



DESIGN OF STEEL STRUCTURES

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IIT Kharagpur

INTENDED AUDIENCE : Civil Engineering

INDUSTRIES APPLICABLE TO : LIST OF COMPANIES/INDUSTRY THAT WILL RECOGNIZE/VALUE THIS ONLINE COURSE: TATA Steel, SAIL, HSCL, EPIL, Jindal Steel & Power, NBCC, RITES Limited, STUP Consultancy, MN Dastur Co. Ltd., TRF Ltd., Thyssenkrupp, WBHDC Ltd, PWD, CPWD etc.

COURSE OUTLINE :

The course deals with design of steel structures using “Limit State Design Method”. The design methodology is based on the latest Indian Standard Code of Practice for general construction (IS 800:2007). The subject covers all the necessary components such as material specifications, connections and elementary design of structural members for designing industrial steel structures. The course provides material specifications and design considerations. It provides relevant material properties of different types of steel. It deals with two types of connections namely welded and bolted connections. The advantages and limitations of these two methods of connections are also spelt out. Eccentric connections due to different plane of loading for both bolt and weld are discussed. The course also comprises of analysis and design procedure of steel members under axial tension. Design of compression members, built-up compression members along with the batten and lacing systems are explained in in this course. It deals with the design procedures of flexural members having laterally supported and laterally unsupported beams. It comprises of design of various types of column bases which transfers different kind of loads from super structures to underneath soil. Design of gantry girder with reference to industrial applications is also demonstrated.

ABOUT INSTRUCTOR :

Prof. Damodar Maity did his graduation and post-graduation from Jadavpur University, Kolkata and Ph. D. from IIT Kharagpur. He has worked in Research Engineers Pvt. Ltd. as System Analyst for two years on the development of Software STAAD.Pro which includes steel design. He has served as faculty member in IIT Guwahati for seven years. He is currently Professor in the Department of Civil Engineering, IIT Kharagpur. His research works concentrated mainly in computational mechanics which includes structural health monitoring, earthquake analysis of dams, vibration control of highrise buildings etc. He has published more than 70 technical papers in various journals of National and International repute. Many of his papers have become top downloaded articles. Prof. Maity organized several training courses for teachers of Engineering Colleges as well as engineers of Government organizations like PWD, CPWD, NF Railway, NEC etc. He is member of Technical Advisory Committee of National Disaster Management Authority, Government of India. Prof. Maity is author of a text book titled, Computer Analysis of Frame Structures, published by IK International Pvt. Ltd. He has developed a video course in Design of Steel Structures in working stress method and a web course in Finite Element Analysis under NPTEL.

COURSE PLAN :

- Week 01** : Introduction: Material Overview
- Week 02** : Introduction: Design Overview
- Week 03** : Bolted Connections
- Week 04** : Welded Connections
- Week 05** : Eccentric Connections
- Week 06** : Failure and Strength Calculations of Tension Members
- Week 07** : Design of Tension Members
- Week 08** : Design of Compression Members
- Week 09** : Design of Lacing and Batten Systems
- Week 10** : Design of laterally supported Beams
- Week 11** : Design of laterally unsupported Beams
- Week 12** : Design of Column Base