VII SEMESTER

CE 1702 STEEL STRUCTURES (3-1-0)

I. Introduction

Properties of Structural Steel, I.S. Rolled Sections, LS.
Specifications.

II. Design Approach Factor of Safety, Permissible and Working stresses, Elastic method, Plastic method, Introduction to limit states of design.

III. Connections

Riveted, bolted and welded connections, Strength & Efficiency and Design of Joints, Introduction to high strength friction grip bolts.

IV. Tension Members

Steel members and high strength steel cables.

V. Compression Members

Struts and Columns including built-up columns. lacings and battens.

VI. Beams

Stability of flange and web, Build-up sections. Plate girders including stiffeners. connections and curtailment of flange plates.

VII. *Beam-columns*

Stability base, Gusseted base and Grillage footing.

VIII. Column bases.

Stability base, Guessted base and Grillage footing.

References

1.Arya,A.S. & Ajmani. l.L., "Design of Steel Structures". Nem Chand & Bros., Roorkee (UP), 1992

2.Bresler, B., Lin, T.Y. and Scalzi, J.B., "Design of Steel Structures", Wiley Eastern Pvt. Ltd., New Delhi, 1970.

3.Duggal, S.K., "Desi'gn of Steel Structures", Tata McGraw - Hill Book Pub. Co. Ltd., New Delhi, 1993.

4.Kazimi, S.M.A. and Jindal, S.K., "Design of Steel Structures", Prentice Hall of India Pvt. Ltd., New Delhi, 1989.

5.Krishnamachar, B.S. and Sinha, D.A., "Design of Steel Stnlctures", Tata McGraw Hill Pub. Co. Ltd., New Delhi, 1987.

6.Negi L.S., "Design of Steel Structures",Tata McGraw Hill Pub. Co. Ltd., New Delhi, 1995

7.Punmia, B.C., Jain, AX. and Jain, AX., "Design of Steel Structures", Vol. I, Arihant Publications, Bombay - Jodhpur, 1995.

8.Raghupathi, M., "Design of Steel Structures", Tata McGraw-Hill Pub. Co. Ltd., New Delhi, 1995.

9.Chandra, Ram., "Design of Steel Structures", Standard Book House, Nai Sarak, Delhi - 6, 1975.

EC 1712 PHOTOGRAMMETRY AND REMOTE SENSING (3-1-0)

I. Photogrammetry

Definition of Photogrammetric Terms, Geometry of aerial and terrestrial photographs, Aerial camera and photo - theodolite, Scale of a Photograph, Tilt and Height displacements, Stereoscopic vision and stereoscopes, Height determination from parallax measurements, Flight planning. Maps and Map substitutes and their uses,

II. Remote Sensing

Introduction and definition of remote sensing" terms, Remote Sensing System, Electromagnetic radiation and spectrum; Spectral signature, Atmospheric windows, Different types of platforms, sensors and their characteristics, Orbital parameters of a satellite, Multi concept in Remote Sensing.

III. Image Interpretation

Principles of interpretation of aerial and satellite images, equipments and aids required for ground truth collection and verification. Advantages of multidate and multiband images. Digital image processing concept.

References

1.Campbell, J.B., "Introduction to Remote Sensing", The Guilford Press, London, 1986.

2.Curran, *P.J.*, "Principles of Remote Sensing", Longman, London, 1985.

3.Kennie, T.J.M. and Petric, G., "Engineering Surveying Technology", Blackie & Sons Ltd, London, 1990.

4. Wolf, P.R., "Elements of Photogrammetry", Tata McGraw Hill Book Company, New Delhi, 1986.

CE 1701 WATER RESOURCES ENGINEERING I (3-1-0)

I.Introduction

Definitions, functions and advantages of irrigation, present status of irrigation In classification for agriculture, soil moisture and crop-water relations, irrigation water quality,' consumptive use of water, principal Indian crop seasons and water requirements, multiple cropping, hybrid crops.

II. Canal Irrigation

Types of canals, parts of a canal irrigation system, channel alignment, assessment of water requirements, estimation of channel losses, design of Channels, regime and semi-theoretical approaches (Kennedy's Theory, Lacey's theory), cross-sections of channels, silt control in canals.

III. Water Distribution System

Rotational delivery (warabandi), continuous delivery and delivery on demand, Role, of command area development authority. Functions and organization structures.

IV. Distribution of Canal Water

System of regulation and *control,* outlets. assessment of canal revenue.

V.Hydraulics of Alluvial Rivers

Critical tractive force, regimes of flow, resistance relationship for natural] streams, bed *load,* suspended load and total load equations, different stages of rivers, meandering, meandering and degradation, river training & bank protection works.

VI. Water Logging

Causes, preventive and curative measures, drainage of irrigated lands, saline and alkaline lands, types of channel linings and design of lined channel.

VII. Principles of Design of Masonry and Other Structures for Canals

Design for surface and sub-surface flows, Bligh's, Lane's and Khosla's methods. design of falls. distributary and cross-regulators, energy dissipation.

VIII. Well Irrigation

Open wells and tube wells, types of tube wells, duty of tube well Water

IX. Hydrology

Definition. Hydrologic cycle, Application to Engineering problems, Measurement of rainfall, raingauge, Peak flow, Flood frequency method, Catchment area formulae, Flood hydrograph. Rainfall

analysis, Infiltration, Run off, Unit hydro graph and its determination. Estimation of run off.

References

1.Asawa, G.L., "Irrigation Engineering", New Age International Publishers, Hnd ed., New Delhi, 1996.

2.Bharat Singh, ;'Fundamentals oflrrigation Engineering", 7th Ed., Ncm ~hand & Bros., 1983.

3.Varshney, R.S., Gupta and Gupta," Theory and design ofIrrigation structures vol I&II".

4.PunamiCl,B.C. and Pandey, 'B.B.Lal," Irrigation and Water Power Engineering".

CE 1703-P STRUCTURAL DETAILING (0-0-3)

To prepare working drawings manually as well as on computer for the following.

1.Simple beam/Lintel

2.T-Beam floor.

3.Rectangular slabs.

4.Brick wall and isolated footing

5.Combined rectangular and Trapezoidal footing

6.Water tank

7.T-Shape retaining wall.

8.Detailing of Retaining walls.

9. Water Tanks

10.Rolled sections and connections

11.Built-up columns and beanls

12. Guesset base.

13. Grillage footing.

14. Trusses.

CE 1704-P ESTIMATION AND EVALUATION (0-0-3)

I. Building Drawing

Objective of pi all. elevation and sectional elevations Scale and types of drawings. I.S. Specifications.

II. Quantity Estimation

Principles of estimation, methods and units. Estimation of materials in buildings: walls, floors and roofs, R.B and R.C.C. works, plaster, white washing, distempering and doors and windows, lump sum items. Principles of general and detailed specifications for building works, analysis of rates and schedule of rates.

III. Drawing Estimation

Survey of an existing building on the campus. Preparation of a report giving its salient features including the following details on the drawing sheets: Ground floor plan, two sectional elevations, front and *side* elevations, plan and sectional elevation of a stair case, door, window/ ventilator. Floor and roof.

IV. Analysis of Rates

Definition of analysis of rates, Prime cost, Work charged establishment, Resource planning through analysis of rates, P.W.D. Schedules and cost for building material and Labour, Measurement and *measurement* book.

Valuation

Purposes of valuation, Terminology, Factors affecting the value of a property, valuation and its different aspects, methods of valuation such as Rental method, Direct compensation method, Profit based method and development method, Capitalized value and depreciation.

References

1. Arya, A.S., "Masonry and Timber Structures including Earth Resistant Design, Nem Chand Bros., Roorkee(U.P.), 1987
2. Bellis, H.F. & Schmidt, W.A."Architecture Drafting", McGraw-Hill Book Co. Inc., London, 19
3. Dutta, B.N., "Estimating and Costing in Civil Engineering -Theory & Practice", UBS Publishers