Course Name:

Design of Bridges

Course Number: 20-251	**Credit:** 3
Program: Graduate	**Course Type:** Technical Selective
Prerequisite: -	**Corequisite:** -

Course Description (Objectives):

This course covers the design methods for bridge superstructure and substructure components in accordance with the AASHTO LRFD 2020 specifications.

Course Content (outline):

- Chapter 1: Introduction, Types of Bridges, Codes and Standards
- Chapter 2: Loads on Road and Railway Bridges, Hydraulic Studies and Scour in Bridges
- Chapter 3: Analysis of Slab under Concentrated Load, Magnitude of Moving Loads, Longitudinal Movement and Transverse Load Distribution, Design of Arch Bridges
- Chapter 4: Design of Reinforced Concrete Bridges
- Chapter 5: Design of Prestressed Concrete Bridges
- Chapter 6: Design of Steel and Composite Bridges
- Chapter 7: Cable-Stayed Bridges
- Chapter 8: Types of Piers, Analysis and Design Methods, Bridge Repair and Maintenance Methods
- Chapter 9: Time-Dependent Deformation
- Chapter 10: Deck Vibration
- Chapter 11: Temperature Effects and Expansion Joints
- Chapter 12: Fatigue Design
- Chapter 13: Maintenance
- Chapter 14: Existing Bridge Evaluation
- Chapter 15: Retrofit

References:

- Bridge Engineering, Zhao & Tonias, 3rd edition, 2012, McGraw-Hill.
- AASHTO, LRFD Bridge Design Specification, 9th edition, 2020.
- Highway Bridge Superstructure Engineering,Narendra Taly,crc Press,2015.