VEER NARMAD SOUTH GUJARAT UNIVERSITY, SURAT.

B.E. Civil Engineering

Semester - VI

B.E./B.Tech III (Civil) :: 6th Semester		Teaching Scheme (Hours)			Examination Scheme					
					Theory			Practical/ Drawing		
Course	Course No.	L	T	P	Duration (hours)	Marks	Tuto. Mark.	Cont. Int. Eval. Marks	End Sem. Marks	Total Marks
Irrigation Engg - I	CE601C	3	1	-	3	100	25	-	-	125
Estimation & Specification	CE602C	3	-	3	4	100	-	30	45	175
Heavy Constr. Engg	CE603C	3	-	2	3	100	-	20	30	150
Environmental Engg - I	CE604C	3	-	1	3	100	-	10	15	125
Structural Analysis - III	AM605C	3	1	-	3	100	25	-	-	125
Structural Design & Drawing - II	AM606C	3	-	2	4	100	-	20	30	150
Computer Application in Civil Engineering - I	CE/AM 607C	-	2	-	-	-	50	-	-	50

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CE 601 C IRRIGATION ENGINEERING - I

(A) THEORY:

1. INTRODUCTION:

Definition, necessity, advantages and disadvantages of irrigation, types of irrigation, quality of irrigation water, various methods of irrigation, suitability of various methods of irrigation.

2. WATER REQUIREMENTS OF CROPS:

Classes and availability of soil water, depth and frequency of irrigation, duty, delta, relationship between duty and delta factors affecting duty, methods of improving duty, irrigation efficiencies, crop rotation, assessment of irrigation water, Kharif, rabi and perennial crops.

3. CANAL IRRIGATION :

Classification of canals, bandhara irrigation, Kennedy's and Lacey's theories of channel design, procedure, defects and comparison of Kennedy's and Lacey's theory's, Cross section of an irrigation channel, maintenance of irrigation channels, management of irrigation water, economical depth of cutting.

4. WATER LOGGING AND CANAL LINING :

Definition, effects, causes and remedial measures of water logging, types of land drains, layout and spacing of tile drains, necessity, advantages, disadvantages, suitability and types of lining, design of lined canals, economics of canal lining.

5. CANAL OUTLETS :

Requirements and types of outlets, definition of the terms related with outlets.

6. DIVERSION HEAD WORKS :

Component parts of diversion headwork, types of weir, causes of failure of weirs and their remedies, Bligh's, Lane's and Khosla's theory for design of floor for subsurface flow, silt control, location of headworks.

7. CANAL REGULATION WORKS :

Necessity, location and types of canal falls, design aspects of sarda type fall, functions and design aspects of head regulator and cross regulator, canal escapes.

8. CROSS DRAINAGE WORKS :

Types of cross drainage works, selection of suitable type, classification of aqueducts, design aspects of cross drainage works.

(B) PRACTICALS / TUTORIALS:

1. Design of concrete gravity dams & its appurtenances.

REFERENCES:

1. Asawa G. L. , " Irrigation Engineering ", New Age International Publishers, New Delhi (1996).
2. Punamia B.C. & Pande B. B. Lal, " Irrigation and water power Engineering ", Laxmi Publications Pvt. Ltd., New Delhi (1992).
3. Garg S. K., " Irrigation Engineering and Hydraulic Structures ", Khanna Publishers, New Delhi (1996).
4. Varshney R. S. , Gupta S. & Gupta R. L. , " Theory and Design of Irrigation Structures", Vol. - I & II, , Nem Chand Brothers, Roorke.

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Semester - VI

CE 602C ESTIMATION & SPECIFICATION

(A) THEORY:

1. GENERAL :

* Purpose and importance of estimation, role of surveyor works.

* Types of estimates, approximate estimating techniques for various civil engineering works, reading of working drawings, ISI code for measurements.

2. ESTIMATION OF BUILDINGS :

* Building components, measurement techniques for earthwork and masonary in foundation, measurement and estimation of different building components.

* Measurement and estimation of different R. C. C. items inclusive of reinforcement, estimation of beam, column, slab, footing and staircase etc.

* Estimation of finishing work and different types of roofs.

* Measurement and estimation of different woodwork and steelwork.

* Typical estimation of load bearing and a R. C. C. framed structure of one / two storeyed building along with schedule of materials and task force.

3. ESTIMATING OF OTHER CIVIL ENGINEERING STRUCTURES:

* Estimating of different roads and culverts.

* Earthwork estimation for earthen dam and irrigation channels.

* Rough estimation of domestic water supply, sanitation and septic tanks.

* Estimation of domestic electrical fixtures and work.

4. ANALYSIS OF RATES:

* Purpose and principal factors affecting the rates of an item of work, output of labour force.

* Analysis of rates for important building items and other typical civil engineering works mentioned above, S. O. R. statements.

5. ABSTRACTING AND BILLING :

* Abstracting methods relevant to ISI standards, preparation of abstract statements, cost analysis and statement.

6. SPECIFICATION WRITING :

* Purpose and basic principles of specifications, types of specification, study of important specification.

* Specification drafting for important civil engineering items - brief and detailed specification.

(B) PRACTICALS:

Based on the theory as prescribed above.

REFERENCES:

1. Birdie G. S. , " Text book of Estimating and Costing ", Dhanpat Rai & Sons, Delhi - 6 (1988).

2. Dutta B. N. , " Estimating and Costing ", S. Dutta & Co., Lukhnow - 1 (1997).

3. Rangwala S. C. , " Elements of Estimating and Costing ", Charotar Publishing Pvt. Ltd., Anand - 1 (1996).

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CE 603 C HEAVY CONSTRUCTION ENGINEERING

(A) THEORY:

1. GENERAL :

Heavy construction projects, nature and scope of project organisation, components of heavy construction works.

2. HEAVY CONSTRUCTION EQUIPMENTS :

Engineering fundamentals of heavy equipments, type of equipments and earth moving equipment, excavating equipments , hoisting equipment , tractors, scrapers, bull dozers, trenchers, pneumatic equipment, pumping equipment, management of equipments, aggregate and concrete preparing plants, dredging equipment.

3. FOUNDATIONS FOR HEAVY STRUCTURE:

Pile foundation - types of piles, pile tests, pile driving formulas, pile clusters, construction techniques.

Caisson foundation - types, construction methods, problems of sinking caissons, and their remedial measures, coffer dams, their construction techniques, problems of dewatering and their measures.

Raft foundation, their types and construction techniques, rock foundations, drilling and grouting of foundation.

4. HEAVY CONCRETE CONSTRUCTION :

Concreting in irrigation, housing and industrial projects.

5. TUNNEL CONSTRUCTION:

Types of tunnels, size and shapes, trenching in soft rocks and common soil, explosives and their use and safety, principles of drilling and blasting techniques for under water drilling and blasting, full face heading, Heading and bench method , shield tunnelling, ventilation systems, tunnel construction operations and lining.

(B) PRACTICALS / DRAWINGS:

Based on theory prescribed above.

REFERENCES :

1. Jagman singh: " Heavy Construction : Planning , Equipment and Methods " , Pub : Oxford and IBH Publishing Co. (1997),

2. Peurifoy R. L.: " Construction Planning, Equipment and Methods " , Pub : McGraw Hill Book Co., NewYork (2nd Edition).

3. Strart Wood Jr.: " Heavy Construction Equipment and methods " , Pub : Prentice Hall Inc. New York.

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CE 604 C ENVIRONMENTAL ENGINEERING- I

(A) THEORY:

1. ECOLOGY AND ENVIRONMENTAL SANITATION:

Definition and concept of environmental ecosystem and ecology of environment, man's impact on environment , environmental sanitation.

2. WATER DEMAND AND COLLECTION:

Water demand , population forecasts, water quality requirements, sources and yields of sources for water requirements, methods of water collections, quality parameters and their significance for domestic usages, drinking water standards, issues and remedial measures of urban water supply.

3. WATER TREATMENT:

Need for water treatment, water treatment systems, design of treatment units such as aeration unit, sedimentation, coagulation and flocculation, filteration, Disinfection, water softening and removal methods for iron and mangenese.

4. WATER DISTRIBUTION SYSTEMS:

Pumps and pumping, conduits for water analysis of distribution reservoirs, service reservoirs and distribution methods, pipe network.

5. PLANNING OF WATER SUPPLY PROJECT:

Data collection, project formulation, project drawings and cost estimation.

6. RURAL WATER SUPPLY AND TREATMENT:

Water demand and treatment techniques for rural area, water problems and remedial measures.

(B) PRACTICALS / DRAWINGS:

1. To determine Turbidity of given water sample.
2. To determine Chloride of given water sample.
3. To estimate Hardness of given water sample by E.D.T.A. method.
4. To estimate Carbonate , Bicarbonate and Hydroxide Alkalinity.
5. To determine Chlorine Demand and Chlorine Residual.
6. Bacteriological Analysis of water for Coliform Group of organism.

REFERENCES :

1. A. K. Jain (1997), " Water Supply and Water Treatment", Pub. Akalank's Pub., New Delhi.

2. Davis and Cornwell, " Elements of Water Supply and Waste water Disposal", Pub. John Wiley & Sons, New York.

3. G. M. Masters(1994), " Introduction to Environmental Engineering and Science", Pub. Prentice Hall of India Pvt. Ltd. , New Delhi.

4. K. N. Duggal(1993), " Elements of Public Health Engineering", Pub. S. Chand & Co., New Delhi.

5. McGhee, Terena J. , " Water Supply & Sewerage", 5th Edition, McGraw Hill International Edition, New Delhi.

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AM 605C STRUCTURAL ANALYSIS - III

Information Awaited

AM 606C STRUCTURAL DESIGN & DRAWING - II

Information Awaited

CE/AM 607C COMPUTER APPLICATION IN CIVIL ENGG.-I

TUTORIAL ASSIGNMENTS :

1. Computer system and operations of DOS.
2. Introduction to computer language and software for data presentation and office automation through MS office, WordStar, Lotus, FORTRAN, C++ etc.
3. Using software package to solve linear equations and statistical analysis of data and regression.
4. Introduction to structural “Analysis software”.
5. Application to matrix operation in structural analysis.
6. Stiffness method application.