

PRESTRESSED CONCRETE AND INDUSTRIAL STRUCTURES

Course Outline: **Prestressed Concrete Structures** – Fundamentals of Prestressed Concrete (PSC), Prestressing technology, Elastic Analysis of PSC flexural (beam) elements, Prestress losses, Limit State Design of PSC elements for flexure, shear and torsion, Shear Resisting Mechanism of PSC Beams
Industrial Structures – Structural Analysis and Design of Cylindrical shell structures including Cylindrical Water Tanks and Pressure Vessels, Folded plates, Industrial Chimneys, Silos, Bunkers and Industrial Bins

Textbooks:

1. “Prestressed Concrete”, by N. Krishna Raju, Tata McGraw Hill
2. “Prestressed Concrete”, by N. Rajagopalan
3. “Handbook of Concrete Engineering”, Edited by Mark Fintel, CBS Publishers and Distributors
4. “Reinforced Concrete Design” by S. N. Sinha, Second Edition, Tata McGraw-Hill Publishing Company.

References and Codes:

1. “Prestressed Concrete”, by Y. Guyon, Asia Publishing House
2. “Prestressed Concrete Structures”, by Michael Collins and Dennis P. Mitchell, Prentice Hall
3. “Theory of Plates and Shells”, by S. P. Timoshenko and S. Woinowsky Krieger, McGraw Hill International Edition
4. “Tall Chimneys – Design and Construction”, by S. N. Manohar, Tata McGraw Hill
5. “Indian Standard Code of Practice for Prestressed Concrete, IS:1343 – 2012, Bureau of Indian Standards, Manak Bhawan, 9 Bahadur Shah Zafar Marg, New Delhi 110 002.
6. “Indian Standard Code of Practice for Plain and Reinforced Concrete”, IS: 456 – 2000, Bureau of Indian Standards, Manak Bhawan, 9 Bahadur Shah Zafar Marg, New Delhi 110 002.
7. “Criteria for design of Reinforced Concrete Chimneys: 1. Assessment of loads”, IS: 4998 (Part I) – 1992, Bureau of Indian Standards, Manak Bhawan, 9 Bahadur Shah Zafar Marg, New Delhi 110 002.
8. “Indian Standard Criteria for Design of Reinforced Concrete Shell Structures and Folded Plates”, IS: 2210 – 1988
9. “Indian Standard Criteria for Practice for Earthquake Resistant Design of Structures”, IS: 1893 (Part I) – 2016, Bureau of Indian Standards, Manak Bhawan, 9 Bahadur Shah Zafar Marg, New Delhi 110 002.
10. “Indian Standard Code of Practice for Design Loads (Other than Earthquake) for Buildings and Structures”, IS: 875 – 2015 (Parts I – V), Bureau of Indian Standards, Manak Bhawan, 9 Bahadur Shah Zafar Marg, New Delhi 110 002.
11. “Indian Standard Code of Practice for Ductile Detailing of Reinforced Concrete Structures subjected to Seismic Forces”, IS: 13920 – 2016, Bureau of Indian Standards, Manak Bhawan, 9 Bahadur Shah Zafar Marg, New Delhi 110 002.