

Course Syllabus

Course Information

<i>Course Number/Section</i>	MECH 6351
<i>Course Title</i>	Finite Element Techniques I
<i>Term</i>	Fall 2016
<i>Location, Days & Times</i>	ML2 1.218, Monday and Wednesday: 4:00PM-5:15PM

Professor Contact Information

<i>Professor</i>	Dong Qian
<i>Office Phone</i>	972-883-4890
<i>Email Address</i>	dong.qian@utdallas.edu
<i>Office Location</i>	ECSN 3.206
<i>Office Hours</i>	Monday and Wednesday 1:30PM-2:30PM
<i>Other Information</i>	Please call or email for appointments if you can not meet during office hour
<i>Teaching Assistant:</i>	Mr. Mohammad Rezaul Karim
<i>Email:</i>	mxk143830@utdallas.edu
<i>Office Hours:</i>	TBD.

Course Pre-requisites, Co-requisites, and/or Other Restrictions

MECH 3301 (Mechanics of Materials), MECH 4301 (Intermediate Mechanics of Materials) or equivalent.

Course Description

This course will provide an introduction to the basic concepts of finite element method and the techniques used for stress analysis for mechanical systems design. Simple tutorial to the use of commercial FEM code will be provided.

Student Learning Objectives/Outcomes

1. Learn the basic principles and formulations of the finite element method.
2. Solve practical engineering problems using commercial finite element code.
3. Develop the ability to write a simple 2D finite element code for analysis.
4. Understand the implication of FEM analysis results for engineering design.

Textbooks and Materials

Textbook

Concepts and Applications of Finite Element Analysis by Cook, Malkus, Plesha and Witt, 2002, 4th edition, Wiley. (This book is recommended but not required)

Class handouts

Academic Calendar

The following topics will be covered. The timeline is approximate and subjected to change based on the actual schedule. The numbers indicated are for the numbers of lectures

- Introduction to the concept of finite element method; review of matrix algebra and basic elasticity theory. (3)
- Bar and beam elements. Local and global stiffness equation (4)
- Energy principles, Rayleigh-Ritz Method, and interpolations. (4)
- 2D plane problems and isoparametric elements. (4)

- Finite element solution techniques (3)
- Plate and shells (2)
- 3D solid elements (2)
- Structural vibration and dynamic analysis (4)
- Computer lab sessions (3-4)

There will be homework every one to two weeks. Handwritten homeworks are typically due one week after assigned. Computer homeworks are due two weeks after assigned. They are collected at the beginning of the class.

If you have to be absent on the due date, you need to place the submission in the collection folder in front of my office before the due date.

Academic Integrity

Academic integrity is a serious matter. Students can discuss about the assignments and projects. However, direct copy from one to another or from solution manual will lead to a zero grade for all the party involved. Any violation of the academic conduct policy will be dealt with according to the University Policy.

Grading Policy

Course Credit will be temporarily distributed as follows: Midterm (close book, 30%), Final project (35%), Homework (35%)

Grade appeals shall be submitted within *one week* of the return date for the assignment or exams and *must be submitted in writing*. The reason for requesting a regrade must be clearly stated. Requests submitted later than one week after the return date or not in writing will not be processed.

Course Policies

Make-up exams

No make-up exams will be given with the only exception of a serious emergency. Advanced notice must be given in such a case.

Late Work

Late work will not be graded.

Class Attendance

Students are expected to attend each class. Missing class or be late for class on a frequent base (more than 3) will receive deduction of points.

Cell phone/electronic device usage

Cell phone and any other type of electronic devices for communication must be turned off during the class. Computer and tablet can ONLY be used for the purpose of taking notes.

Email usage

Please note that all the email communications with regard to the course must be handled through your email address at UT Dallas according to the University policy.

UT Dallas Syllabus Policies and Procedures

The information contained in the following link constitutes the University's policies and procedures segment of the course syllabus. Please go to <http://go.utdallas.edu/syllabus-policies> for these policies.

The descriptions and timelines contained in this syllabus are subject to change at the discretion of the Professor.