12. Strain measurement using strain gauges.

REFERENCES

1. Relevant IS Codes: 456-2000, IS: 800-2007, IS: 10262-2009.
2. Shetty M.S; *"Concrete Technology"* , 3rd Edition, S chand Publications – 2008.
3. Neville A.M. *"Properties of Concrete",* 4th Edition, S Chand Publications.

ADVANCED STEEL STRUCTURAL DESIGN

Course Code: 13CE 2209 **L P C**
4 0 3

Course Outcomes:

At the end of the course, the student will be able to:

CO1 : Analyse and design the Truss type Rolling stock (moving vehicles) and Pedestrian bridges.
CO2 : Analyse and design High Tension Transmission line towers.
CO3 : Analyse and design Self-supporting steel chimneys for Industrial purposes
CO4 : Analyse and design North light roof trusses and Lattice girders for Industrial buildings.
CO5 : Associate and perform analysis and design of elevated steel water tanks to store oil and water.

UNIT-I

Design of pedestrian Bridge (N-Truss and Pratt), Design of through type truss bridge member for dead load and equivalent live load including top, bottom bracings and portal bracing.

UNIT-II

Analysis and design for transmission line tower.

UNIT-III

Design of self supporting steel chimneys including foundations.

UNIT-IV

Design of North light trusses and Lattice girder.

UNIT-V

Design of water storage and oil storage steel tanks.

TEXT BOOKS

1. Ramchandra. *"Design of Steel Structures Vol. I & II",* 3rd Edition, Standard Book House, New Delhi, 1998

2.Duggal, S.K., *"Design of Steel Structures",* 3rd Edition, Tata McGraw-Hill Publications, 2006

REFERENCES

1. Indian Standard Code 800-2007.
2. Bureau of Indian Standard Code, Special Publications 36.
3. MBMA and AISC Hand Books

EARTHQUAKE RESISTANT DESIGN OF STRUCTURES

Course Code: 13CE2210 **L P C**
4 0 3

Course Outcomes:

At the end of the course, the student will be able to:

CO1 : Summarise engineering Seismology and discuss the causes and effects of Earthquakes.

CO2 : Analyse and detail the multi-storeyed structures using I.S Codes by Seismic Coefficient and Response Spectrum methods.

CO3 : Design and detail Shear walls using I.S: 13920.

CO4 : Discuss various retrofitting techniques for R.C buildings

CO5 : Design earthquake-resistant masonry buildings.

UNIT – I

Engineering Seismology: Introduction, causes and effects of earth quakes faults, structure of earth, plate tectonics, elastic rebound theory, earth quake terminology- source, focus, epicentre, hypocenter, Earthquake size, magnitude & intensity, Seismic waves, Seismic zones, Seismic zoning map of India, seismo grams and accelerograms.

UNIT – II

Codal Design Provisions: Review of the latest Indian Seismic code IS: 1893 – 2002 (Part- I) provisions for buildings, earthquake design philosophy, assumptions, design by Seismic coefficient and response spectrum methods, displacements and drift requirements. Analysis of multi storeyed building using Seismic coefficient method.

Codal Detailing Provisions: Review of latest Indian Seismic codes IS: 4326 & IS: 13920 provisions for ductile detailing of R.C. buildings, beam, column and joints.

UNIT – III