;"><b>SO1</b></td> </tr> </tbody> </table>			Course Learning Outcomes	Related Student Outcomes (SO)	<b>CLO1.</b> Determine magnitude of different types of loads using the relevant Codes.	<b>SO1</b>	<b>CLO2.</b> Identify the determinacy, stability of structures and different types of floor systems.	<b>SO1</b>	<b>CLO3.</b> Determine the internal forces in determinate beams and frames using classical and computer-based methods.	<b>SO1</b>	<b>CLO4.</b> Calculate displacements of determinate structures by energy methods.	<b>SO1</b>	<b>CLO5.</b> Analyze the determinate structures for moving loads by using influence lines	<b>SO1</b>	<b>CLO6.</b> Determine the internal forces in indeterminate structures using classical and computer-based methods.	<b>SO1</b>
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<b>Student Outcomes related to this Course</b>	<b>SO1.</b> an ability to identify, formulate, and solve complex engineering problems by applying principles of engineering, science, and mathematics, [ABET 1] and using modern engineering tools.																

<b>Topics Covered</b>	<b>List of Topics</b>		<b>Related CLOs</b>
	1. Classification of structures; loads; structural design.		CLO1
	2. Structural Idealization and different types of floor systems.		CLO2
	3. Analysis of statically determinate structures with the use of structural software		CLO3
	4. Shear and moment diagrams in frames.		CLO3
	5. Virtual work in trusses, beams and frames		CLO4
	6. Influence lines		CLO5
	7. Analysis of statically indeterminate beams, frames and trusses using Force Method with the use of structural software		CLO6
	8. Moment Distribution Method for beams and non-sway frames with the use of structural software		CLO6
<b>Textbook(s) and Other Required Material</b>	Structural Analysis-by R.C. Hibbeler, Prentice Education, SI units, Last edition		
<b>Grading System</b>	Two Mid-term Exams            40 % Quizzes and assignments      10% Computer assignment            5% Mini-project                        5% Final Exam:                         40%		
<b>Instructors</b>	Prof. Yousef Al-Salloum (2A9), email; <a href="mailto:ysalloum@ksu.edu.sa">ysalloum@ksu.edu.sa</a> Prof. Shehab Mourad (2A38), email; <a href="mailto:smourad@ksu.edu.sa">smourad@ksu.edu.sa</a> Dr. Yassir Abbas (2A84/1), email; <a href="mailto:yabbas@ksu.edu.sa">yabbas@ksu.edu.sa</a>		
<b>Date of Review</b>	November, 2020		