

College of Engineering

Department of Civil Engineering

جامعة  
الملك سعود  
King Saud University



## CE 579 Special Topics in Structural Engineering

<b>Credit and Contact hours</b>	3/ 3 (Lectures), 0 (Tutorials), 0 (Laboratory)	
<b>Required, or Elective</b>	Elective for a MSCE degree	
<b>Course Description</b>	This course deals with special topics in structural engineering which are of contemporary interest.	
<b>Prerequisites or Co-requisites</b>	None	
<b>Course Learning Outcomes</b>	Students completing this course successfully will be able to	
	<b>Course Learning Outcomes</b>	<b>Related Program Outcomes</b>
	<b>CLO1:</b> Acquire new knowledge about selected topics in Structural Engineering	<b>K1</b>
	<b>CLO2:</b> Solve advanced Civil Engineering problems	<b>S1</b>
	<b>CLO3:</b> Carry out a group-project related to the state-of-the-art analysis and design for advanced applications.	<b>S1</b>
	<b>CLO4:</b> Evaluate the current state-of-the-art methods of structural analysis and design for advanced applications.	<b>C1</b>
	<b>CLO5:</b> Produce Scientific-writing research reports on selected topics	<b>C1</b>
	<b>CLO6:</b> Design of advanced structural systems and evaluate its performance	<b>C2</b>
<b>Student Outcomes related to this Course</b>	<b>K1.</b> Recognize advanced engineering knowledge, concepts and techniques to identify, interpret and analyze complex and real-life engineering problems.	
	<b>S1.</b> 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.	

	<p><b>C1.</b> Criticize and discuss scientific research reports /papers related to Civil Engineering issues with high level of ethics and proficiency, independently, or as a team work.</p> <p><b>C2.</b> Design novel advanced Civil Engineering systems and evaluate its performance and effectiveness for engineering practice and its impact on society.</p>	
<b>Topics Covered</b>	List of Topics	
	1. Topic #1: Strengthening of RC members	Related CLOs CLO6
	2. Topic #2: Concrete-filled steel tubular (CFST) members	CLO6
	3. Topic #3: Optimization in structural engineering	CLO2
	4. Topic #4: Utilization of waste materials in the production of concrete	CLO1
	5. Topic #5: Methods of demolition of high-rise buildings and special structures	CLO4
	6. Topic #6: Structural design and construction aspects of nuclear power plants (NPP)	CLO4
	7. Topic #7: Mix design and properties of ultra-high performance concrete	CLO1
	8. Topic #8: Prediction of service life of RC / steel structures	CLO3
	9. Topic #9: Life cycle assessment of concrete/steel buildings	CLO3
	10. Topic #10: Design aspects of fallout shelters	CLO5
	11. Topic #11: Performance of different types of mechanical couplers used for splicing steel rebars in RC	CLO5
<b>Textbook(s) and Other Required Material</b>	None	
<b>Grading System</b>	Assignments and Homework	30%
	Three Presentations	30%
	Mini Project (Final Exam)	40%
<b>Instructors</b>	Prof Yousef Al Salloum, Office 2A9, email: <a href="mailto:ysalloum@ksu.edu.sa">ysalloum@ksu.edu.sa</a>	
<b>Date of Review</b>	February, 2021	