Department of Civil Engineering

Course Name:

Matrix Analysis of Structures

Course Number: 20-123	**Credit:** 3
Program: Graduate	**Course Type:** Technical Selective
Prerequisite: -	**Corequisite:** -

Course Description (Objectives):

The main goal of this course is to familiarize students with matrix-based structural analysis methods and their implementation on computers, with an emphasis on the static analysis of 2D and 3D frames. Additionally, through programming in MATLAB, students will gain the necessary skills to solve engineering problems and prepare for more advanced courses.

Course Content (outline):

- Chapter 1: Introduction
- Chapter 2: Stiffness (Displacement) Method
- Chapter 3: Flexibility Method
- Chapter 4: Three-Dimensional Structures
- Chapter 5: Introductory Concepts of Finite Element Method
- Chapter 6: Special Topics

References:

- Kassimali (2021), Matrix Analysis of Structures, Cengage Learning.
- McGuire, Gallagher and Ziemian (2000), Matrix Structural Analysis, John Wiley & Sons.
- Ghali and Neville (2017), Structural Analysis: A Unified Classical and Matrix Approach, CRC Press.
- Nagarajan (2018), Matrix Methods of Structural Analysis, CRC Press.
- Paz (2009), Matrix Structural Analysis and Dynamics: Theory and Computation, Computers and Structures Inc.