

School of Engineering and Computer Science
MECH 215: Mechanics of Materials

Catalog Data:	215 Mechanics of Materials 3 Course Prerequisite: MECH 211. Concepts of stress, strain, and their relationships; axial, torsion, bending, and combined stresses; properties of materials; columns and strain energy method. Typically offered Spring.	
Class Schedule:	Three 50-minute lecture sessions per week, for one semester.	
Laboratory Schedule:	None	
Prerequisites by Course:	MECH 211	
Prerequisites by Topic:	Statics	
Textbook:	Beer, Ferdinand P., Johnston, Russell E., Jr., DeWolf, John T., & Mazurek, David F., <i>Mechanics of Materials</i> , 6 th Edition, , McGraw Hill, 2011	
Course Coordinator:	Dr. Linda Chen	
Course Objectives:	<ol style="list-style-type: none"> 1. Demonstrate knowledge of fundamental concepts and problem solving techniques associated with stress, strain, simple constitutive theory. 2. Applications involving axial loading, torsion, and bending, including introductory-level statically indeterminate systems. 3. Accumulate significant practice in solving a variety of application problems in solid mechanics. 	
Topics Covered:	<ol style="list-style-type: none"> 1. Stress and strain 2. Properties of materials 3. Constitutive relations 4. Axial loads 5. Pressure vessels 6. Bending stresses and internal forces 7. Torsion 8. Principal stresses and planes 9. Deflection of beams 10. Strain energy method 11. Combined stresses 12. Buckling of columns 	
Lab Experiments and Activities:	None	
Course Outcomes:	Students will be able to:	
	Assessed for Student Outcomes	<ol style="list-style-type: none"> 1-a. Demonstrate knowledge of fundamental concepts such as stress, strain, elastic and inelastic behavior, strain energy, and material properties. 1-d. Apply mathematics and engineering principles to obtain analytical solutions in solid mechanics. 4-b. Examine situations involving ethical considerations (safety through design) to evaluate decisions.
	Other	

<i>Required or Elective Course:</i>	Required		
<i>Relationship of Course to Program:</i>	Meets: Educational Objectives <u>1, 3</u> Student Outcomes <u>1, 4</u>		
<i>Prepared by:</i>	Dr. Linda Chen	Date:	March 7, 2018 (04/03/18 mb)
<i>Approved by USC:</i>	4/9/18		