Department of Civil Engineering

Course Name:

Finite Element

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

Course Description (Objectives):

The main objective of this course is to familiarize students with simplified modeling methods for solving complex problems in physics and engineering. Additionally, introducing numerical methods to achieve approximate solutions for problems described by differential equations is one of its primary goals.

Course Content (outline):

- Chapter 1: Introduction
- Chapter 2: An introduction to applied mechanics and methods for finding governing equations of continuous systems
- Chapter 3: Mathematical methods for approximate solutions of equations
- Chapter 4: The theory of the finite element method, fundamentals, and basic concepts
- Chapter 5: The finite element method for straight elements
- Chapter 6: The finite element method for curved elements
- Chapter 7: The finite element method for plane elasticity problems
- Chapter 8: The finite element method for field problems
- Chapter 9: The 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: Zienklewiez and Taylor
- The finite element Method By: Hughes