

EGFD-705 -002- Finite Element Techniques I
Winter Quarter 2003

- Instructor: Dr. Dong Qian, Assistant Professor of Mechanical Engineering
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<http://www.min.uc.edu/dqian> and <http://blackboard.uc.edu>
- Textbook: *Concepts and Applications of Finite Element Analysis* by Cook, Malkus, Plesha and Witt, 2002, 4th edition, Wiley.
- Class: 2:00-3:15 TH, 354 McMicken Hall
- TA: Mr. Ghokan Ozgen
- Office Hours: Dr. Qian: 1:00-3:00 Wed. or stop by, 406B Rhodes.
- Goals: Introduction to the finite element method and basic techniques.
- Prerequisites: Linear Algebra, Differential Equations and Strength of Materials.
- Topics:
1. Introduction to the concept of finite element method; review of matrix algebra and basic elasticity theory.
 2. The stiffness method and the plane truss problems.
 3. Stationary principles, Rayleigh-Ritz Method, and interpolations.
 4. Displacement-based elements for structure mechanics (bar and beam).
- Computer Usage:
- Students will primarily use Matlab with the options to use C, C++, Fortran, etc. and write a simple FEM code.
 - Use of ANSYS to solve static problems will be introduced in this Quarter through one or two ANSYS lab sessions, if time permits.
- Grading: 40% homework; 30% midterm exam; 30% final exam.
- Homework: Regular homework due 1 week after day assigned. Computer homework due 2 weeks after day assigned. Late submission will not be graded.