College of Engineering Department of Civil Engineering



CLO2, CLO3, CLO4

CE 567 Stability of Structures		
3 / 3 (Lectures), 0 (Tutorials), 0 (Laboratory)		
Elective		
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. Project		
None		
Students completing this course successfully will be able to:		
Course Learning Outcomes (CLOs)		Related Student Outcomes (SO)
CLO1. Recognize the various types of instability that may occur in str to their deformed configuration. K1	ructures due	SO1
CLO2. Analyze instability in compression members, beams, frames, shells. S1	plates, and	SO2
CLO3. Analyze instability in compression members, beams, frames, plates, and shells using advanced computer programs, and compare their results with analytical solutions. S1		SO2
CLO4. Demonstrate professional engineering and ethical values with high academic integrity in assigned projects and assignments. V1		SO6
 SO1 Recognize advanced engineering knowledge, concepts, and techniques to identify, interpret, and analyze complex and real-life engineering problems. SO2 Provide solutions for complex and real-life engineering problems through critical thinking and the use of modern engineering tools, and identify their impact on social, global, cultural, environmental, safety, and economic factors. SO6 Demonstrate scientific integrity, ethical responsibility, and academic values in scientific publications, research projects, and thesis work. 		
List of Topics Related CLOs		ated CLOs
1. Introduction	CLO1	
2. Elastic and inelastic buckling of compression members	CLO2	
3. Torsional and lateral buckling of beams	CLO2	
4. Local buckling	CLO1	, CLO2
5. Instability of frames	$\frac{\text{CLO2}}{\text{CLO2}}$	<u>, CLO3, CLO4</u>
	CE 567 Stability of Structu 3/3 (Lectures), 0 (Tutorials), 0 (Laboratory) Elective Bending of structural members subjected to axial and inelastic buckling of compression members; Torsional beams; Local buckling; Instability of frames, plates ar None Students completing this course successfully will be able to Course Learning Outcomes (CLOs) CLO1. Recognize the various types of instability that may occur in sti- to their deformed configuration. K1 CLO2. Analyze instability in compression members, beams, frames, shells. S1 CLO3. Analyze instability in compression members, beams, frames, shells using advanced computer programs, and compare their results wi- solutions. S1 CLO4. Demonstrate professional engineering and ethical values academic integrity in assigned projects and assignments. V1 S01 Recognize advanced engineering knowledge, concepts, and and analyze complex and real-life engineering problems. S02 Provide solutions for complex and real-life engineering problems. S02 Demonstrate scientific integrity, ethical responsibility, am- publications, research projects, and thesis work. List of Topics 1. Introduction 2. Elastic and inelastic buckling of compression members 3. Torsional and lateral buckling of beams 4. Local buckling 5. Instability of frames 6. Instability of platex	CEE 567 Stability of Structures 3 / 3 (Lectures), 0 (Tutorials), 0 (Laboratory) Elective Bending of structural members subjected to axial and lateral load inelastic buckling of compression members; Torsional and lateral beams; Local buckling; Instability of frames, plates and shells. P None Students completing this course successfully will be able to: Course Learning Outcomes (CLOs) CLO1. Recognize 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. S1 CLO4. Demonstrate professional engineering and ethical values with high academic integrity in assigned projects and assignments. V1 SO1 Recognize advanced engineering knowledge, concepts, and techniques to and analyze complex and real-life engineering problems. SO2 Provide solutions for complex and real-life engineering problems. SO2 Provide solutions for complex and real-life engineering problems. SO2 Provide solutions for complex and real-life engineering problems. SO2 Provide solutions for complex and real-life engineering problems. SO2 Provide solutions for complex and real-life engineering problems.

7. Instability of shells

Textbook(s) and Other Required Material	• Bažant ZP, Cedolin L. Stability of structures: elastic, inelastic, fractur damage theories. Courier Corporation; 2003.	re, and
Grading System	Assignments	20%
	Lecture Attendance	
	Mini project and/or seminar	10%
	Mid-term exam	30%
	Final Exam	40%
Instructors	Prof. Dr. Nadeem A. Siddiqui; Office 2A89; email: nadeem@ksu.edu.sa	
Date of Review	March, 2025	