CE 4431
Course Objectives & Outcomes
College of Science & Engineering

Department: Civil and Environmental Engineering
Course Number: CE 4431
Course Name: Advanced Mechanics of Solids

Objective 1) To solve advanced solid mechanics problems using classical methods

Outcomes:
1) to understand the theory of elasticity including strain/displacement and Hooke’s law relationships;
2) to analyze solid mechanics problems using classical methods and energy methods;
3) to solve torsion problems in bars and thin walled members;
4) to solve for stresses and deflections of beams under unsymmetrical loading;
5) to locate the shear center of thin wall beams;
6) to obtain stresses and deflections of beams on elastic foundations;
7) to obtain solutions to column buckling and plate problems;
8) to apply various failure criteria for general stress states at points.

Assignments that demonstrate accomplishment of these outcomes:
1) textbook and auxiliary handout reading assignments;
2) written homework assignments using both textbook problems and additional handout problems;
3) classroom discussions including homework solutions and exam problem solutions.

Objective 2) To apply commercial software on select, applied solid mechanics problems

Outcomes:
1) to develop a basic understanding and ability to use ANSYS for the modeling and solution of beam, frame, and shell structures;
2) to compare theoretical solutions with those obtained using analysis software;

Assignment(s) that demonstrate accomplishment of these outcome(s):
1) textbook and auxiliary handout reading assignments;
2) computer assignments using both textbook problems and additional handout problems;
3) classroom discussions of computer solutions