VEER NARMAD SOUTH GUJARAT UNIVERSITY, SURAT.

B.E. Civil Engineering

Elective- II

ELECTIVE GROUP - II

CE 831 C :: Traffic Engineering

CE 832 C :: Housing

CE 833 C :: Municipal Solid Waste Management

CE 834 C :: Hydropower Engineering

CE 835 C :: Building Maintenance

CE 836 C :: Entrepreneurship Development

CE 837 C :: Bridge and Tunnel Engineering

CE 838 C :: Architecture and Land scaping

AM 841 C :: Design of Bridge Structures

AM 842 C :: Computer methods in Structural Engineering

AM 843 C :: Rehabilitation Structures

AM 844 C :: Advanced Structural Analysis

AM 845 C :: Ground Improvement

AM 846 C :: Rock Mechanics

VEER NARMAD SOUTH GUJARAT UNIVERSITY, SURAT.

B.E. Civil Engineering

Elective- II

CE 831 C TRAFFIC ENGINEERING

(A) THEORY :

1. Introduction:

Traffic engineering functions and administration , Elements of traffic engineering, traffic issues in Indian Cities.

2. Traffic studies and Analysis :

Road-user characteristics, vehicle characteristics, traffic flow characteristics, different traffic studies and analysis for volume , spot studies , delays , origin and destination, parking and accident , traffic forecasting.

3. Traffic geometrics:

Basic geometric elements, traffic parameters related to geometry , design of intersections, rotary intersections, grade seperated intersections, design of parking and terminal facilities.

4. Traffic flow study :

Vehicular stream models, car following model, Q- K -V models, highway capacity , level of service, shock wave phenomenon, queuing.

5. Traffic control management :

Traffic regulations , control on vehicles, drivers and flow , one way street, traffic control devices, signs, signals, island and markings, design of traffic signal system, urban traffic management techniques, street lighting , accident analysis, skidding, pedestrain safety, traffic simulation .

(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.
2. Pignataro L. J. , " Traffic Engineering - Theory and Practice", Prentice Hall Pub., New York.
3. Davies E., " Traffic Engineering Practice ", E. and F. Span Ltd., London.

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B.E. Civil Engineering

Elective- II

CE 832 C HOUSING

(A) THEORY:

1. Housing in India :

Urban and rural settlements, urbanisation housing demand, problems of housing in urban and rural areas, Building forms, quality, distribution, rural and social housing schemes, housing activities in five year plans.

2. Housing Policy & Finance :

National Housing policy- objectives, housing in private and public sector, housing financing institutes, role of HUDCO, HDFC, State Housing Boards.

3. Town Planning Regulations :

T.P. Schemes and housing, group housing, byelaws and regulations, highrise, rowhouse regulations, Housing legislation scheme approval procedure.

4. Housing Design :

Housing & Environment: Environmental Factors, Climate and Comfort – Elements of Climate, Tropical Climates, thermal comfort, daylight. Housing for hot – dry and warm humid climates. Framing of Housing for different income groups, housing densities. Mass Housing layouts, plot and cluster based schemes, mixed development , Neighbourhood planning - Standards, development guide lines.

5. Housing Projects :

Framing of requirements, development of housing layouts, preparations of project, documentation estimation, housing analysis, project analysis and estimate, mixed housing development: pattern of mixed mixed development, development of housing societies, apartment layouts, typical case studies; mass housing projects.

6. Slums - Housing the Poor :

Causes, effect and remedial measures, transit camps, unauthorised construction, substitute building materials, slum upgradation, site and service schemes, Low cost housing schemes, Low cost techniques.

(B) TUTORIALS :

Tutorials assignments will be based on the above mentioned chapters.

REFERENCES :

1. F. Gibberd, " Town Design ", Architectural Press, London.

2. Modak and Ambedkar, " Town and Country Planning and Housing ", Orient Longman Ltd., Bombay.

3. Heggode, D. and Cherunilam, F., " Housing In India ", Himalaya Publishing House.

4. Koenigshurger, O. H., " Manual of Tropical Housing & Building ", Orient Longman Ltd., Chennai.

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Elective- II

CE 833 C MUNICIPAL SOLID WASTE MANAGEMENT

(A) THEORY

1. Introduction.

Definition, classification of solid waste such as municipal, industrial ,etc. ,problems, issues & functional elements, solid waste management systems and planning.

2 Generation And Processing .

Sources and types, composition, generation rates, onsite handling, storage and processing.

3 Collection, Transfer And Transport.

Collection systems, equipments and labour requirements, collection routes, transfer stations, transport means and methods, location of transport stations.

4 Treatment Processes And Equipment.

Processing techniques, mechanical and chemical volume reduction, mechanical size reduction, component separation, drying and dewatering, incineration and pyrolysis

5 Recovery Of Resources, Conversion Products And Energy.

Materials processing and recovery systems, recovery of chemical and biological conversion products, recovery of energy from conversion products.

6 Disposal Methods.

Site selection, landfilling methods and operations, gas and leachate movement, its control, design of landfills, ocean disposal.

7 Management Issues.

Planning in solid waste management, choices in the functional elements, plan development and implementation, management issues and concerns.

8 Health Hazards In Solid Waste Management.

Health hazards in solid waste collection, handling, treatment and disposal.

(B) Practical/Tutorial/Drawing/Sketching :

Based On The Theory Course Prescribed Above.

REFERENCES:

1 Tchobanoglous G. & Others (1977)., “Solid Wastes - Engineering Principles And Management Issues”., Mc Graw Hill Book Company.

2 Neal Hommer (1988)., “Solid Waste Management And Environment” ,Prentice Hall ,New Jersey

3 Dewan J.M. And Sudarshan K.N. (1996)., “Solid Waste Management”., Discovery Publ. House, New Delhi.

4 Trivedi P.R. & Gurdeep Raj (1992)., “ Solid Waste Pollution”.,Akashdeep Publ. New Delhi.

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B.E. Civil Engineering

Elective- II

CE 834 C HYDROPOWER ENGINEERING

(A) THEORY

1. Water Power :

Sources of energy, Hydroelectric power, Estimation of water power potential.

2. Hydropower Terms :

Load curve, Load factor, Capacity factor, Utilization factor, Diversity factor, Load duration curve, Firm power, Secondary power, Load prediction.

3. Hydropower Plants :

Run-off-river plants, Valley dam plants, Diversion canal plants, Low-and high-head plants. Pumped storage plants with their efficiencies, Study of some typical Hydropower Plants.

4. Penstocks and Water Hammer :

Types of penstocks and their design criteria, Economical diameter of penstock, Valves, Bends, Manifolds, Effect of Water-hammer in penstock, Surge tanks.

5. Surface Power Plants :

Surface power stations, Criteria for determining their size, Lighting and ventilation.

6. Underground Power Plants :

Types and location of underground power station, Its components, Types of layout, Limitations of underground power plants.

(B) Practical/Tutorial/Drawing/Sketching :

Based on the theory course prescribed above.

REFERENCES :

1. Dandekar and Sharma (1996) “Water Power Engineering”, Vikas Publishing House, New Delhi.
2. Varshney R.S, (1992) Hydropower Structures, Nem chand and Bros., Roorkee (U.P.).
3. Deshmukh M.M. (1998) Water Power Engineering, Dhanpat Rai Publications, New Delhi.
4. Barrows H. K., Water Power Engineering, McGraw Hill Book Co., New York.

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Elective- II

CE 835 C BUILDING MAINTENANCE

(A) THEORY :

1. Durability of Buildings :

Life expectancy of different types of buildings – Effect of environmental elements such as heat, dampness, frost and participation on buildings – Effect of chemical agents on buildings – Effect of chemical agents on building materials – Effect of pollution on buildings – Damage by biological agents like plants, trees, algae, fungus, moss, insects etc.

2. Failure and Repair of Buildings :

Definitions of building failure – Functional, structural and aesthetical failures – Case studies – Methodology or investigation of failures – Diagnostic testing methods and equipments – Effect of fire on buildings.

Repair of cracks in concrete and masonry – Stiching , grouting, guniting, etc. – Repair and strengthening of concrete buildings – Foundation repair and strengthening – Underpinning – Leakage of roofs and methods of repair.

3. Maintenance of Buildings :

Preventive maintenance , corrective maintenance, Reliability engineering principles and its application in selection of systems of buildings – Routine maintenance of buildings – Maintenance cost – Specifications for maintenance works – Dampness – Damp proof courses – Construction details for prevention of dampness – Termite proofing – Fire protection – Correction protection – Maintenance of flooring, roofing and services.

4. Conservation and Recycling :

Historical buildings – Conservation movement – Documentation – Materials and methods for conservation work – Recycling of old buildings and its advantages – Examples.

(B) TUTORIALS :

Tutorials assignments will be based on the above mentioned chapters.

REFERENCES :

1. Philip. H. Perkins , " Concrete Structure – Repair , Water proofing and Projection ".
2. S. M. Johnson, " Deterioration Maintenance & Repair of Buildings ", McGraw Hill Pub.
3. Raikar R. N., " Technology of Building Repairs ", Raikar Pub., Bombay.
4. Eldridge H. J. , " Common defects in Buildings ", HMSO. Publishers.

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B.E. Civil Engineering

Elective- II

CE 836 C ENTREPRENEURSHIP DEVELOPMENT

(A) THEORY :

1. Introduction :

Objective of the course, What is entrepreneurship?, Need & Scope for entrepreneurship, Risks & Rewards in enterpreneurship, Characteristics of an entrepreneur, Relevance and benefits of Small Scale Industry.

2. Human Engineering (Theory & Lab) :

Entrepreneur and Society, Attitude towards work; Self –assessment and goal setting, Achievement Motivation and behaviour (TAT, WHO am I ?, Business exercise, Ring toss game etc.); Understanding Human behaviour (Maslow's Heirarchy of needs).

3. Setting Up an Industry :

Forms of business organisation/ ownership , their merits and demerits, Formation of a Company, procedures and formalities for setting up of new industry, Sources of information (Whom to contact for what and where), Incentives, Subsides and concessions for industry, Industrial development agencies and their functions, State & National level institutions for Small Scale Industry (General set up).

4. Project Planning :

Identification of opportunities; Market survey; Techno - Economic feasibility studies and economic analysis (Pay back period, Return on Investment, Cost-benefit analysis and Break-even analysis) , Financial viability, sources of Finance for Industry, Assessment of fixed wand working capital requirements, Financial Ratios, Project Scheduling.

5. Marketing :

Components of Marketing Management, Market survey and analysis, Marketing arrangements, strategies and assistance to small industry, Consumer behaviour, Market feedback; Projections, Predictions and Forecasts.

6. Project Report :

Preparation of a Detailed Project Report.

7. Industrial Laws :

The Factories Act 1948, Minimum Wages Act, payment of wages Act 1936, Workmen Compensation Act 1923.

(B) TUTORIALS :

Tutorials assignments will be based on the above mentioned chapters.

REFERENCES:

1. Hand book for New Entrepreneurs – EDII, Ahmedabad.
2. Entrepreneurial Development – P. Saravanavel
3. Project Planning and Entrepreneurship Development- T.R. Banga.

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B.E. Civil Engineering

Elective- II

CE 837 C BRIDGE AND TUNNEL ENGINEERING

PART – I : BRIDGE ENGINEERING

1. Bridges :

History & Development , Components, site selection, alignment, hydrological data, scouring, economic span.

2. Loads and Distribution :

IRC loading, railway loading, seismic considerations, load distributions.

3. Bridge Substructure and Superstructure :

Types of bridge foundations, construction techniques, piers, abutments, wingwalls, superstructure approaches, bearings.

4. Low Cost Bridges :

Culverts, types and choices, suspension and floating bridges, causeways.

5. Bridge Construction :

Construction and techniques, bridge maintenance , bridge erection.

PART – II : TUNNEL ENGINEERING

6. General :

Role of tunnels, types , shape and size, alignment surveys, site investigation, geological and hydrological requirements, shafts.

7. Construction :

Construction of tunnel in rocks, hard and soft soils, different techniques of construction, shield and air compressor technique, muck handling, tunnel lining, drainage subaquired.

8. Tunnels :

Metro tunnels, tunnels lining, silcosis, ventilation, important tunnels in India.

(B) TUTORIALS :

Tutorials assignments will be based on the above mentioned chapters.

REFERENCES :

1. Bindra ,S.P., " Principles and practice of Bridge Engineering ", Dhanpat Rai & Sons. , New Delhi.
2. Krishnamurthy, " Introduction to Bridges ", Dhanpat Rai & Sons, New Delhi.
3. Saxena S. C., " Tunnel Engineering ", Dhanpat Rai & Sons, Delhi.
4. Megaev T.M., and J.V. Bartlett, " Tunnels : Planning , Design , Construction ", Ellis Horward Ltd., New York.

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Elective- II

AM 841 C DESIGN OF BRIDGE STRUCTURES

Information Awaited

AM 842 C COMPUTER METHODS IN STRUCTURAL ENGINEERING

Information Awaited

AM 843 C REHABILITATION STRUCTURES

Information Awaited

AM 844 C ADVANCED STRUCTURAL ANALYSIS

Information Awaited

AM 845 C GROUND IMPROVEMENT

Information Awaited

AM 846 C ROCK MECHANICS

Information Awaited