

ME280B - Finite Element Methods in Non-linear Continua

CONDUCT OF COURSE

Instructor

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Teaching Assistant

There will be no teaching assistant in this course.

Course Website

<http://www.me.berkeley.edu/ME280B>

Course Objectives

The course intends to serve as an introduction to advanced finite element procedures, as they apply to the numerical solution of non-linear problems in applied mechanics. The target audience consists of intermediate- and advanced-level graduate students in applied mechanics or related engineering disciplines with interest in modern computational methods.

Prerequisites

- ME280A, CE222 or an equivalent introductory course on the finite element method.
- ME185 or an equivalent introductory course on continuum mechanics.

Textbook and Reading Assignments

1. There is no required textbook. Most of the relevant literature is accessible online. A reader containing copies of electronically unavailable material can be purchased at Copy Central, 2483 Hearst Avenue, phone #:849-9600.
2. **FEAP – A Finite Element Analysis Program: User and Example Manuals**, by R.L. Taylor. These documents are available electronically at: <http://www.ce.berkeley.edu/feap>.

Homework

Homework will be assigned approximately every two to three weeks. Problems will involve theoretical, analytical and computational aspects of the finite element method. Computer assignments will focus on modeling, solution strategies, and result evaluation – computer programming will be required at a moderate level. Programming can be done in MATLAB or other programming languages.

To simplify the task of grading, solutions should be submitted on $8\frac{1}{2} \times 11$ in engineering computation paper. Principal results must be clearly identified. Untidy solutions will not be accepted.

Examinations

There will be one $1\frac{1}{2}$ -hour in-class examination, a 20-minute presentation on a topic directly related to the content of the course, and, if deemed necessary, a take-home final examination. Please reserve all-day Saturday, May 9th for the presentations.

Grading

Homework: 25%, in-class examination: 35%, presentation and final (if needed): 40%.