

## Course syllabus

Department of Civil Engineering, Indian Institute of Technology Madras

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### CE3320: Design of steel structural systems

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

**Course Type:** Theory

**Description:** To enable understanding of the concepts and issues in the design of various steel structural systems.

**Course Content:**

1. Loads: Calculation of wind, seismic and other loads, and their combinations acting on various structural systems.
2. Analysis: Introduction to elastic, plastic and stability analysis; Plastic design of continuous beams and simple frames.
3. Structural Systems for Steel Multi-storey and Industrial Buildings: Braced and moment resisting frames; Industrial sheds; Gantry girders; Pre-engineered Building (PEB) Systems.
4. Special Structures: Introduction to liquid storage tanks, bunkers, silos, conveyors structures, chimneys; Highway and railway bridges; Transmission and microwave towers.

**Text Books**

- NPTEL web courses on Design of Steel Structures - I and II, [www.nptel.ac.in/courses/IIT-Madras](http://www.nptel.ac.in/courses/IIT-Madras).
- Teaching Resources for Structural Steel Design, Volumes 1-3, Institute for Steel Development and Growth
- Design of Steel Structures, Arya A.S. and Ajmani J.L., 5th Ed., Nemchand Bros, 2001.
- Design of Steel Structures, Ramchandra and Gehlot V., Vols. I & II, Standard Publishers Distributors, 2010.

**Reference Books**

- IS 800, IS 801, IS 802, IS 875, IS 1893, IS 6533, IS 11384, Bureau of Indian Standards.
- SP 6 Handbook for Structural Engineers, (1) Structural Steel Sections, (6) Plastic Analysis, Bureau of Indian Standards.
- IRC 24, Indian Roads Congress.
- Steel Designers Manual, Edited by Davison B. and Owens G.W., 7th Ed., SCI, Blackwell, UK, 2012.
- Guide to Stability Design Criteria for Metal Structures, Edited by Ziemian R.D., 6th Ed., John Wiley & Sons Inc., 2010.

**Prerequisite:** NIL