

**CE/ME 200: Mechanics of Solids
Fall and Spring Semesters**

- Type (check one):** Required: X Elective: _____
- 2005-2006 Catalog Data:** CE/ME 200. Mechanics of Solids I. (Formerly CE 201) Principles of statics; coplanar and non-coplanar force systems. Equilibrium of force systems. Centroids and moment of inertia. Axial load, shear and moment diagrams. Differential equations of beams. Study of stresses due to axial, bending and torsional loading. Mohr's circle of stress. Design applications. Prerequisites: PHYS 150 (Same as ME 200) *One semester; three credits.*
- Prerequisite:** PHYS 150
- Co-Requisite:** None
- Textbook:** W. F. Riley, L. D. Sturges, and D. H. Morris, *Statics and Mechanics of Materials: An Integrated Approach*, Second Edition, Wiley, 2002.
- Other Required Materials:** None
- Other References:** None
- Instructor:** Dr. Siripong Malasri, Professor of Civil Engineering
- Course Objectives:**
1. Develop understanding of static load analysis
 2. Develop understanding of behavior of solid materials under load
 3. Develop understanding of phenomena relevant to structural design: brittle and ductile failure, fatigue, creep, thermal stress
 4. Expose students to concepts of tensor analysis; Mohr's circle in 2D and 3D
 5. Introduce design concepts.
- Prerequisites by Topics:**
1. Differential and integral calculus
- Topics:**
1. Static equilibrium
 2. Determination of forces and moments
 3. Fundamentals of stress
 4. Strain; geometric compatibility
 5. Constitutive relations and mechanical properties of materials
 6. Axial loading
 7. Torsion
 8. Bending: shear force, bending moment, slope, deflection
 9. Combined loadings
 10. Stress concentrations; thermal stress
 11. Tensor transformations; Mohr's circle
 12. Failure criteria
 13. Stability of slender members
- Class Schedule:** Three 50-minute sessions per week

Prepared by: _____ Dr. Siripong Malasri **Date:** December 2005

CE/ME 200 – Mechanics of Solids

Category (check one)	Math/Basic Science _Engineering General Education Other
Design (check one)	Significant Some None
Realistic Constraints (check all that apply)	Economic Environmental Sustainability Manufacturability Ethical Health & Safety Social Political

Relationship to Program Outcomes:

Check all that apply:

- (a) an ability to apply knowledge of mathematics, science, and engineering
- (b) an ability to design and conduct experiments, as well as to analyze and interpret data
- (c) an ability to design a system, component, or process to meet desired needs
- (d) an ability to function on multi-disciplinary teams
- (e) an ability to identify, formulate, and solve engineering problems
- (f) an understanding of professional and ethical responsibility
- (g) an ability to communicate effectively
- (h) the broad education necessary to understand the impact of engineering solutions in a global and societal context
- (i) a recognition of the need for and an ability to engage in life-long learning
- (j) a knowledge of contemporary issues
- (k) an ability to use the techniques, skills, and modern engineering tools necessary for engineering practice