

**Course Name:**

Finite Elements Method

Course Number: 20-149	Credit: 3
Program: Graduate	Course Type: Technical Selective
Prerequisite: -	Corequisite: -

Course Description (Objectives):

This course focuses on a numerical method for solving engineering and physical problems. Common physical and engineering problems that are addressed using this method include structural analysis, heat transfer, fluid mechanics, mass transfer, and electromagnetic potential.

Course Content (outline):

- Chapter 1: Introduction
- Chapter 2: An introduction to applied mechanics and methods for deriving governing equations of continuous systems
- Chapter 3: Mathematical methods for approximate solutions of equations
- Chapter 4: Theory of the finite element method: fundamentals and basic concepts
- Chapter 5: Finite element method for straight elements
- Chapter 6: Finite element method for curved elements
- Chapter 7: Finite element method for plane elasticity problems
- Chapter 8: Finite element method for field problems
- Chapter 9: Finite element method for plate bending problems

References:

- Finite Element Analysis By: P. Seshu.
- Introduction to the finite element method by: Desai and Abel
- Introduction to approximate solution techniques, numerical modeling and finite element method By: V.N. Kliakin
- Finite element Procedures by: Bathe
- The finite element method, Fifth Edition, By: Zienkiewicz and Taylor
- The finite element Method By: Hughes.
- Energy methods in applied mechanics, By: Langhnan.