

EGM 4350 – FINITE ELEMENT ANALYSIS FOR ENGINEERING DESIGN
Common course Syllabus

Catalog Data: 3 CREDITS, Fundamental concepts of finite element software to perform the stress, vibration, and heat transfer analyses of various engineering design problems.

Goals: To introduce our students the basic concepts of finite element method and how to use finite element software to solve engineering and scientific problems.

Prerequisites:

1. EGN 3331 Strength of Materials (with a minimum grade of C)

Topics: (the number of lectures are guidelines and are subject to change by the instructor)

1. Introduction (4 hours).
2. FE modeling of trusses (4 hours).
3. FE modeling of beam and frames (4 hours).
4. One-dimensional FE modeling of heat transfer problems (4 hours).
5. Two-dimensional elements (5 hours).
6. 2D FE modeling of heat transfer problems (5 hours).
7. 2D FE modeling of solid mechanics problems (5 hours).
8. Three-dimensional element (5 hours).
9. FE modeling of model analysis (4 hours).
10. Additional topics at the discretion of the instructor.

Course Outcomes: (numbers in parentheses indicate correlation of the outcome with the appropriate ABET program outcomes 1-7)

1. The student will be able to use ANSYS to build a finite element model. (1)
2. The student will be able to use ANSYS to solve linear elastic problems and model analysis for trusses, beams and frames, and 2 and 3 dimensional structures. (1)
3. The student will be able to use ANSYS to solve heat transfer problems. (1)
4. The student will be able to prepare a report based on results obtained from ANSYS solution. (3)

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