

CIVIL ENGINEERING DEPARTMENT
MID SEMESTER EXAM SYLLABUS-2019

| SEMESTER | SUBJECT | CODE | % COURSE |
|----------|---------------------------------|---------|----------|
| VIII | HARBOUR AND AIRPORT ENGINEERING | 2180602 | 75% |

Module I: General – HARBOUR ENGINEERING

History of water transportation at world level and at national level development and policy, classification of harbours, natural and artificial. Major ports in India, administrative set up.

Module II: Harbour Planning

Harbour components, ship characteristics, characteristics of good harbour and principles of harbour planning, size of harbour, site selection criteria and layout of harbours. Surveys to be carried out for harbor planning.

Module III: Natural Phenomena

Wind, waves, tides formation and currents phenomena, their generation characteristics and effects on marine structures, silting, erosion and littoral drift

Module IV: Marine Structures

General design aspects, breakwaters - function, types general design principles, wharves, quays, jetties, piers, pier heads, dolphin, fenders, mooring accessories – function, types, suitability, design and construction features.

Module V: Docks and Locks

Tidal basin, wet docks-purpose, design consideration, operation of lock gates and passage, repair docks - graving docks, floating docks.

Module VI : Port Amenities and Navigational Aids

Ferry, transfer bridges, floating landing stages, transit sheds, warehouses, cold storage, aprons, cargo handling equipments, purpose and general description, Channel and entrance demarcation, buoys, beacons, light house electronic communication devices.

Module VII : Harbour Maintenance

Costal protection-purpose and devices, dredging, purpose, methods, dredgers-types, suitability, disposal of dredged materials .mechanical and hydraulic dredgers.

Module VII : General: AIRPORT ENGINEERING

History, development, policy of air transport, aircrafts, aerodromes, airtransport authorities, air transport activities, air crafts and its characteristics, airport classifications as per ICAO.

Module VIII : Airport Planning

Regional planning-concepts and advantages, location and planning of airport as per ICAO and F.A.A.recommendations, airport Elements -airfield, terminal area, obstructions, approach zone,zoning laws, airport capacity, airport size and site selection, estimation of future air traffic, development of new airport, requirements of an ideal airport layout.

Module IX : Run Way Design

Wind rose and orientation of runway ,wind coverage and crosswind component, factors affecting runway length, basic runway length, and corrections to runway length, runway geometrics and runway patterns (configurations).Runway marking, threshold limits cross section of runway

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| A/Prof. KASHYAP.L.PANCHAL |
| Subject Co-ordinator |

CIVIL ENGINEERING DEPARTMENT
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| SEMESTER | SUBJECT | CODE | % COURSE |
|-----------------|-------------------------------|----------------|-----------------|
| VIII | Foundation Engineering | 2180609 | 65 |

Introduction, significant depth, design criteria, modes of shear failures.

Detail study of bearing capacity theories (Prandtl, Rankine, Terzaghi, Skempton), bearing capacity determination using IS Code, Presumptive bearing capacity. Settlement, components of settlement & its estimation, permissible settlement, Proportioning of footing for equal settlement, allowable bearing pressure. Bearing capacity from in-situ tests(SPT, SCPT, PLATE LOAD), Factors affecting bearing capacity including Water Table., Bearing capacity of raft/mat foundation as per codal provisions, Contact pressure under rigid and flexible footings. Floating foundation.

Pile foundations

Pile foundations :

Introduction, load transfer mechanism, types of piles and their function, factors influencing selection of pile, their method of installation and their load carrying characteristics for cohesive and granular soils, piles subjected to vertical loads- pile load carrying capacity from static formula,dynamic formulae (ENR and Hiley), penetration test data & Pile load test (IS 2911).

Pile group: carrying capacity, efficiency and settlement. Negative skin

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| A/Prof. Ninaad Athalye |
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| Subject Co-ordinator |
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CIVIL ENGINEERING DEPARTMENT
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| SEMESTER | SUBJECT | CODE | % COURSE |
|----------|---------------------------|---------|----------|
| VIII | Design of Steel Structure | 2180610 | 75% |

Module I: Loads & Load Combinations:

Appraisal of loading standards such as I.S, I.R.C., Effect of wind and earthquake on structure .

Module II: Connections

Stiffened and unstiffened, moment & shear resisting structural connections, design and detailing of various connection - roof truss to column, column to beam, beam to beam and truss to bed block

Module III: Design of Industrial Building:

Structural layout of industrial building, Various types of trusses and their selection, effect of wind loads on purlin and trusses, bracing systems, columns, foundations, static and moving loads, selection & design of section.

Module IV: Design of plate girders:

Modes of failure : Elastic buckling, Bending in the plane of web, Local buckling, Buckling in the plane of web, Vertical buckling of the compression flange, Shear buckling Design of bolted, welded plate girder by Tension field Method & Simple Post Critical Method including design of vertical & horizontal stiffeners, Splices, urtailment

Module V: Design of foot-over bridges:

Structural system of through & deck type bridges, design of foot-over bridge & its Supporting system

Module VI Plastic Design:

Introduction to plastic method of analysis, Design of continuous beams and portal frame using plastic design approach.

A/Prof. Parth V Danani

Subject Co-ordinator

CIVIL ENGINEERING DEPARTMENT
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| SEMESTER | SUBJECT | CODE | % COURSE |
|----------|-------------------------|---------|----------|
| VIII | Construction Management | 2180611 | 75% |

3. **Construction economics:** Economic decision making, Evaluating alternatives by , Effect of taxation on comparison of alternatives, Effect of inflation on cash flow, Evaluation of public projects, Benefit cost ratio method.
4. **Construction planning:** Types of project plans, Work break down structure, Planning techniques, Bar charts, CPM and PERT network analysis, Precedence network ladder network, Line of balance method.
5. **Project scheduling and Resource leveling,** Resource allocation, Importance of project scheduling, deriving other schedules, Network crashing and cost time trade off.
6. **Construction equipment management** advanced concepts in economical analysis.
7. **Construction accounts management** Principles of accounting, Accounting process construction contract revenue recognition, Construction contract status report, Limitation of accounting, Balance sheet, Profit and loss account, Working capital, Ratio analysis, Fund flow statement.
8. **Construction material management:** Material management functions, Inventory management. Job layout
9. **Construction project cost and cost and value managements** – Project cost management, Collection of cost related information, Cost codes, Cost statement, Value management in construction, Steps, Value engineering application in a typical case project.
10. **Construction quality management:** Construction quality, Inspection, Quality control and Quality assurance in projects, Total quality management, Quality gurus and their teaching cost of quality ISO standards, Principles of quality management systems, (CONQUAS) construction quality assessment system.
11. **Construction safety management,** Evolution of safety, Accident causation theory, Unsafe conditions, Unsafe acts health and safety act and regulation cost of accidents, Role of safety personnel, Accident causes and principles of safety, Safety and health management system

A/Prof. Aakash B Desai

Subject Co-ordinator