

Course Title: DESIGN OF BRIDGES			
As per Choice Based Credit System (CBCS) scheme]			
SEMESTER:VII			
Subject Code	17CV741	IA Marks	40
Number of Lecture Hours/Week	03	Exam Marks	60
Total Number of Lecture Hours	40	Exam Hours	03
CREDITS –03		Total Marks- 100	
Course objectives: This course will enable students to understand the analysis and design of concrete Bridges.			
Module -1			
Introduction to bridges, classification, computation of discharge, linear waterway, economic span, afflux, scour depth			
Design loads for bridges, introduction to I.R.C. loading standards, Load Distribution Theory, Bridge slabs, Effective width, Introduction to methods as per I.R.C.			
L1,L2			
Module -2			
Design of Slab Bridges: Straight and skew slab bridges			
L2,L3			
Module -3			
Design of T beam bridges(up to three girder only)			
Proportioning of components, analysis of slab using IRC Class AA tracked vehicle, structural design of slab, analysis of cross girder for dead load & IRC Class AA tracked vehicle, structural design of cross girder, analysis of main girder using Courbon's method, calculation of dead load BM and SF, calculation of live load B M & S F using IRC Class AA Tracked vehicle. Structural design of main girder.			
L2,L3,L4			
Module -4			
Other Bridges:			
Design of Box culvert (Single vent only)			
Design of Pipe culverts			
L2,L3,L4			

Module -5

Substructures - Design of Piers and abutments,

Introduction to Bridge bearings, Hinges and Expansion joints.(No design)

L2,L3,L4

Course outcomes: After studying this course, students will be able to:

- Understand the load distribution and IRC standards.
- Design the slab and T beam bridges.
- Design Box culvert, pipe culvert
- Use bearings, hinges and expansion joints and
- Design Piers and abutments.

Program Objectives:

- Engineering knowledge
- Problem analysis
- Interpretation of data

Text Books:

1. Johnson Victor. D, "Essentials of Bridge Engineering", Oxford Publishing Company.
2. N Krishna Raju, "Design of Bridges, Oxford and IBH publishing company
3. T R Jagadeesh and M A Jayaram, "Design of bridge structures", Prentice Hall of India

Reference Books:

1. Jain and Jaikrishna, "Plain and Reinforced Concrete", Vol.2., Nem Chand Brothers.
2. Standard specifications and code of practice for road bridges, IRC section I,II, III and IV.
3. "Concrete Bridges", The Concrete Association of India