

Shantilal Shah Engineering College, Bhavnagar

Civil Engineering Department

PAT :: Aug-Sept 2019 :: Syllabus

BE Sem 3

Building Construction Technology (3130607)

1. Module 1

Subsurface Investigation

Shallow Foundation: Necessity, Types, setting out, excavation, construction, failures of foundation and remedial measures,

Deep Foundation: Pile Foundation: Introduction, uses, selection of pile, types of piles, pile cap and pile shoe, pile driving/ boring methods, causes of failures of piles.

2. Module 2

Stone masonry.

Brick masonry.

Other masonry.

3. Module 3

Plain and Reinforced Concrete Construction: Pre-cast and cast-in-situ Construction, Concrete 3D printing.

Building and Town Planning (3130609)

1. Introduction to buildings, detailed study of Principles of building planning (with case study), Orientation of building, Principles of architecture composition, Fundamentals of Building Information Modelling (BIM).
2. Building by-laws as per National Building Code, Building by-laws of local authority, Standards for Residential, Public, Commercial, Industrial and Institutional Buildings Planning.
3. Necessity of Civic surveys for Planning purpose, types, data and its presentation and analysis, Fundamental principles of Town Planning. Necessity of Town Planning
4. Components of town such as Land use, Zones, Road Network, CBD, Neighborhood planning, Development controls for new town planning schemes.

BE Sem 5

Highway Engineering (2150601)

1. Scope of highway engineering, Highway planning and development in India, Classification of rural and urban roads, Road patterns, Planning and alignment surveys.
2. Highway materials: subgrade soil, aggregates, binder materials, bituminous materials, bituminous paving mixes, cement and cement concrete – their engineering and physical properties, basic tests.
3. Surface and sub-surface drainage.
4. Hill roads – alignment, construction, drainage and maintenance.

Hydrology & Water Resources Engineering (2150602)

1. Module-1
Introduction, Hydrologic cycle, Climate and water availability, Water balances, Precipitation: Forms, Classification, Variability, Measurement, Data analysis, Evaporation and its measurement, Evapotranspiration and its measurement, Penman Monteith method. Infiltration: Factors affecting infiltration, Horton's equation and Green Ampt method.
2. Module-2
Hyetograph concepts
Occurance of ground water, Zones of ground water, types of aquifers, steady state flow to wells in unconfined aquifer
3. Module-4
Indian rivers and floods, causes of flood, Alleviation (flood control / flood mitigation)

Environmental Engineering (2150603)

1. Introduction
2. Quality and Quantity of Water for supply to towns/Cities
3. Air Pollution
4. Noise Pollution
5. Solid Waste Management- Quantity composition and characteristics of solid wastes. Classification of solid wastes.

BE Sem 7

Irrigation Engineering (2170609)

1. Module I

Introduction- Definition, Necessity, Scope, Benefits and ill effects of irrigation, Types of irrigation schemes, Social and environmental considerations, Irrigation development in India.

Water Requirement of Crops- Soil-water-plant relation- field capacity, wilting point, available water, consumptive use, Irrigation requirements - Net irrigation requirement, Field irrigation requirement, Gross Irrigation requirement, Soil moisture extraction pattern, Frequency of irrigation, Principal Indian crops, Gross command area, Culturable command area, Intensity of irrigation, Duty and delta relation, Introduction to various methods of application of irrigation water, Irrigation efficiency, assessment of irrigation water

2. Module 2

Diversion Works: Different stages of a river and their flow characteristics, Weir and barrages, various parts of a weir and their functions, Exit gradient, Principles of weir design on permeable formations -Bligh's creep theory

3. Module 3

Distribution works: Modes of conveying irrigation water- Types of irrigation canals- contour canal, ridge canal, side sloping canals, Canal sections-filling, cutting, partial cutting and partial filling, balanced depth

Professional Practices & Valuation (2170610)

1. Computation of areas and volumes for following objects;

- (i) Cylinder- Area of curved surface and volume
- (ii) Cone- Volume and area of curved surface
- (iii) Frustum of cone- Volume and curved surface area
- (iv) Frustum of pyramid- Volume and surface area of all sides.
- (v) Area of sector and segment of a circle
- (vi) Area and volume of sphere and segment of sphere
- (vii) Ellipse- Area of ellipse and Units of measurements

2. Estimates- Definition, Units of measurements, types of estimates, Different methods to find the quantities of civil works. Estimated cost And its importance. Provisions of IS-1200, for working out quantities and deductions in civil works. Entering the measurements in quantity sheet and calculation of quantities of various items of civil works for residential, commercial and industrial buildings, Market rates of material and labour, Introduction to schedule of rates, Entering quantities and rates in abstract sheet, calculation of estimated cost.
3. Rate Analysis- Definition of rate analysis, Definition of task, Determination of man power and material requirement for a given quantity of items of civil works, study of present wages of labour and prices of material in the market. Study of market rents of different construction equipment's, Determination of rate of item of civil work. Working out rates of various items of civil works like 10m² plaster, 10m³ 1:2:4 plain and reinforced concrete, 10m³ brick work etc.