Course Name:

Repair and Rehabilitation of Structures using Fiber Reinforced Polymer

Course Number: -	**Credit:** 3
Program: Graduate	**Course Type:** Technical Selective
Prerequisite: Reinforced Concrete Structures I & II	**Corequisite:** -

Course Description (Objectives):

In this course, students become familiar with different types of polymer fibers, their properties, and engineering behavior. The application of these fibers in the strengthening and retrofitting of structures is also explored.

Course Content (outline):

- Chapter 1: Introduction
- Chapter 2: Flexural strengthening of beams using FRP
- Chapter 3: Shear strengthening of members using FRP
- Chapter 4: Strengthening of columns for confinement using FRP
- Chapter 5: Strengthening of unreinforced masonry walls using FRP
- Chapter 6: Seismic regulations for FRP systems

References:

- Strengthening of Concrete Structures Using Fiber Reinforced Polymers (FRP); Wu and Eamon
- Strengthening Design of Reinforced Concrete with FRP; Rasheed Advanced
- Fiber-Reinforced Polymer (FRP) Composites for Structural Applications, Bai
- The International Handbook of FRP Composites in Civil Engineering, Zoghi
- ACI 222R-01: “Corrosion of Metals in Concrete.”
- 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.”
- ACI 440.1R-03: “Guide for the Design and Construction of Concrete Reinforced with FRP Bars ”.