



COLLEGE OF TECHNOLOGY AND ENGINEERING

DEPARTMENT OF CIVIL ENGINEERING
3 YEAR BE I SEMESTER SESSION 2015-16

1. Course Code : **CE 316 (AE)**
2. Course Title : **DESIGN OF STRUCTURES**
3. Credit : 3(2+1)
4. Theory Lecture Outlines :

1.	<i>Introduction</i> – Grade of Concrete and Characteristics strength
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3.	permissible stress in concrete and steel reinforcement. Modular ratio.
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5.	<i>Singly Reinforced Beams</i> : Fundamental assumptions
6.	Equivalent area of sections, Neutral axis and Moment of resistance. Balanced, Under-reinforced, Over-reinforced section
7.	Types of problems in singly reinforced beams.
8.	Shear stress in R. C. beams, Effect of shear, Reinforcement for shear. I.S. recommendations
9.	Bond, anchorage, development length.
10.	<i>Doubly Reinforced Beam</i> : Neutral axis, Moment of resistance. Type of problems.
11.	<i>T-Beams</i> : Dimensions, Neutral axis. Lever arm, Moment of resistance with or without web compression. Type of problems in T-Beams.
12.	<i>Cantilever</i> : Design of simple cantilever.
13.	Slabs spanning in one direction.
14.	<i>Two way slabs</i> : Supported on four edges with corners not held down and carrying U.D.L.
15.	<i>Axially loaded columns</i> : Long and short columns. Types of columns.
16.	Load carrying capacity, I. S. recommendations, Design of columns with lateral and spiral reinforcement.
17.	<i>Introduction</i> : Common steel sections, Selection criterion for beams and columns.
18.	<i>Design of Beams</i> : Assumptions in the theory of bending,
19.	<i>Design of Beams</i> : Assumptions in the theory of bending,
20.	Design of laterally restrained beams, with checks for shear, deflection
21.	Web buckling and crippling, Design steps, Problems.
22.	<i>Columns</i> : Classification of columns

23.	Types of sections, Strength of column
24.	Design of axially loaded columns. Compound columns. Design of compound column.
25.	<i>Lacing and Battening</i> : Design of lacing
26.	Design of battening
27.	Column bases, Slab bases
28.	Design of slab with concrete block, Problems
29.	Numerical
30.	Revision

Text Books/References

1. B.C. Punmia. (1992). Reinforced Concrete Structure, Vol. I, Standard Publishers & Distributors, Delhi.
2. Jain and Jaikrishna. (1992). Plane and Reinforced Cement Concrete, Nemi Chand Bros., Roorkee.
3. M.M. Malhotra. (1992). Design of Steel Structure, Jain Brothers, New Delhi.
4. Ram Chandra. (1992). Design of Steel Structures, standard Publishers & Distributors, New Delhi.

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