

MECH 2340 Finite Element Analysis

Course Syllabus

Fall 2022

Time and Location: T TR 12:00 pm - 1:20 pm, 107 Liberal Art

Instructor: Hossein Mallahzadeh, Ph.D
E-mail: hmallahzade@utep.edu
Office hours: Monday (2:00 – 3:00 pm) and Tuesday (9:30-10:30 am)
Office location: Engineering Building, Room E-329
Teaching Assistant: TBA
TA's office hours: TBA
TA's office location: TBA

Reference Textbooks:

"A First Course in the Finite Element Method", 6th edition, by Daryl L. Logan

Blackboard: The instructor will use Blackboard for uploading lectures, updating the syllabus (if necessary), and communicating with students via "Announcements" and email.

Required Material/Software: MATLAB

Prerequisites: MECH 3334& MECH 2351

Course Description: This 3 credit hour class is intended to provide the students with an introduction to the theory, skills, and nomenclature to confidently, and intelligently, perform linear elastic and basic dynamic finite element analysis for mechanical engineering systems and structures. This will be done with exposure to the basic theory of finite element analysis with hands-on applications solved using Matlab. This is not a class to teach you how to use a particular software.

COURSE OBJECTIVES:

At the end of this class the typical students should be well prepared in the following areas:

- Formulate assemble and solve simple finite element problems by hand
- Understand the finite element interpolation and how it is used to model elasticity problems
- Understand the formulation of the following finite elements: bar, truss, beam, CST, LST and Quad4 2D elements, solid and shell elements
- Understand how various finite elements converge and how to test for the convergence

- Understand the basic elasticity partial differential equations and the 2D simplifications of plane stress, plane strain and axisymmetric
- How to choose appropriate boundary conditions
- Modeling errors and basic element deficiencies

Exam dates: 9/27, 10/25 and 11/17.

Grading

Your final grade for this course will be based on the following activities

Assignments	Percentage
Midterm Exams (3x)	75%
Project	25%
Total	100%

Grade Scale	
100-90%	A
89-80%	B
79-70%	C
69-60%	D
<60%	F

The instructor reserves the right to revise this grading plan.