SVM Institute of Technology, Bharuch

Department of Civil Engineering

Syllabus: Mid Semester Examination (Even semester 2018-19)

BE – IV Year(8th Semester) Civil Engineering

Name of Faculty: Prof. Aneri Chavan

Subject Code: 2180609 **Subject Name:** Foundation Engineering

Sr. No.	Unit	Topics
1	Unit 1	**Selection of foundation and Sub-soil exploration/investigation:** Types of foundation, Factors affecting the selection of type of foundations, steps in choosing types of foundation based on soil condition, Objectives and planning of exploration program, methods of exploration-wash boring and rotary drilling-depth of boring, soil samples and soil samplers-representative and undisturbed sampling, field penetration tests: SPT, SCPT, DCPT. Introduction to geophysical methods, Bore log and report writing, data interpretation.
2	Unit 2	**Shallow Foundation:** 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. Types of pavements & its design.
3	Unit 3	**Foundations on problematic soil & Introduction to Geosynthetics :** Significant characteristics of expansive soil, footing on such soils, Problems and preventive measures. Under-reamed pile foundation-its concept,design & field installation. Significant characteristics of silt and loess, problems & remedial measures footing on such soils, introduction to geosynthetics-types and uses.

Reference Books:

1) P. Purushothama Raj; Soil Mechanics and Foundation Engineering; Pearson Education.

2) B.C. Punamia; Soil Mechanics & Foundation Engineering; Laxmi Pub. Pvt. Ltd., Delhi.

3) Alamsingh; Soil Mechanics & Foundation Engineering; CBS Publishers & Distributors, Delhi

4) Taylor D.W.; Fundamentals of Soil Mechanics; Asia Publishing House, Mumbai

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BE – IV Year(8th Semester) Civil Engineering

Name of Faculty: Prof. Chetan V. Kulkarni

Subject Code: 2180611 **Subject Name: CONSTRUCTION MANAGEMENT**

Sr. No.	Unit	Topics
1	**1**	**Introduction:** A construction project, Phases of construction project, Importance of construction and construction industry, Indian construction industry need of construction management, Stakeholders of construction management.
2	**2**	**Project organization**: Construction company structure of construction organization, Organizing for construction project management, Management levels, Traits of project manager and co-ordinators. Ethical conduct for engineers, Factors for success of a construction organization.
3	**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	**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	**5**	**Project scheduling and Resource leveling**, Resource allocation, Importance of project scheduling, Deriving other schedules, Network crushing and cost time trade off.
6	**6**	**Construction equipment management** advanced concepts in economical analysis.
7	**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.
8	**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.

Text Book(s):

1) **Construction project management: Theory and Practices, 2nd edition, 2016, Kumar Niraj Jha, Pearson Education Publishers.**
2) **Project management for engineering and Construction, By Garold D Oberlender, 2nd Edition, McGraw Hill Education (India), Pvt. td.**
3) **CPM and PERT: Punamia & Khandelwal.**

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BE – IV Year (8th Semester) Civil Engineering

Name of Faculty: Prof. Ruchi Gupta & Prof. Shonak Purohit

Subject Code: 2180610 **Subject Name:** Design of Steel Structures

Sr. No.	Unit	Topics
1	Unit 1	**Loads & Load Combinations:** Appraisal of loading standards such as I.S, I.R.C., Effect of wind and earthquake on structure.
2	Unit 2	**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, gantry girder – static and moving loads, selection & design of section.
3	Unit 3	**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, Curtailment
4	Unit 4	**Plastic Design:** Introduction to plastic method of analysis, Design of continuous beams and portal frame using plastic design approach.

Text Book(s):

1. **N. Subramanian , Design of Steel Structures, Oxford University Press**
2. **S. S. Bhavikatti, Design of Steel Structures: By Limit State Method as Per IS: 800-2007, I K International Publishing House Pvt. Ltd**
3. **P. Dayaratnam, "Design of Steel Structures", S. Chand Group**

Syllabus: Mid Semester Examination (Even semester 2018-19)

BE – IV Year (8th Semester) Civil Engineering

Name of Faculty: Prof. D A Patel

Subject Code: 2180607 **Subject Name:** Repair & Rehabilitation of Concrete Structures

No.	Unit	Topics
1	**Introduction**	Overview of distress, deterioration in concrete structures, Scenario of distressed structures world over, Need for repairs and upgrading of structures, General introduction to process (Road-map) to a durable concrete repair
2	**Deterioration of concrete structures**	Types of deterioration – Signs, causes & symptoms, Mechanism of deterioration, contributing factors like permeability, inadequate durability & micro-structure of concrete. Physical deterioration due to moisture, temperature, shrinkage, freeze-thaw, abrasion, erosion, cavitations, crystallization of salts, Efflorescence, exposure to severe environment like marine exposure. Chemical deterioration due to corrosion of reinforcement (chloride induced, carbonation induced), Alkali-silica reaction, sulphate attack, Acid attack. Deterioration due to water leakage, fire – detection & mitigation of the same. Deterioration due to ageing, inadequate maintenance, Design & construction deficiencies, overloading etc. **Visual deterioration of structures-** Types of cracks, causes & characteristics of cracking in various structural components like beam, column, slab, masonry walls. Measurement of cracks, interpretation of the cause of particular type of crack.
3	**Conditional/ damage assessment & Evaluation of structures**	**Structural assessment:** Conditional evaluation / Structural Appraisal of the structure – Importance, objective & stages, Conditional/damage assessment procedure, Preliminary & Detailed investigation – Scope, Objectives, Methodology & Rapid visual inspection of structures **Damage Assessment allied Tests (Destructive, Semi-destructive, Non-destructive):**Field & laboratory testing procedures for evaluating the structure for strength, corrosion activity, performance & integrity, durability. Interpretation of the findings of the tests.
4	**Allied topics**	**Long term health monitoring / Structural health monitoring (SHM)–** Definition and motivation for SHM, Basic components of SHM and its working mechanism, SHM as a tool for proactive maintenance of structures.

Reference Books:

1. Concrete microstructure, Properties and materials – P Kumar Mehta and Paulo J.M.Monterio
2. Handbook on Repairs and Rehabilitation of RCC buildings – CPWD, Government of India.
3. Concrete technology – A.R.Shanthakumar, Oxford University Press, India
4. Concrete Technology by M.L.Gambhir, Tata McGraw-Hill Education, Third Edition
5. Appraisal and Repair of Reinforced concrete by R.Holland, Thomas Telford Ltd. London.
6. V. M. Malhotra, Nicholas J. Carino 2004 "Handbook on Nondestructive Testing of Concrete"
7. "Repair and Strengthening of Concrete structures" , FIP guide, Thomas Telford, London.
8. Concrete Structures, Protection, Repair and Rehabilitation by R.Dodge Woodson.
9. Structural Condition assessment by Robert T. Ratay