College of Engineering

Department of Civil Engineering

CE 567 Stability of Structures

Credit and Contact hours	3/ 3 (Lectures), 0 (Tutorials), 0 (Laboratory)
Required, or Elective	Elective for a MSCE degree
Course Description	Bending of structural members subjected to axial and lateral loads; Elastic and inelastic buckling of compression members; Torsional and lateral buckling of beams; Local buckling; Instability of frames, plates and shells.
Prerequisites or Co-requisites	CE 563 Advanced Structural Analysis
Course Learning Outcomes	Students completing this course successfully will be able to

Course Learning Outcomes	*Related Program Outcomes*
CLO1: Recognize and identify the various types of instability that may occur in structures due to their deformed configuration.	**K1**
CLO2: Analyze instability in compression members, beams, frames, plates and shells.	**S1**
CLO3: Analyze instability in compression members, beams, frames, plates, and shells 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.

<table>
<tr><td>Topics Covered</td><td>
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<tr><th>List of Topics</th><th>Related CLOs</th></tr>
<tr><td>1. Introduction</td><td>CLO1</td></tr>
<tr><td>2. Elastic and inelastic buckling of compression members</td><td>CLO3</td></tr>
<tr><td>3. Torsional and lateral buckling of beams</td><td>CLO2</td></tr>
<tr><td>4. Local buckling</td><td>CLO3</td></tr>
<tr><td>5. Instability of frames</td><td>CLO2</td></tr>
<tr><td>6. Instability of plates</td><td>CLO2</td></tr>
<tr><td>7. Instability of shells</td><td>CLO2</td></tr>
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<tr><td>Textbook(s) and Other Required Material</td><td>• Bažant ZP, Cedolin L. Stability of structures: elastic, inelastic, fracture, and damage theories. Courier Corporation; 2003.</td></tr>
<tr><td>Grading System</td><td>Assignments 15%
Mini Project and Oral Presentation 15 %
Midterm Exams 30%
Final Exam 40%</td></tr>
<tr><td>Instructors</td><td>Prof. Dr. Nadeem A. Siddiqui; Office 2A89; email: nadeem@ksu,edu.sa</td></tr>
<tr><td>Date of Review</td><td>February, 2021</td></tr>
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