SEMESTER VII

SUBJECT CODE	COURSE TITLE	L	P	M
THEORY				
	Estimating and Cost Engineering.	3	0	100
	Irrigation Engineering	3	0	100
	Environmental Engineering	3	0	100
	Engineering economics and Principles of Management	3	0	100
	Elective II	3	0	100
	Elective III	3	0	100
PRACTICALS				
	Comprehension Lab	0	3	100
	Environmental Engineering Lab	0	3	100

SEMESTER VII
ESTIMATING AND COST ENGINEERING

UNIT -1 ESTIMATION **9**

Philosophy – purpose - Methods of estimation – advantages – types of estimates – approximate estimates – definite estimate – estimation of quantities for buildings, roads, canals and hydraulic structures – Sluices – Head and wing wall type, tower head, surplus weir, earthen dam.

UNIT -2 SPECIFICATIONS AND TENDERS **9**

Specifications-Detailed and general specifications-construction specifications – sources – types of specifications – Tender notices – types – corrigendum notice – tender procedures – Drafting model tenders

UNIT -3 CONTRACTS **9**

Contract – types of contracts – formation of contract - contract conditions - contract problems-contract for labour, material, design and construction – drafting of contract documents – construction contracts – arbitration and legal requirements.

UNIT -4 VALUE ENGINEERING **9**

Basics - principles of valuation – Value and cost –value engineering – value analysis – phases in value engineering – information – function – escalation – evaluation - recommendation implementation – Audit.

UNIT -5 CASH FLOW AND COST CONTROL **9**

Cash flow –cash inflow – outflow – cost control-tools and techniques – cost control in construction projects – Exercise on cash flow in Civil engineering projects.

Total Hours: 45

Text Books:

1. Estimating and costing in civil Engineering – B.N.Dutta, S.Dutta & Company, Lucknow.
2. Practical valuation – Vol I Mr. B.Kanagasabapathy, M/s. Ehilalarasi Kanagasabapathy, Thiruchirappalli.

References:

1. A text book on estimating and costing – G.S.Birdie – Dhanpat Rai and Sons, New Delhi.

2. Fixation of fair rent - Mr. B.Kanagasabapathy, M/s. Ehilalarasi Kanagasabapathy, Thiruchirappalli.
3. Jagannathan G, Getting more at less less cost – The Value Engineering Way, Tata McGraw Hill,
New Delhi, 1992.

SEMESTER VII
IRRIGATION ENGINEERING

UNIT -1 SOIL – PLANT WATER RELATIONSHIP

9

Definition – Need – Benefits- developments – Historical - Scope in the country and state. Soil – Water relationship - Wilting point – Soil fertility- Principal crops – Crop rotation – Crops and cropping season.

UNIT -2 CROP WATER REQUIREMENTS

9

Duty and Delta – Definitions – Factors affecting Duty – Methods of Improving Duty, Consumptive use of water (Evapo – Transpiration) – Estimation of Evapo – Transpiration – Blaney and Criddle Method – Penman Methods – Lysimeter.

UNIT -3 SOURCES, CONVEYANCE AND DISTRIBUTION OF WATER

9

Sources of Water – Rivers – Streams – Reservoirs and Tanks. Lift irrigation – Devices and equipment for Lift irrigation. Components of irrigation networks – Main and Branch canal – Distributors – Minors – Water courses and field chak. Water application methods – Surface irrigation – Border – Check and Furrow – Subsurface irrigation – Sprinkler and Drip irrigation.

UNIT -4 CONTROL AND REGULAR WORKS

9

Canal regulation works – Necessity and location of falls – Head and cross regulator – Canal escapes. Cross drainage works – Types of cross drainage work. River training works – Classification of River training works – Groynes or Spurs – Bank protection.

UNIT -5 IRRIGATION WATER MANAGEMENT

9

Irrigation Efficiencies – Water conveyance efficiency – Water application efficiency – Water storage efficiency – Water distribution efficiency. Need for optimization – Need for interdisciplinary and participation approach. Roles and responsibilities of farmer's and government agencies in Turn Over.

Total Hours = 45

Text Books

1. Michael A.M., Irrigation – Theory and Practices, Vikas Publishing House, New Delhi, 1990.
2. Sharma R.K., Irrigation Engineering and Hydraulic Structures, Oxford and IBH Publishing
Company, New Delhi, 1994.
3. Sathyanarayana Murthy, Irrigation Design and Drawing, Published by Mrs.L.Banumathi, Tuni,
East Godavari District, A.P. 1998.

SEMESTER VII
ENVIRONMENTAL ENGINEERING

UNIT -1 WATER SUPPLY SYSTEMS – SOURCE & CONVEYANCE

9

Objectives – Population forecasting – Design period – Water demand characteristics – Sources of water – Source selection – Water quality parameters & significance – Standards – Intake structures – Conveyance – Hydraulics – Laying, jointing & testing of pipes – Pump selection – appurtenances

UNIT -2 DESIGN PRINCIPLES OF WATER TREATMENT

9

Objectives – Selection of unit operations and processes – Principles of flocculation, sedimentation, filtration, disinfection – Design principles of flash mixer, flocculator, clarifiers, filters – Disinfection devices – Softening – Demineralisation – Aeration – Iron removal – Defluoridation – Operation and Maintenance aspects - Residue Management

UNIT – 3 SEWERAGE SYSTEM: COLLECTION & TRANSMISSION

9

Sources of wastewater – Quantity of sanitary sewage – Storm run off estimation – Wastewater characteristics and significance – Effluent disposal standover – Design of sewers – Computer applications – Laying, jointing and testing of sewers – Sewer appurtenances – Pump selection

UNIT -4 SEWAGE TREATMENT & DESIGN PRINCIPLES

9

Objectives – Selection of unit operation and process – Design principles of primary and secondary treatment, screen chamber, grit chamber, primary sedimentation tanks, activated sludge process – Aeration tank & oxidation ditch – Trickling filter - Stabilisation ponds – Septic tanks with soak pits – Sludge: treatment and disposal – Biogas recovery – Sewage farming

UNIT -5 DISPOSAL OF SEWAGE

9

Disposal on land – Disposal into water bodies – Oxygen sag curve – Streeter Phelp's model – Wastewater reclamation techniques

TOTAL HOURS: 45

TEXT BOOKS

1. Garg, S.K., "Environmental Engineering I & II", Khanna Publishers, New Delhi

2. Modi, P.N., “Environmental Engineering I & II”, Standard Book House, Delhi – 6

REFERENCES

1. Manual on Water Supply and Treatment, CPHEEO, Government of India, New Delhi, 1999
2. Manual on Sewerage and Sewage Treatment, CPHEEO, Government of India, New Delhi, 1993
3. Hand book on Water Supply and Drainage, SP35, B.I.S., New Delhi, 1987
4. Metcalf and Eddy, M.C., “Wastewater Engineering – Treatment & Reuse”, Tata McGraw-Hill
Publications, New Delhi, 2003

SEMESTER VII
ENGINEERING ECONOMICS AND PRINCIPLES OF MANAGEMENT

UNIT -1 ECONOMICS
9

Role of civil engineering in industrial development - Advances in civil engineering and engineering economics - Support matters of economy as related to engineering Market demand and supply choice of technology and quality control and quality production - Audit in economic, Law of returns governing production.

UNIT -2 LAND AND CONSTRUCTION ECONOMICS
9

Urban land use and values - Construction development in housing, transport and other infrastructures –Economics of ecology, environment, energy resources, local material selection, form and functional designs –Construction workers - Urban problems - Poverty - Migration -Unemployment - Pollution.

UNIT -3 BASIC CONCEPTS IN MANAGEMENT
9

Types of business operations -Sole proprietorship – Partnership – Company – Public and private sector enterprises / Joint ventures, collaborations.

Functions of Management -Principles of management – Functions of management – Functions of a manager.

Production Management -Planning – scheduling – procurement – Inventory control – management tools – L.P. – PERT, CPM, etc.

UNIT -4 INTRODUCTION TO MARKETING AND FINANCIAL MANAGEMENT 9

Market – Marketing, Segmentation, Positioning, Marketing Research, Market Planning, Scope of financial management – Cost accounting Vs Financial accounting, Appraisal of projects, Investment decisions – concept of pay back.

UNIT -5 MATERIALS AND EQUIPMENT MANAGEMENT & COMPUTER APPLICATION
9

Planning – Identification, Procurement, Schedule and Cost control – systems approach in resource management – ABC analysis, VED analysis, FSN analysis, vendor rating evaluation, buying versus leasing of equipment, Planning – Scheduling and Resource analysis - Recording and operations- Project accounting, costing and finance – usage of project management software.

Total Hours = 45

Text Books:

1 Konni, Donnel C.O. and weighnrich. H., Management Eight edition, McGraw Hill International
Book Company, 1997.
2. Philip Kotler, Marketing management, Prentice-Hall of India, Edition 1998
3. Warneer Z, Hirsch, Urban Economics, Macmillan, New York, 1993.
4. Prasanna Chandra, " Project Management ", TMH 1997.

References:

1. Momoria, Personal management, Himalaya Publishing Co., 1992
2. Sharma J.L., Construction management and accounts, Sathya Prakashan, New Delhi, 1994.
3. Srinath,L.S. An introduction to project management, Tata McGraw Hill publications, 1995.
4. Kwaku A, Tenah and jose M.Guevara, "Fundamental of Construction Management and organisation", Prentice - Hall of India, 1995.
5. Engineering Economic Analysis.
6. K K Chitkara, Construction Project Management, Tata McGraw Hill.

SEMESTER VII

ELECTIVE II

The Elective Subject Can be Selected from Elective List

SEMESTER VII

ELECTIVE III

The Elective Subject Can be Selected from Elective List

SEMESTER VII
ENVIRONMENTAL ENGINEERING LAB
OBJECTIVE
This subject includes the list of experiments to be conducted for characterization of water and municipal sewage. At the end of the course, the student is expected to be aware of the procedure for quantifying quality parameters for water and sewage.

LIST OF EXPERIMENTS

1. Sampling and preservation methods and significance of characterization of water and wastewater.
2. Determination of P^H and turbidity Hardness
3. Determination of iron & fluoride
4. Determination of residual chlorine
5. Determination of Chlorides
6. Determination of Ammonia Nitrogen
7. Determination of Sulphate
8. Determination of Optimum Coagulant Dosage
9. Determination of available Chlorine in Bleaching powder
10. Determination of dissolved oxygen
11. Determination of suspended, volatile and fixed solids
12. B.O.D. test
13. C.O.D. test
14. Introduction to Bacteriological Analysis (Demonstration only)

Total hours: 45

REFERENCES

1. Standard methods for the examination of water and wastewater, APHA, 20th Edition, Washington, 1998
2. Garg, S.K., "Environmental Engineering Vol. I & II", Khanna Publishers, New Delhi
3. Modi, P.N., "Environmental Engineering Vol. I & II", Standard Book House, Delhi-6

SEMESTER VII

COMPREHENSION LABORATORAY

Unit – I

Strength of Materials
Mechanics of Solids
Building Science
Environmental Engineering
Elective I

Unit – II

Applied Hydraulic Engineering
Structural Design
Transportation Engineering
Elective - II

Unit - III

Surveying
Concrete and Construction Technology
Soil Mechanics
Engineering Geology
Hydrology
Elective – III

Unit – IV

Architecture
Structural Analysis
Basics of Remote Sensing and GIS
Foundation Engineering
Elective - IV

TOTALHOU
RS: 45

REFERENCES:

1.National Building Code of India, “Building Materials ", Part V

2.Clark D., " Plane and Geodetic Surveying ", Vols. I and II, C.B.S.

Publishers Distributors, New Delhi, Sixth Edition, 1991.

3. Francis D.K. Ching, " Architecture: Form, Space and Order ", VNR, N.Y., 1999.

4. Givoni B., " Man Climate and Architecture ", Applied Science, Barking ESSEX, 1982

5. Francis D.K. Ching, " Architecture: Form, Space and Order ", VNR, N.Y., 1999.

6.Givoni B., " Man Climate and Architecture ", Applied Science, Barking ESSEX, 1982

7. Shetty M.S., “Concrete Technology ", S.Chand and Company, 1992.

8.Shetty M.S., “Concrete Technology ", S.Chand and Company, 1992.

9. Ramachandra, Design of steel structures Vol. 1, Standard Book House, New Delhi 1992

10. V.N Vazirani and M.M Ratwani, Steel Structures and Timber Structures, Khanna publishers, New Delhi 1995.

11. Khanna K and Justo C E G, Highway Engineering, Khanna Publishers, Roorkee, 2001

12. Punmia P.C., " Soil Mechanics and Foundations ", Laximi Publications Pvt. Ltd., New Delhi, 1995.

13.Garg, S.K., Environmental Engineering, Vols. I and II, Khanna Publishers, New Delhi, 1994

14.H.S.Peavy, D.R.Rowe and George Tchobanoglous, Environmental Engineering, McGraw-Hill Book Company, New Delhi, 1995.

15. Bowles J.E. Foundation analysis and design, McGraw Hill, 1994