(CE510) BRIDGE ENGINEERING

Objective of the Course:

The main aim of this course is to enable students to choose the appropriate bridge type for a given project, and to analyses and design the main components of the chosen bridge. The course also provides students with fundamental knowledge in a wide range of state-of-the-art practices, including code specifications, in bridge engineering. Upon completion of this course, students should have learned the analysis and design of bridge superstructures, foundations, bearings and deck joints.

UNIT-I

Components of Bridges

Classification – Importance of Bridges – Investigation for Bridges –Selection of Bridge site – Economical span – Location of piers and abutments – Subsoil exploration – Scour depth – Traffic projection – Choice of bridge type.

UNIT-II

IRC Standards

Specification of road bridges – width of carriageway – loads to be considered – dead load – IRC standard live load – Impact effect.

UNIT-III

General Design Considerations

Design of culvert – Foot Bridge - Slab Bridge – T-beam Bridge – Box Culvert-Fly over bridges.

UNIT-IV

Bridge sub structure

Evaluation of sub structures – Pier and abutments caps – Design of pier – Abutments – Type of foundations.

UNIT-V

Bearings for Bridges

Importance of Bearings – Bearings for slab bridges – Bearings for girder bridges – Electrometric bearing – Joints – Expansion joints.

TEXT BOOKS

1. Bridge engineering by S.Ponnuswamy, TataMcGraw-Hill, 1986.
2. Bridge superstructure by N.Rajagopalan, Narosa Publishing House, 2006.

REFERENCE BOOKS

1. Victor, D.J., Essentials of Bridge Engineering, Oxford & IBH Publishers Co., New Delhi,1980.