

For Syllabus, Question Papers, Notes & many More

ST5101 ADVANCED CONCRETE STRUCTURES

DETAILED SYLLABUS

UNIT I DESIGN PHILOSOPHY

Limit state design - beams, slabs and columns according to IS Codes. Calculation of deflection and crack width according to IS Code. interaction curve generation for axial force and bending

UNIT II DESIGN OF SPECIAL RC ELEMENTS

Design of slender columns - Design of RC walls. Strut and tie method of analysis for corbels and deep beams, Design of corbels, Deep-beams and grid floors.

UNIT III FLAT SLABS AND YIELD LINE BASED DESIGN

Design of flat slabs and flat plates according to IS method – Check for shear - Design of spandrelbeams - Yield line theory and Hillerborg's strip method of design of slabs.

UNIT IV INELASTIC BEHAVIOUR OF CONCRETE BEAMS AND COLUMNS

Inelastic behaviour of concrete beams and Baker's method, moment - rotation curves, ductility definitions, evaluation

UNIT V DUCTILE DETAILING

Concept of Ductility – Detailing for ductility – Design of beams, columns for ductility - Design of cast-in-situ joints in frames.

REFERENCES:

1. Gambhir.M. L., "Design of Reinforced Concrete Structures", Prentice Hall of India, 2012.
2. Purushothaman, P, "Reinforced Concrete Structural Elements: Behaviour Analysis and Design", Tata McGraw Hill, 1986
3. Unnikrishna Pillai and Devdas Menon "Reinforced Concrete Design", Third Edition, Tata McGraw Hill Publishers Company Ltd., New Delhi, 2007.
4. Varghese, P.C, "Advanced Reinforced Concrete Design", Prentice Hall of India, 2005.
5. Varghese, P.C., "Limit State Design of Reinforced Concrete", Prentice Hall of India, 2007.

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OBJECTIVE:

- To make the students be familiar with the limit state design of RCC beams and columns
- To design special structures such as Deep beams, Corbels, Deep beams, and Grid floors
- To make the students confident to design the flat slab as per Indian standard, yield line theory and strip method.
- To design the beams based on limit analysis and detail the beams, columns and joints for ductility.