

Course syllabus

Department of Civil Engineering, Indian Institute of Technology Madras

CE6760 - Structures for power plants

Credit Distribution: C:9 L:3 T:0 P:0 E:0 O:6 TH:0

Course Type: Theory

Description: To understand the issues and concepts in the planning, analysis and design of different power plant structures.

Course Content: Introduction: Overview of energy situation in India, Power Plants: Types and their component structures, Planning, analysis and design of: Boiler Supporting Structures, Electro-Static Precipitators, Transmission Line Tower, Storage Bins and Silos, Steel and Reinforced Concrete Chimneys, Induced and Natural Draught Cooling Towers, Turbo-Generator Foundations.

Text Books

- NPTEL web courses on Design of Steel Structures, www.nptel.ac.in/courses/IIT-Madras. Part 1 for member designs, Part 2 for industrial buildings and towers.
- Ramchandra and Gehlot, V., Design of Steel Structures, Standard Publishers Distributors, 2010. Vol. 2 for towers, chimneys and bins.
- Srinivasulu, P and Vaidyanathan C, Handbook of Machine Foundations, Tata-McGraw Hill, 2003 (for turbo-generator foundations).

Reference Books:

The following codes published by Bureau of Indian Standards.

- IS 800 Code of Practice for General Construction in Steel.
- IS 802 Code of Practice for Transmission Line Towers, (I) Materials and Loads.
- IS 875 Code of Practice for Design Loads for Buildings and Structures, (III) Wind Loads.
- IS 1893 Criteria for Earthquake Resistant Design of Structures., (I) General Provisions and Buildings, (II) Industrial Structures including Stack-like Structures.
- IS 2974 Design and Construction of Machine Foundations for Rotary Type Machines (medium and high frequency).
- IS 4995 Criteria for Design of Reinforced Concrete Bins,
- IS 4998 (I) Criteria for Design of Reinforced Concrete Chimneys.
- IS 6533 Code of Practice for the Design and Construction of Steel Chimneys, (I) Mechanical Aspect (II) Structural Aspect.
- IS 9178 Criteria for Design of Steel Bins for Storage of Bulk Materials, (I) General Requirements and Assessment of Loads, (II) Design Criteria, (III) Bins Designed for Mass Flow and Funnel Flow.
- IS 11504 Criteria for the Structural Design of Reinforced Concrete Natural Draught Cooling Towers.

Prerequisite: NIL