

Course Name:

Repair and Rehabilitation of Structures

Course Number: 20-893	Credit: 3
Program: Graduate	Course Type: Technical Selective
Prerequisite: -	Corequisite: -

Course Description (Objectives):

This course explores structural deterioration, damage mechanisms, and both conventional and modern methods for repairing and strengthening existing structures. The ultimate goal is to familiarize students with advanced technologies, composite materials, and design guidelines to enhance the long-term durability and performance of structures.

Course Content (outline):

- Chapter 1: Introduction
- Chapter 2: Deterioration of Structures
- Chapter 3: Method of Strengthening Existing Structures (Conventional Techniques)
- Chapter 4: Method of Strengthening Existing Structures (Modern Techniques)
- Chapter 5: Durability and Long-term Performance of Fiber Composites
- Chapter 6: Case Studies

References:

- ACI 222R-01: "Corrosion of Metals in Concrete."
- Transportation Research Board (TRB) Report 12-28(4), ERI. "Methods of Strengthening Existing Highway Bridges."
- National Cooperative Highway Research Program (NCHRP) Report 514: "Bonded Repair and Retrofit of Concrete Structures Using FRP Composites."
- ACI 440.02: "Guidelines for Design of Concrete Structures Externally Bonded with Epoxy Bonded FRP Composites."
- ACI 440.3R-04: "Guide Test Methods for Fiber-Reinforced Polymers (FRPs) for Reinforcing or Strengthening Concrete Structures."