

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

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GVPCE(A)

M.Tech. Structural Engineering

2014

EARTHQUAKE RESISTANT DESIGN OF STRUCTURES

Course Code: 13CE2210

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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

Aseismic Planning: Plan configurations, Torsion irregularities, re-entrant corners, non-parallel systems, diaphragm discontinuity, vertical discontinuity in load path, irregularities in strength and stiffness, Mass irregularities, Vertical geometric irregularity, Proximity of adjacent buildings.

Shear Walls: Introduction, types of shear walls, description of building, determination of lateral forces in buildings, design of shear walls as per Indian Standard Code : 13920, detailing of reinforcement of shear walls.

UNIT – IV

Retrofitting Techniques: Introduction, consideration in retrofitting of structures, classification of retrofitting techniques, retrofitting strategies of R.C. buildings like structural level and member level.

UNIT – V

Masonry Buildings : Introduction, determination of design lateral load, determination of wall rigidities, determination of Torsional forces, determination of pier loads, moments and shear, design of shear walls for shear, structural details.

TEXT BOOKS

1. Agarwal pankaj & shrikhande Manish “ *Earthquake Resistant Design of Structures*”, 2nd Edition, Eswar Press, 2010.
2. JaiKrishna and Chandrasekharan, “*Elements of Earthquake Engineering*”, 3rd Edition, Saritha Prakasham, Meerut, 2009.

REFERENCES

1. Anil K. Chopra, “*Dynamics of Structures, Theory and Applications to Earthquake Engineering*”, 3rd Edition, Prentice Hall of India, 2009.
2. Duggal S.K., “*Earthquake Resistant Design of Structures*” 2nd Edition, Oxford University Press, 2008.

3. Relevant Indian Standard Codes: IS-875, IS-1893, IS -4326, IS-13920.

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GVPCE(A)

M.Tech. Structural Engineering

2014

ADVANCED FOUNDATION ENGINEERING

Course Code : 13CE 2211

L P C
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Course Outcomes:

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

CO1 : Identify a suitable foundation system for a structure.

CO2 : Evaluate the importance of raft foundation and principles of design for buildings and tower structures.

CO3 : Analyse and design pile foundations.

CO4 : Examine and discuss various machine foundations.

CO5 : Analyse and design Sheet piles and cofferdams.

UNIT – I

Foundation design basics : Criteria for choice of foundation, bearing capacity, total and differential settlement tolerance for various types of structures, Interpretation of soil profile from design parameters like modulus of compressibility, Modulus of subgrade reaction, Poisson's ratio, etc.

UNIT – II

Raft foundations : Raft foundations for building and tower structures, including effects of soil-structure interaction and nonlinearity, different types of rafts

UNIT – III

Deep foundations : Pile foundation-types, methods of installation, codal practices for permissible load under vertical and lateral loads, stresses during pile driving, load carrying capacity of pile groups, negative skin friction, under-reamed piles