



## Syllabus for ENGR151-01: Strength of Materials

Spring 2017

Instructor: Svetla Gargova

<b>Designation:</b>	ENGR 151
<b>Catalog Description:</b>	Stresses and strain in solids, uniaxial loading, linear elasticity, material behavior, stresses in beams, pressure vessels, Torsion of circular shafts, bending of beams of symmetrical section, column buckling and elastic instability.
<b>Text Books and Other Required Materials:</b>	Mechanics of Materials by James M. Gere and Barry J. Goodno. 8th edition, CENGAGE Learning, ISBN-10: 1-111-57773-0 or ISBN-13: 978-1-111-57773-5
<b>Course Objectives/ Student Learning Outcomes:</b>	<ol style="list-style-type: none"><li>1. Understand the basic concepts of stress, strain, deformation, and material behavior under different types of loading: axial, torsion, bending.</li><li>2. Perform stress analysis and design of beams subjected to bending and shearing loads using several methods.</li><li>3. Perform stress analysis of thin-walled members.</li><li>4. Understand and analyze elastic stability of columns.</li></ol>
<b>Prerequisites by Topic:</b>	ENGR 57 Dynamics and ENGR 45 Introduction to Materials
<b>Course Policies:</b>	<ol style="list-style-type: none"><li>1. NO CELL PHONES are allowed during lecture and lab sessions. PLEASE turn them off before lecture! (not silent or vibrating mode)</li><li>2. No late assignments will be accepted without prior arrangement with the instructor for acceptable excuses. Medical and family emergency will be considered on case-by-case basis.</li><li>3. Quizzes may be given unannounced throughout the term and will count as one homework. There will be no make-up quizzes.</li><li>4. No make-up exams. If you miss an exam, a zero score will be assigned to the missed exam.</li><li>5. If you should miss class due to personal emergency or medical reasons, please notify the instructor (and TA if lab is missed) by email immediately. A doctor's note will be required for make-up work.</li><li>6. Students are responsible for completing the reading assigned from the textbook related to the covered topics and for checking email regularly for important information and announcements related to the course.</li><li>7. University policy on academic honesty concerning exams and individual work will be strictly enforced.</li><li>8. BE ON TIME!</li></ol>
<b>Academic Dishonesty Statement:</b>	<ol style="list-style-type: none"><li>a. Each student in this course is expected to abide by the University of California, Merced's Academic Honesty Policy. Any work submitted by a student in this course for academic credit will be the student's own work.</li><li>b. You are encouraged to study together and to discuss information and concepts covered in lecture and the sections with other students. You can give "consulting" help to or receive "consulting" help from such students. However, this permissible cooperation should never involve one student having possession of a copy of all or part of work done by someone else, in the form of an e mail, an e mail attachment file, a diskette, or a hard copy. Should copying occur, both the student who copied work from another student and the student who gave material to be copied will both automatically receive a zero for the assignment. Penalty for violation of this Policy can also be extended to include failure of the course and University disciplinary action.</li></ol>

c. During examinations, you must do your own work. Talking or discussion is not permitted during the examinations, nor may you compare papers, copy from others, or collaborate in any way. Any collaborative behavior during the examinations will result in failure of the exam, and may lead to failure of the course and University disciplinary action.

**Disability Statement:** Accommodations for Students with Disabilities: The University of California Merced is committed to ensuring equal academic opportunities and inclusion for students with disabilities based on the principles of independent living, accessible universal design and diversity. I am available to discuss appropriate academic accommodations that may be required for student with disabilities. Requests for academic accommodations are to be made during the first three weeks of the semester, except for unusual circumstances. Students are encouraged to register with Disability Services Center to verify their eligibility for appropriate accommodations.

**Topics:**

1. Concepts of Stress and Strain
2. Stress-Strain Behavior, Axial Loading
3. Torsion
4. Bending
5. Analysis and design of beams for bending
6. Shearing in thin-walled members
7. Transformation of stresses and strains
8. Deflection of beams
9. Column buckling and elastic instability

**Class/laboratory Schedule:** LECTURE ENGR-151-01 Sec.11023 MWF 12:30 - 1:20 pm COB 130; LAB ENGR-151-02L Sec.11024 M 8:00am-10:50 am SE2 160; LAB ENGR-151-03L Sec. 13898 W 8:00am-10:50 am SE2 160; LAB ENGR -151-04L Sec.14126 F 8:00am-10:50 am SE2 160; LAB ENGR -151-05L Sec.14464 T 2:30pm-5:20 pm SE2 160;

**Midterm/Final Exam Schedule:** MIDTERM 1- Wednesday , March 1,  
MIDTERM 2 - Wednesday, April 12  
FINAL EXAM: Monday, May 8  
From 3:00. to 6:00 pm. in COB 130

**Course Calendar:** Reading: Gere 8th edition  
Note Engr. 151 classes meet MWF  
Please consult ENGR 151 course calendar

**Professional Component:** Engineering fundamentals 75%  
Engineering applications 25%

**Grading Policy:** Grade Distribution: UC Merced  
Grading Policy

**Assessments:** Homework (20%): Homework assignments will be given once per week or at the end of each section/ chapter and/or posted on CatCourse. Homework will be due one week after it has been assigned and collected at the beginning of the class session (at 12:30 pm). No late homework will be accepted. Homework is to be completed on an individual basis. You may discuss homework with classmates, but you are responsible for your own work. If you have consulted classmates, please note the individuals name on the top of you assignment.

Lab (20%): Labs will be completed weekly. Students are responsible for printing and bringing appropriate lab instructions and text to laboratory sections as part of participation. A full lab write up will be completed for each lab as assigned by the TA and due the following week at the beginning of lab. No late labs will be accepted. Labs will be performed in groups, however, each individual is responsible for turning in and completing his/her own calculations and write up. Labs must be submitted in the required format as seen in the Lab Requirements. All lab sections are mandatory and will be used for experiment completion as needed, and lectures.

Exams (30% Midterm, 30% Final): There will two midterms and a comprehensive final in the course. Exams will be closed book but one page of formulas are allowed. This limits the notes to no more than 94 square inches (both sides), regardless whether you are going to use plain paper or index cards. The note sheet cannot include FBD or examples. You are responsible to bring your own calculator.

**Coordinator:** Svetla Gargova  
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**Office Hours:** Wednesday  
1:30 pm - 2:30 pm in A0A 146