

UTA Course Syllabus

ME 5310 & AE 5330
Fall 2009

Instructor's Name: Yaling Liu
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Course Number, Section Number and Course Title: ME 5310, AE 5330, 001, Finite Element method
Course WWW website: WebCT
Teaching Assistant: TBD
Office Hours: TTH 11am-12:00pm or by appointment
Time and Place of Class Meetings: TBD NH 109, TTH 9:30AM - 10:50AM

Description of Course Content: Introduction of concept of Finite Element Method and its analysis process, FEM formulation of beam, plane stress/strain, and 3D stress problems

Student Learning Outcomes: Basic concepts of Finite Element Method and analysis process, be able to solve simple mechanical problem from problem statement to post-analysis, understand and be able to implement numerical calculation in Matlab

Course Prerequisites: Basic MATH and ME courses (Calculus, Linear Algebra, Statics, Solid Mechanics, Material mechanics, etc)

Required Textbooks and Other Course Materials

Textbook

- A First Course in the Finite Element Method, Fourth Edition, by Daryl L. Logan, Thomson, 2007

Reference

- Concepts and Applications of Finite Element Analysis by Cook, Malkus, Plesha and Witt, 2002, 4th edition, Wiley.

Descriptions of major assignments and examinations with due dates:

Homework problems are posted on the Web. NO LATE HOMEWORKS. All homeworks that are obviously copied will receive a score of zero. NO MAKEUP EXAMS!

Computer programs: Executable Matlab programs will be provided to the student in this course. The students are also encouraged to solve home work and exam problems any general purpose finite element computer programs.

Tentative Topic	Textbook Sections	Matlab codes
Introduction to FEM	Chapter 1	
Matrix operation	Appendix A	
Solution of linear equations	Appendix B	
Introduction to displacement method	Chapter 2	Springs
Plane and space truss structure	Chapter 3	Truss23
Beam structures	Chapter 4	Beam
Frame structures	Chapter 5	Frame
Plane stress and Plane strain problems	Chapter 6	PlaneStress

General treatment of constraint equations	Secs. 3.9, 5.3 and notes
Practical modeling consideration	Chapter 7
Isoparametric formulation	Chapter 10
3-D Stress Analysis formulation	Chapter 11
Plate bending element formulation	Chapter 12
Thermal Stress	Chapter 15

Grading Policy:

- Homework (25%)
- Midterm (35%)
- Final (40%)

Course grades will be earned based on the following criteria:

A= 85% and above, B=71% - 84%, C=60% - 70%, F=0% - 59%

Drop Policy: The drop policy is consistent with the University drop schedule

Americans with Disabilities Act:

The University of Texas at Arlington is on record as being committed to both the spirit and letter of federal opportunity legislation; reference Public Law 92-112 – The Rehabilitation Act of 1973 as amended. With the passage of federal legislation entitled *Americans with Disabilities Act (ADA)*, pursuant to section 504 of the Rehabilitation Act, there is renewed focus on providing this population with the same opportunities enjoyed by all citizens. As a faculty member, I am required by law to provide “reasonable accommodations” to students with disabilities, so as not to discriminate on the basis of that disability. Student responsibility primarily rests with informing faculty of their need for accommodation and in providing authorized documentation through designated administrative channels. Information regarding specific diagnostic criteria and policies for obtaining academic accommodations can be found at www.uta.edu/disability. Also, you may visit the Office for Students with Disabilities in room 102 of University Hall or call them at (817) 272-3364.

Academic Integrity:

It is the philosophy of The University of Texas at Arlington that academic dishonesty is a completely unacceptable mode of conduct and will not be tolerated in any form. All persons involved in academic dishonesty will be disciplined in accordance with University regulations and procedures. Discipline may include suspension or expulsion from the University. “Scholastic dishonesty includes but is not limited to cheating, plagiarism, collusion, the submission for credit of any work or materials that are attributable in whole or part to another person, taking an examination for another person any act designed to give unfair advantage to a student or the attempt to commit such acts.” (Regents’ Rules and Regulations, Series 50101, Section 2.2)

Student Support Services Available:

The University of Texas at Arlington supports a variety of student success programs to help you connect with the University and achieve academic success. These programs include learning assistance, developmental education, advising and mentoring, admission and transition, and federally funded programs. Students requiring assistance academically, personally or socially should contact the Office of Student Success Programs at (817) 272-6107 for more information and appropriate referrals.

Final Review Week: A period of five class days prior to the first day of final examinations in the long sessions shall be designated as Final Review Week. The purpose of this week is to allow students sufficient time to prepare for final examinations. During this week, there shall be no scheduled activities such as required field trips or performances; and no instructor shall assign any themes, research problems or exercises of similar scope that have a completion date during or following this week unless specified in the class syllabi. During Final Review Week, an instructor shall not give any examinations constituting 10% or more of the final grade, except makeup tests and laboratory examinations. In addition, no instructor shall give any portion of the final examination during Final Review Week. Classes are held as scheduled during this week and lectures and presentations may be given.

Librarian to Contact: For assistance with your library needs in this course, please consult the appropriate [subject librarian](#).

Make-up Exam Policy: There are no make-up exams; An excused absence from an exam will result in one less exam being considered in the final grade computation.