THE OHIO STATE UNIVERSITY
COLLEGE OF ENGINEERING

Introduction to the Finite Element Method

CIVILEN 5168

Credit Hours:
3.00 - 3.00

Course Levels:
Undergraduate (1000-5000 level)
Graduate (5000-8000 level)

Course Components:
Lecture

Course Description:
Basic concepts, formulation, and application of finite element techniques for numerical solution of problems of engineering and scientific interest.

Prerequisites and Co-requisites:
Prereq: 2060, Math 2568, 2174, or 2177, or equiv., or Grad standing in Engr or Math.

Course Goals / Objectives:
- To introduce the basic concepts, formulation and application of finite element methods to solve problems of engineering and scientific interest

Course Topics:
- Introduction/Formulation of the basic problems
- Strong and weak forms
- The Galerkin method
- Finite element basis functions in one dimension
- Finite element calculations in one-dimension
- Interpretation and accuracy of finite element solutions
- Development of a one-dimensional finite element code
- Introduction to two-dimensional problems
- Finite element basis functions in two-dimensions
- Finite element calculations in two-dimensions
- Development of a two-dimensional finite element code
- Advection dominated problems
- Time-dependent problems

Designation:
Elective