

Prof Incharge: Amit shaw, IITkgp

Topic Name: Design of reinforced concrete beams

Relevant Course Name: Design of RC Structures

Relevant Department: Civil Engineering, Architecture

Relevant Semester: 5th

Topic Description and Outline:

The purpose of this course is to establish a basic understanding of design of reinforced concrete structures through Limit State Method. As many structural components (slab, staircase, retaining wall, footing, pile cap etc.) may be idealized as beam, the main emphasis in this course will be given on analysis and design of reinforced concrete beams. The following topics will be covered.

Lecture 1:

Concept of Limit State Method
Characteristic load and characteristic strength
Partial safety factors
Stress strain behaviour steel and concrete
Failure of concrete beam
Balanced, under-reinforced and over-reinforced section
Singly reinforced section and doubly reinforced section
Examples

Lecture 2:

Analysis and design of singly reinforced beam
Introduction to IS codes
Examples

Lecture 3:

Analysis and design of doubly reinforced beam
Examples
Extension of beam design philosophy to other structural components (illustration)

Pre- requisites: Analysis of Structures