VEER NARMAD SOUTH GUJARAT UNIVERSITY, SURAT.

B.E. Civil Engineering

Elective - I

ELECTIVE GROUP - I

CE 811 C :: Urban Transportation Engineering

CE 812 C :: Rural Planning & Development

CE 813 C :: Water & Waste Water Treatment

CE 814 C :: Design of Hydraulic Structures

CE 815 C :: Architectural Engineering

CE 816 C :: Remote Sensing

CE 817 C :: CAD in Civil Engineering

CE 818 C :: Coastal Engineering & Marine Structures

AM 821 C :: Design of Industrial Structures

AM 822 C :: Design of Advance Concrete Structures

AM 823 C :: Design of Precast & Prestressed Structures

AM 824 C :: Design of Tall Structures

AM 825 C :: Ground Engineering

AM 826 C :: Design of Earth Dams

VEER NARMAD SOUTH GUJARAT UNIVERSITY, SURAT.

B.E. Civil Engineering

Elective - I

CE 811 C URBAN TRANSPORTATION PLANNING

(A) THEORY :

1. Introduction:

Urban transportation , urban transportation in India, need for planning land use and traffic interrelation , transportation planning process, systems approach.

2. Transportation Surveys :

Study area, zoning, inventory, various transportation surveys and methods, sampling.

3. Demand Forecasting :

Trip generation: factors , trip generation models, rates and trip distribution : growth factors, gravity model, probabilistic models

Assignment & model split: Assignment techniques, model split factors, mode choice modeling Planning packages, transportation planning approach.

4. Land use transport interaction models :

Lowry and other models Hansen , accessibility.

5. Public transportation planning :

City bus services, transport demand, planning & scheduling bus route network, para transit system, public transportation in India issues.

6. Evaluation of transportation Plans :

Economic evaluation, environmental impact, air pollution, noise generation, energy consumption.

(B) TUTORIALS :

Tutorials assignments will be based on the above mentioned chapters.

REFERENCES :

1. Kadiyali L. R., " Traffic Engineering and Transportation Planning ", Khanna Publishers, Delhi. (1986).

2. Bruton M.J., " Introduction to Transportation Planning ", Hutchinson & Co.Ltd.,London.

3. Papacostas C. S. , " Fundamentals of transportation engineering ", Prentice Hall Of India Pvt. Ltd., New Delhi.

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B.E. Civil Engineering

Elective - I

CE 812 C RURAL PLANNING AND DEVELOPMENT

(A) THEORY :

1. Rural Planning in Perspective:

Rural planning, definitions and dimensions, socio-economic structure of rural area, nature and scope of rural planning

2. Rural planning :

Classification based in use, topography and population, agricultural pastoral, forest and other types, effect of topography and population on rural planning, integrated approach in planning and development.

3. Requirement of Rural areas :

Requirements of village communities , factors affecting, rural development resources, development approach , policies and programme co-ordination.

4. Development of infrastructural rural marketing :

Industrialisation, rural technology, rural infrastructural facilities, village-plan amenities, rural housing, environmental issues.

(B) TUTORIALS :

Tutorials assignments will be based on the above mentioned chapters.

REFERENCES :

1. Rakesh Upadhyaya, " Integrated Rural Development in India ", Himalaya Publishers House. (1989).
2. Khatkar R.K., " Rural Development ", Northern Book Centre, New Delhi (1989).
3. Venkata Reddy, " Rural Development in India ", Himalaya Publishers House.
4. Arora R.C. , " Integrated Rural Development", S, Chand & Co. Ltd., New Delhi.

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Elective - I

CE 813 C WATER AND WASTE WATER TREATMENT

(A) THEORY :

1. Introduction :

Objectives of water and waste-water treatment, Interrelationship between water treatment and waste-water treatment, classification of treatments, parameters commonly employed to indicate pollution strength, standard for water quality and waste-water disposals.

2. Common Water Treatment :

Sedimentation, Coagulation, Flocculation, Filtration, Disinfection, Aeration, softening methods.

3. Common Waste-water Treatment :

Measurement of waste-water flow, Screen and Grit chambers. Detritus tanks, Settling tanks, Aerobic treatment, Anaerobic treatment, Symbiotic treatment, Chlorination of effluents before disposal.

4. Advanced Water Treatment :

Ion Exchange, Reverse Osmosis, Adsorption, Ultra filtration, Electro dialysis & Desalination techniques.

5. Advanced Waste-water Treatment and Reclamation of waste-water :

Tertiary treatment for removal of residual organics, removal of nutrients, recycling and reuse of waste-water.

(B) Practical/Tutorial/Drawing/Sketching :

Based on the theory course prescribed above.

REFERENCES :

1. Metcalf and Eddy, (1995) Waste-water Engineering-treatment, Disposal, Refuse, T.M.H. Edition, New Delhi.

2. Manual on water supply & treatment (1991) 3rd Ed. Pub : CPH & Env. Engg. Organization, Ministry of Urban Development, Govt. of India, New Delhi.

3. Peavy, Rowe & Tchob anoglous (1985) Environmental Engg. Pub : Mc Graw Hill Int., New Delhi.

4. T. J. McGhee (1991), " Water supply and sewarage" Pub : Mc Graw Hill Int., New Delhi.

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B.E. Civil Engineering

Elective - I

CE 814 C DESIGN OF HYDRAULIC STRUCTURES

(A) THEORY :

1. Spillways :

Design of chute, Side channel. Shaft and siphon spillways, Spillway aerators.

2. Energy dissipaters:

Energy dissipation by hydraulic jumps, Roller bucket and ski-jump bucket, Manifold diffusers.

3. Gates :

Design principles of gates for low and high heads, Different types of gates.

4. Valves :

Different types of valves with their characteristics, Transitions in open channels.

5. Cavitation :

Cavitation in hydraulic structures, Causes, Ill-effects, Analysis, Remedies.

6. Intake Structures :

Design of vortex-free intakes.

(B) Practical/Tutorial/Drawing/Sketching :

Based on the syllabus prescribed above.

REFERENCES :

1. Punamia B. C. & Pande B.B. Lal, (1992), “Irrigation & Water Power Engineering.”, Laxmi Publication Pvt. Ltd. New Delhi.

2. Garg S.K. (1996) “Irrigation Engineering & Hydraulic Structures”, Khanna Publishers, New Delhi.

3. Ivan E Houk, (1990), “Irrigation Engineering Vol-II,” John Willy & Sons, New York.

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B.E. Civil Engineering

Elective - I

CE 815 C ARCHITECTURAL ENGINEERING

(A) THEORY :

1. Building System :

Classification , interpretation of spatial, structural and mechanical system, functional standards.

2. Building Regulation :

Building Bye laws and Town Planning Act , Building standardisation – space and norms for public housing.

3. Building Climatology :

Meteorological elements , elements of climate comfort indices, control of eliminate.

4. Lighting & Ventilation :

Luminous environment, perception characteristics, lighting for different activities, daylighting – principles and factors, standards of ventilation, air flow characteristics, humidity control.

5. Thermal Design :

Thermal environment, thermal comfort, heat control measures, thermal insulation.

6. Architectural acoustics :

Sound and noise , standards , behaviour of sound in rooms, reverberation, design of rooms for speech and music sound reinforcement, acoustic materials.

(B) TUTORIALS :

Tutorials assignments will be based on the above mentioned chapters.

REFERENCES :

1. Olson H.F., “ Acoustical Engineering ”, D. Van Nostrand.
2. Flynn and Segil, “ Architectural Interior Systems ”, Van Nostrand.

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B.E. Civil Engineering

Elective - I

CE 816 C REMOTE SENSING

(A) THEORY :

1. Introduction :

Concept and fundamentals of remote sensing, energy interactions, ideal remote sensing system, real sensing system.

2. Air Photo Interpretation :

Fundamentals of interpretation, basic equipments used for interpretation, elements of airphoto interpretation, interpretation keys.

3. Photogrammetry :

Aerial photographs, scale, procedure for aerial survey, relief displacement, ground control , flight planning.

4. Data Acquisition :

Various remote sensing platforms, satellites, sensors, multi spectral scanners, microwave sensing.

5. Digital Image Processing :

Image rectification, image enhancement, contrast manipulation, spatial feature manipulation.

6. Engineering Application :

Landuse / Landcover mapping , applications to urban and regional planning, water resources and environmental studies.

(B) TUTORIALS :

Tutorials assignments will be based on the above mentioned chapters.

REFERENCES :

1. Lillesand T. and Kieter R. W., " Remote Sensing and Image Interpretation ", John Willey & Sons, New York (1987).

2. Lucder D.A., " Aerial photographic Interpretation principles and applications ", McGraw Hill Book Company, New York (1959).

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B.E. Civil Engineering

Elective - I

CE 817 C COMPUTER AIDED DESIGN IN CIVIL ENGINEERING

(A) THEORY :

1.0 Basics :

Role of CAD in Civil Engineering, programming languages, other CAD tools, Internet information systems.

2.0 Building Design :

Building planning, drawing generation, interior design, landscaping, use of commercial packages.

3.0 Water Resources Engineering:

Programming and spreadsheet applications in the analysis and design of water resources systems such as Reservoir planning, Dam design and river training works.

4.0 Transportation Engineering:

Programming and spreadsheet applications in the design and analysis of transportation systems, pavement design and related planning aspects.

5.0 Environmental Engineering:

Programming and spreadsheet applications in the design and analysis of water and waste treatment, management and disposal systems.

6.0 Geographical Information System:

Basics of GIS, GIS applications in the above mentioned areas.

7.0 Recent advances in Computer applications:

Applications of artificial intelligence, expert systems, Neural networks, Fuzzy logic, Genetic Algorithms, Simulated Annealing etc.

(B) TUTORIALS :

Tutorials assignments will be based on the above mentioned chapters.

REFERENCES :

1.0 Computer aided architectural design, Lee Kaiman,

2.0 AutoCAD 13 , BPB pubilcations

3.0 Genetic Algorithms, David E. Goldberg

4.0 C++, Neural Networks and Fuzzy logic, V.Rao, H.Rao, BPB

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B.E. Civil Engineering

Elective - I

CE 818 C COASTAL ENGINEERING AND MARINE STRUCTURES

(A) THEORY :

1. Introduction:

Man-ocean interaction, Effects of ocean on ecology and climate, Ocean as a source of food and means of communication, Minerals in ocean, Ocean for disposal of wastes.

2. Theory Of Ocean Waves:

Formulation of wave motion problem, assumption made in two dimensional cases, small amplitude wave theory, orbital motion and pressure, wave energy, finite amplitude wave theory, Stockes' wave theory (third order) , mass transport, gerstner theory, solitary wave theory, generation of waves, wave forecasting, decay of waves.

3. Generation Of Waves:

Relationship among wave dimensions, wind and fetches, generation of waves, wind waves in shallow water, limited width of wine field, decay of swell, wave forecasting procedures and their reliability, surface wind velocity and fetch determination, S.M.B and P.N.J methods.

4. Reflection, Refraction and Diffraction of Waves:

Reflection of waves, clapotis or standing waves, superposition of waves, refraction, refraction diagrams, wave fronts and orthogonal methods, diffraction of waves around semi infinite break waters, detached break water of finite length, diffraction through openings.

5. Wave Forces On Structures:

Forces on vertical walls due to non breaking waves, breaking waves and broken waves base on linear theory, forces on circular cylinders.

6. Shores and Shore Processes:

Long term and short term changes of shores, Factors influencing beach characteristics , beach wave interaction, beach profile modification , littoral drift, stability of shores, shore erosion due to sea level , On shore and off shore transport, long shore transport, interaction of shore structures, shore erosion in kerala, mud banks.

7. Shore Protection Works:

Description and effects of break waters, sea walls, groynes of various types, beach nourishment, design of sea walls, break waters, tetra pod , tribar etc.

8. Port Planning and Marine Structures :

Harbour Types and Features, Ship Features related to port planning, site investigation & selection, port layout, on-shore and offshore structures, corgo handling equipments, Navigational Aids.

(B) TUTORIALS :

Tutorials assignments will be based on the above mentioned chapters.

REFERENCES:

1. Robert, L. Weigel, “ Oceanographical Engineering”, Prentice Hall Inc.

2. Arthar , T.I., “Estuary and coastline hydrodynamics ”, McGraw Hill Book Co.

3. Surrenzo , “ Basic Coastal Engineering”.

4. Alonzo Def. Quinn, “ Design and Construction of Ports and Marine Structures ”, McGraw Hill Book Company.

5. Henry F. Cornik, “ Dock and Harbour Engineering Vol . – I to IV ”, Charles Griffin & Company Ltd., London.

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Elective - I

AM 821 C DESIGN OF INDUSTRIAL STRUCTURES

Information Awaited

AM 822 C DESIGN OF ADVANCED CONCRETE STRUCTURES

Information Awaited

AM 823 C DESIGN OF PRECAST & PRESTRESSED STRUCTURES

Information Awaited

AM 824 C DESIGN OF TALL STRUCTURES

Information Awaited

AM 825 C GROUND ENGINEERING

Information Awaited

AM 826 C DESIGN OF EARTH DAMS

Information Awaited