CE 543 Stability of Structures (3)

2017 Spring Semester — Tentative Course Syllabus

Lecture	Tuesday	6:40p.m. to 9:20p.m.	OHE 100C
Professor	Dr. A. Niazy, P.E.		
Email	Niazy@usc.edu		
Textbook • Required	G. Simitses and D. Hodges, "*Fundamentals of Structural Stability*," Butterworth-Heinemann, Elsevier Inc., 2006, First Edition, ISBN-13: 978-0750678759.		
References	1. C. H. Yoo and S. Lee, "*Stability of Structures: Principles and Applications*," Butterworth-Heinemann, First Edition, Elsevier Inc., 2011, ISBN-13: 978-0123851222.		
	2. T.V. Galambos, "*Guide to Stability Design Criteria for Metal Structures,*" Wiley, 5th edition 1998.		
	3. M. Lal Gambhir, "*Stability Analysis and Design of Structures,*" Springer, 1st edition 2004.		
	4. Z. Bazant and L. Cedolin, "*Stability of Structures,*" Oxford University Press, Inc., 1991.		
	5. M.S. El Naschie, "*Stress, Stability and Chaos,*" McGraw-Hill Book Co., UK, 1990.		
	6. S. Timoshenko and J. Gere, "*Theory of Elastic Stability,*" 2nd Edition, McGraw-Hill Inc., 1961.		
	7. V. Bolotin, "*The Dynamic Stability of Elastic Systems*," Holden-Day, Inc., 1964.		
	8. Luis A. Godoy, "*Theory of Elastic Stability: Analysis and Sensitivity*," Taylor & Francis Group, 2000.		
	9. W. Xie, "Dynamic Stability of Structures," Cambridge University Press, 2006.		
Course Description	Critical loads of columns, beams, thin-wall bars, plates, shells; stability of frames and trusses; effect of inelastic behavior of materials; effect of dynamic loading.		
Course Objectives	To achieve fundamental understanding of the subject of stability of structures and apply it to diverse problems in civil, mechanical, and Aerospace engineering.		
Learning Objectives	To enable the students to determine the critical state(s) of a structural system, use such information to enhance the design analysis process.		
Policies on:			
Exams	• Closed book • **Only one sheet of 8.5" x 11" paper** (two pages) of formulae allowed • Calculator • Students **must turn in questions sheets** with their answer sheets at the end of each exam.		
Homework	Homework problems, which are assigned weekly, are due on the following Tuesday, by 6:40 p.m. in Los Angeles, CA, USA; **unless otherwise instructed**.		
Late work	Will not be accepted.		
Make-up work	No make-up on any examinations.		
Incomplete work	To be graded accordingly.		
Extra credit	No extra Credit.		
Final grade scheme is based on percentages of graded coursework	Homework 20 % Midterm 35 % Final Exam 45 % Total 100 %		

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Tentative Class Calendar

Week	Tuesday	Topic	Homework	
			Assignment	Due
1	1/10	Basic Concepts of Stability/ Branching Points/ Imperfection Sensitivity	HW 1	
2	1/17	Basic Concepts of Stability/ Limit Points	HW 2	
3	1/24	Elastic Buckling of Columns/Standard Cases	HW 3	HW 1
4	1/31	Elastic Buckling of Columns/Additional Cases	HW 4	HW 2
5	2/7	Elastic Buckling of Frames /Beam-Column Theory	HW 5	HW 3
6	2/14	Elastic Buckling of Frames/ Elastica Problem		HW 4
7	2/21	Energy Based Methods/ Approximation Variational Methods	HW 6	HW 5
8	2/28	Energy Based Methods/ Columns on Elastic Foundation	HW 7	HW 6
9	3/7	**Midterm Exam (90 min)**		
10	3/14	Spring Recess: March 12 – 19		
11	3/21	Buckling of Thin Rectangular Plates		HW 7
12	3/28	Buckling of Thin Rectangular Plates	HW 8	
13	4/4	Buckling of Circular Rings	HW 9	HW 8
14	4/11	Dynamic Analysis of Stability	HW 10	HW 9
15	4/18	Numerical Techniques for Structural Stability Problems	HW 11	HW 10
16	4/25	Buckling of Cylindrical Shells		HW 11
17	5/2	Study Days: April 30 – May 2		
18	5/9	**Final Exam (120 min)**		

STATEMENT ON ACADEMIC INTEGRITY

USC seeks to maintain an optimal learning environment. General principles of academic honesty include the concept of respect for the intellectual property of others, the expectation that individual work will be submitted unless otherwise allowed by an instructor, and the obligations both to protect one's own academic work from misuse by others as well as to avoid using another's work as one's own.

All students are expected to understand and abide by these principles. *SCampus,* the Student Guidebook, contains the Student Conduct Code in Section 11.00, while the recommended sanctions are located in Appendix A:

http://www.usc.edu/dept/publications/SCAMPUS/gov/

Students will be referred to the Office of Student Judicial Affairs and Community Standards for further review, should there be any suspicion of academic dishonesty. The Review process can be found at:

http://www.usc.edu/student-affairs/SJACS/

The Viterbi Honor Council presents the following honor code:

Engineering enables and empowers our ambitions and is integral to our identities. In the Viterbi community, accountability is reflected in all our endeavors.

Engineering+ Integrity.

Engineering+ Responsibility.

Engineering+ Community.

Think good. Do better. Be great.

These are the pillars we stand upon as we address the challenges of society and enrich lives.

STATEMENT FOR STUDENTS WITH DISABILITIES

Any student requesting academic accommodations based on a disability is required to register with Disability Services and Programs (DSP) each semester. A letter of verification for approved accommodations can be obtained from DSP. Please be sure the letter is delivered to me (or to TA) as early in the semester as possible.

DSP Contact Information

Location: STU 301

Hours open: 8:30 a.m. until 5:00 p.m., Monday — Friday

Phone number: (213) 740-0776