

**School of Engineering and Computer Science**  
**Mech 215: Mechanics of Materials**

<b>Catalog Data:</b>	<b>Mech 215 Mechanics of Materials;</b> 3 credits Concepts of stress, strain, and their relationships; axial, torsion, bending and combined stresses; properties of materials; columns and strain energy method.
<b>Class Schedule:</b>	Three 50-minute lecture sessions per week, for one semester.
<b>Laboratory Schedule:</b>	None
<b>Prerequisites by Course:</b>	Mech 211
<b>Prerequisites by Topic:</b>	Statics
<b>Required Texts:</b>	J. M. Gere, Mechanics of Materials, Thomson-Engineering; 6 edition, ISBN: 0534417930
<b>Course Coordinator:</b>	Dr. Dave Kim
<b>Course Objectives:</b>	<ol style="list-style-type: none"> <li>1. Demonstrate knowledge of fundamental concepts and problem solving techniques associated with stress, strain, simple constitutive theory.</li> <li>2. Applications involving axial loading, torsion, and bending, including introductory-level statically indeterminate systems.</li> <li>3. Accumulate significant practice in solving a variety of application problems in solid mechanics.</li> </ol>
<b>Topics Covered:</b>	<ol style="list-style-type: none"> <li>1. Stress and strain</li> <li>2. Properties of materials</li> <li>3. Constitutive relations</li> <li>4. Axial loads</li> <li>5. Pressure vessels</li> <li>6. Bending stresses and internal forces</li> <li>7. Torsion</li> <li>8. Principal stresses and planes</li> <li>9. Deflection of beams</li> <li>10. Strain energy method</li> <li>11. Combined stresses</li> <li>12. Buckling of columns</li> </ol>
<b>Lab Experiments and Activities:</b>	None
<b>Course Outcomes:</b>	Students will be able to: A-1. Apply mathematics to obtain analytical solutions in solid mechanics. A-2. Choose appropriate mathematical model to analyze mechanical systems and structures. A-3. Demonstrate knowledge of fundamental concepts such as stress, strain, elastic and inelastic behavior, strain energy, and material properties. A-4. Apply engineering principles (solid mechanics) toward solving engineering problems. F-1. Recognize situations involving ethical considerations (safety through

	design) and be able to evaluate decisions.		
<b>Required or Elective Course:</b>	Required		
<b>Contribution to Professional Component:</b>	Engineering Topics		
<b>Relationship of Course to Program:</b>	Meets: Educational Objectives <u>  1, 3  </u> Program Outcomes <u>  A, F  </u>		
<b>Prepared by:</b>	Dr. Dave Kim	Date:	November 1, 2006
<b>Approved by CAC:</b>			