



**VEL TECH MULTI TECH  
Dr RANGARAJAN Dr. SAKUNTHALA  
ENGINEERING COLLEGE**

(An ISO 9001: 2008 Certified Institution)

(Owned by Vel Trust)

(Approved by Govt. of Tamil Nadu and affiliated to Anna University)



**SYLLABUS**

**WEEKLY SCHEDULE**

**V SEMESTER**

**2015 - 2016**

**DEPARTMENT OF CIVIL ENGINEERING**

**IV YEAR DEGREE COURSE**

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## **WEEK DETAILS**

<b>SL.NO.</b>	<b>WEEK</b>	<b>FROM</b>	<b>TO</b>
1	<b>WEEK1</b>	<b>24.06.2015</b>	<b>26.06.2015</b>
2	<b>WEEK2</b>	<b>29.06.2015</b>	<b>03.07.2015</b>
3	<b>WEEK3</b>	<b>06.07.2015</b>	<b>10.07.2015</b>
4	<b>WEEK4</b>	<b>13.07.2015</b>	<b>17.07.2015</b>
5	<b>WEEK5</b>	<b>20.07.2015</b>	<b>24.07.2015</b>
6	<b>WEEK6</b>	<b>27.07.2015</b>	<b>28.07.2015</b>
7	<b>WEEK7</b>	<b>03.08.2015</b>	<b>07.08.2015</b>
8	<b>WEEK8</b>	<b>10.08.2015</b>	<b>14.08.2015</b>
9	<b>WEEK9</b>	<b>17.08.2015</b>	<b>21.08.2015</b>
10	<b>WEEK10</b>	<b>24.08.2015</b>	<b>28.08.2015</b>
11	<b>WEEK11</b>	<b>31.08.2015</b>	<b>04.09.2015</b>
12	<b>WEEK12</b>	<b>07.09.2015</b>	<b>11.09.2015</b>
13	<b>WEEK13</b>	<b>14.09.2015</b>	<b>18.09.2015</b>
14	<b>WEEK14</b>	<b>21.09.2015</b>	<b>25.09.2015</b>
15	<b>WEEK15</b>	<b>28.09.2015</b>	<b>30.09.2015</b>
16	<b>WEEK16</b>	<b>05.10.2015</b>	<b>09.10.2015</b>
17	<b>WEEK17</b>	<b>12.10.2015</b>	<b>16.10.2015</b>
18	<b>WEEK18</b>	<b>19.10.2015</b>	<b>20.10.2015</b>
19	<b>WEEK19</b>	<b>27.10.2015</b>	<b>30.10.2015</b>

## SUBJECT CONTENTS

<b>SL.NO</b>	<b>SUBJECT CODE</b>	<b>SUBJECT NAME</b>
<b>THEORY</b>		
<b>1</b>	<b>CE6501</b>	<b>Structural Analysis I</b>
<b>2</b>	<b>CE6502</b>	<b>Foundation Engineering</b>
<b>3</b>	<b>CE6503</b>	<b>Environmental Engineering I</b>
<b>4</b>	<b>CE6504</b>	<b>Highway Engineering</b>
<b>5</b>	<b>CE6505</b>	<b>Design of Reinforced Concrete Elements</b>
<b>6</b>	<b>CE6506</b>	<b>Construction Techniques, Equipment and Practice</b>
<b>PRACTICAL</b>		
<b>7</b>	<b>GE6563</b>	<b>Communication Skills - Laboratory Based</b>
<b>8</b>	<b>CE6511</b>	<b>Soil Mechanics Laboratory</b>
<b>9</b>	<b>CE6512</b>	<b>Survey Camp</b>

**TEST / EXAM SCHEDULE**

<b>SL.NO</b>	<b>SUBJECT CODE</b>	<b>SUBJECT NAME</b>	<b>UNIT TEST I</b>	<b>UNIT TEST II</b>	<b>Pre Model Exam</b>	<b>UNIT TEST IV</b>
1	CE6501	Structural Analysis I	13.07.2015	03.08.2015	21.08.2015	14.09.2015
2	CE6502	Foundation Engineering	14.07.2015	04.08.2015	22.08.2015	15.09.2015
3	CE6503	Environmental Engineering I	15.07.2015	05.08.2015	24.08.2015	16.09.2015
4	CE6504	Highway Engineering	16.07.2015	06.08.2015	25.08.2015	18.09.2015
5	CE6505	Design of Reinforced Concrete Elements	17.07.2015	07.08.2015	26.08.2015	21.09.2015
6	CE6506	Construction Techniques, Equipment and Practice	20.07.2015	10.08.2015	27.08.2015	22.09.2015

<b>SL.NO</b>	<b>SUBJECT CODE</b>	<b>SUBJECT NAME</b>	<b>MODEL EXAM</b>
1	CE6501	Structural Analysis I	05.10.2015
2	CE6502	Foundation Engineering	06.10.2015
3	CE6503	Environmental Engineering I	07.10.2015
4	CE6504	Highway Engineering	08.10.2015
5	CE6505	Design of Reinforced Concrete Elements	09.10.2015
6	CE6506	Construction Techniques, Equipment and Practice	12.10.2015

# **CE6501 STRUCTURAL ANALYSIS I**

## **WEEK 1**

### **UNIT I INDETERMINATE FRAMES**

Degree of static and kinematic indeterminacies for plane frames - analysis of indeterminate pin-jointed frames

## **WEEK 2**

rigid frames (Degree of statical indeterminacy up to two)

## **WEEK 3**

Energy and consistent deformation methods.

## **UNIT TEST I**

### **UNIT II INFLUENCE METHODS**

Influence lines for reactions in statically determinate structures – influence lines for member forces in pin-jointed frames – Influence lines for shear force and bending moment in beam sections – Calculation of critical stress resultants due to concentrated and distributed moving loads.

## **WEEK 4**

Muller Breslau's principle – Influence lines for continuous beams and single storey rigid frames – Indirect model analysis for influence lines of indeterminate structures – Beggs deflector

## **WEEK 5**

### **UNIT III ARCHES**

Arches as structural forms – Examples of arch structures

## **WEEK 6                      UNIT TEST II**

## **WEEK 7**

Types of arches – Analysis of three hinged

## **WEEK 8**

two hinged and fixed arches, parabolic and circular arches.

## **WEEK 9**

Settlement and temperature effects.

## **WEEK 10 UNIT TEST III**

### **UNIT IV SLOPE DEFLECTION METHOD**

Continuous beams and rigid frames (with and without sway)

## **WEEK 11**

Symmetry and antisymmetry

**WEEK 12**

Simplification for hinged end – Support displacements

**WEEK 13****UNIT TEST IV****WEEK 14****UNIT V MOMENT DISTRIBUTION METHOD**

Distribution and carryover of moments – Stiffness and carry over factors – Analysis of continuous beams

**WEEK 15**

Plane rigid frames with and without sway – Neylor’s simplification

**WEEK-17- UNIT TEST V****WEEK-18- MODEL EXAM****TEXT BOOKS**

1. Vaidyanadhan, R and Perumal, P, “Comprehensive Structural Analysis – Vol. 1 & Vol. 2”, Laxmi Publications Pvt. Ltd, New Delhi, 2003.
2. L.S. Negi & R.S. Jangid, “Structural Analysis”, Tata McGraw Hill Publications, New Delhi, 6th Edition, 2003.
3. Punmia.B.C, Ashok Kumar Jain and Arun Kumar Jain, "Theory of structures", Laxmi Publications Pvt. Ltd., New Delhi, 2004
4. Reddy. C.S., "Basic Structural Analysis", Tata McGraw Hill Education Pvt. Ltd., New Delhi, 2013.
5. BhavaiKatti, S.S, "Structural Analysis – Vol. 1 & Vol. 2", Vikas Publishing Pvt Ltd., New Delhi, 2008

**REFERENCES:**

1. Wang C.K. , “Indeterminate Structural Analysis”, Tata McGraw Hill Education Pvt. Ltd., New Delhi, 2010
2. Devadas Menon, “Structural Analysis”, Narosa Publishing House, 2008
3. Ghali.A., Nebille and Brown. T.G., "Structural Analysis - A unified classical and matrix approach" Sixth Edition, SPON press, New York, 2013.
4. Gambhir. M.L., "Fundamentals of Structural Mechanics and Analysis"., PHI Learning Pvt. Ltd., New Delhi, 2011.

## **CE6502 FOUNDATION ENGINEERING**

### **UNIT I SITE INVESTIGATION AND SELECTION OF FOUNDATION**

**WEEK 1:** Scope and objectives – Methods of exploration – auguring and boring – Wash boring and rotary drilling – Depth of boring – Spacing of bore hole

**WEEK 2:** Sampling techniques – Representative and undisturbed sampling – methods - Split spoon sampler, Thin wall sampler, Stationery piston sampler – Penetration tests (SPT and SCPT) - Bore log report

**WEEK 3:** Data interpretation - strength parameters and Liquefaction potential - Selection of foundation based on soil condition

### **UNIT II SHALLOW FOUNDATION**

#### **WEEK 4: UNIT TEST I**

Introduction – Location and depth of foundation – Codal provisions – bearing capacity of shallow foundation on homogeneous deposits – Terzaghi's formula and BIS formula – factors affecting bearing capacity – problems – Bearing capacity from in-situ tests (SPT, SCPT and plate load) Allowable bearing pressure

**WEEK 5:** Seismic considerations in bearing capacity evaluation. Determination of Settlement of foundations on granular and clay deposits – Total and differential settlement – Allowable settlements – Codal provision – Methods of minimizing total and differential settlements

#### **WEEK 6: UNIT TEST II**

### **UNIT III FOOTINGS AND RAFTS**

**WEEK 7:** Types of footings – Contact pressure distribution: Isolated footing – Combined footings – Types and proportioning – Mat foundation

**WEEK 8:** Types and applications – Proportioning – Floating foundation – Seismic force consideration – Codal Provision

### **UNIT IV PILE FOUNDATION**

#### **WEEK 9: UNIT TEST III**

Types of piles and their function – Factors influencing the selection of pile – Carrying capacity of single pile in granular and cohesive soil – static formula – dynamic formulae (Engineering news and Hileys) – Capacity from insitu tests (SPT and SCPT) – Negative skin friction –

uplift capacity- Group capacity by different methods (Feld's rule, Converse

**WEEK 10:** Labarra formula and block failure criterion) – Settlement of pile groups – Interpretation of pile load test (routine test only) – Under reamed piles – Capacity under compression and uplift

**WEEK 11: UNIT TEST IV**

**UNIT V RETAINING WALLS**

**WEEK 12:** Plastic equilibrium in soils – active and passive states – Rankine's theory – cohesionless and cohesive soil – Coulomb's wedge theory – Condition for critical failure plane – Earth pressure on retaining walls of simple configurations

**WEEK 13:** Culmann Graphical method – pressure on the wall due to line load – Stability analysis of retaining walls.

**WEEK 14: UNIT TEST V**

**WEEK 15: ICD CLASSES**

**WEEK 16: MODEL EXAM**

**TEXT BOOKS:**

1. Murthy, V.N.S., "Soil Mechanics and Foundation Engineering", CBS Publishers and Distributors Ltd., New Delhi, 2007.
2. Gopal Ranjan and Rao A.S.R. "Basic and Applied soil mechanics", New Age International Pvt. Ltd, New Delhi, 2005.
3. Purushothama Raj. P., "Soil Mechanics and Foundation Engineering", 2nd Edition, Pearson Education, 2013
4. Varghese, P.C., "Foundation Engineering", Prentice Hall of India Private Limited, New Delhi, 2005.

**REFERENCES:**

1. Das, B.M. "Principles of Foundation Engineering" 5th edition, Thompson Asia Pvt. Ltd., Singapore, 2003.
2. Kaniraj, S.R. "Design aids in Soil Mechanics and Foundation Engineering", Tata McGraw Hill Publishing company Ltd., New Delhi, 2002.
3. Punmia, B.C. "Soil Mechanics and Foundations", Laxmi Publications Pvt.Ltd., New Delhi, 2005
4. Venkatramaiah, C. "Geotechnical Engineering", New Age International Publishers, New Delhi, 2007 (Reprint)
5. Arora K.R. "Soil Mechanics and Foundation Engineering", Standard Publishers and Distributors, New Delhi, 2005.



6. IS 6403 : 1981 (Reaffirmed 1997) “Breaking capacity of shallow foundation”, Bureau of Indian Standards, New Delhi, 1998
7. IS8009 (Part1):1976 (Reaffirmed 1998) “Shallow foundations subjected to symmetrical static vertical loads”, Bureau of Indian Standards, New Delhi, 1999
8. IS8009 (Part2):1980 (Reaffirmed 1995) “Deep foundations subjected to symmetrical static vertical loading”, Bureau of Indian Standards, New Delhi, 1992
9. IS2911(Part1):1979 (Reaffirmed 1997) “Concrete Piles” Bureau of Indian Standards, New Delhi, 1994
10. IS2911(Part2):1979 (Reaffirmed 1997) “Timber Piles”, Bureau of Indian Standards, New Delhi, 2007
11. IS2911(Part 3) :1979 (Reaffirmed 1997) “Under Reamed Piles”, Bureau of Indian Standards, New Delhi, 1998
12. IS2911 (Part 4) :1979 (Reaffirmed 1997) “Load Test on Piles”, Bureau of Indian Standards, New Delhi, 1997

## **CE6503 ENVIRONMENTAL ENGINEERING I**

### **UNIT I PLANNING FOR WATER SUPPLY SYSTEM**

**WEEK 1:** Public water supply system -Planning - Objectives -Design period - Population forecasting -Water demand - Sources of water and their characteristics

**WEEK 2** Surface and Groundwater- Impounding Reservoir Well hydraulics -Development and selection of source

**WEEK 3:** Water quality - Characterization and standards- Impact of climate change.

### **UNIT II CONVEYANCE SYSTEM**

#### **WEEK 4: UNIT TEST I**

Water supply -intake structures -Functions and drawings - Pipes and conduits for water- Pipe materials - Hydraulics of flow in pipes -Transmission main design

**WEEK 5:** Laying, jointing and testing of pipes - Drawings appurtenances - Types and capacity of pumps - Selection of pumps and pipe materials.

**WEEK 6: UNIT TEST II**

**UNIT III WATER TREATMENT**

**WEEK 7:** Objectives - Unit operations and processes - Principles, functions design and drawing of Chemical feeding, Flash mixers, flocculators, sedimentation tanks and sand filters

**WEEK 8:** Disinfection- Residue Management - Construction and Operation & Maintenance aspects of Water Treatment Plants.

**UNIT IV ADVANCED WATER TREATMENT**

**WEEK 9: UNIT TEST III**

Principles and functions of Aeration - Iron and manganese removal,

**WEEK 10:** Defluoridation and demineralization - Water softening - Desalination - Membrane Systems - Recent advances.

**WEEK 11: UNIT TEST IV**

**UNIT V WATER DISTRIBUTION AND SUPPLY TO BUILDINGS**

**WEEK 12:** Requirements of water distribution - Components - Service reservoirs - Functions and drawings - Network design - Economics - Computer applications - Analysis of distribution networks - Appurtenances - operation and maintenance - Leak detection, Methods

**WEEK 13:** Principles of design of water supply in buildings - House service connection - Fixtures and fittings - Systems of plumbing and drawings of types of plumbing.

**WEEK 14: UNIT TEST V**

**WEEK 15: ICD CLASSES**

**WEEK 16: MODEL EXAM**

### **TEXT BOOKS:**

1. Garg, S.K., "Environmental Engineering", Vol.1 Khanna Publishers, New Delhi, 2005.
2. Modi, P.N. "Water Supply Engineering", Vol. I Standard Book House, New Delhi, 2005.
3. Punmia, B.C., Ashok K Jain and Arun K Jain, "Water Supply Engineering", Laxmi Publications Pvt. Ltd., New Delhi, 2005

### **REFERENCES:**

1. Government of India, "Manual on Water Supply and Treatment", CPHEEO, Ministry of Urban Development, New Delhi, 2003
2. Syed R. Qasim and Edward M. Motley Guang Zhu, "Water Works Engineering Planning", Design and Operation, Prentice Hall of India Private Limited, New Delhi, 2006.

## **CE6504 HIGHWAY ENGINEERING**

### **UNIT I HIGHWAY PLANNING AND ALIGNMENT**

**WEEK 1:** Significance of highway planning – Modal limitations towards sustainability - History of road development in India – Classification of highways

**WEEK 2:** Locations and functions – Factors influencing highway alignment – Soil suitability analysis - Road ecology

**WEEK 3:** Engineering surveys for alignment, objectives, conventional and modern methods.

### **UNIT II GEOMETRIC DESIGN OF HIGHWAYS**

#### **WEEK 4: UNIT TEST I**

Typical cross sections of Urban and Rural roads — Cross sectional elements - Sight distances – Horizontal curves, Super elevation, transition curves, widening at curves

**WEEK 5:** Vertical curves - Gradients, Special consideration for hill roads - Hairpin bends – Lateral and vertical clearance at underpasses.

**WEEK 6: UNIT TEST II**

**UNIT III DESIGN OF FLEXIBLE AND RIGID PAVEMENTS**

**WEEK 7:** Design principles – pavement components and their role

**WEEK 8** Design practice for flexible and rigid Pavements (IRC methods only) - Embankments

**UNIT IV HIGHWAY CONSTRUCTION MATERIALS AND PRACTICE**

**WEEK 9: UNIT TEST III**

Highway construction materials, properties, testing methods – CBR Test for subgrade - tests on aggregate & bitumen – Construction practice including modern materials and methods, Bituminous and Concrete road construction, Polymer modified bitumen

**WEEK 10:** Recycling, Different materials – Glass, Fiber, Plastic, Geo-Textiles, Geo-Membrane (problem not included) - Quality control measures - Highway drainage — Construction machineries.

**WEEK 11: UNIT TEST IV.**

**UNIT V EVALUATION AND MAINTENANCE OF PAVEMENTS**

**WEEK 12:** Pavement distress in flexible and rigid pavements – Pavement Management Systems - Pavement evaluation, roughness, present serviceability index, skid resistance

**WEEK 13:** structural evaluation, evaluation by deflection measurements – Strengthening of pavements –Types of maintenance – Highway Project formulation.

**WEEK 14: UNIT TEST V**

**WEEK 15: ICD CLASSES**

**WEEK 16: MODEL EXAM**

**TEXT BOOK:**

1. Khanna.S. K., Justo.C.E.G and Veeraragavan A. "Highway Engineering", Nemchand Publishers, 2014.
2. Subramanian K.P., "Highways, Railways, Airport and Harbour Engineering", Scitech Publications (India), Chennai, 2010
3. Indian Road Congress (IRC), Guidelines and Special Publications of Planning and Design.

## **REFERENCES:**

1. Kadiyali.L.R. "Principles and Practice of Highway Engineering", Khanna Technical Publications, 8th edition Delhi, 2013.
2. Yang H. Huang, "Pavement Analysis and Design", Pearson Education Inc, Ninth Impression, South Asia, 2012
3. Ian D. Walsh, "ICE manual of highway design and management", ICE Publishers, 1st Edition, USA, 2011
4. Fred L. Mannering, Scott S. Washburn and Walter P.Kilareski, "Principles of Highway Engineering and Traffic Analysis", Wiley India Pvt. Ltd., New Delhi, 2011
5. Garber and Hoel, "Principles of Traffic and Highway Engineering", CENGAGE Learning, New Delhi, 2010
6. O'Flaherty.C.A "Highways, Butterworth – Heinemann, Oxford, 2006

## **CE6505 DESIGN OF REINFORCED CONCRETE ELEMENTS**

### **UNIT I METHODS OF DESIGN OF CONCRETE STRUCTURES**

**WEEK 1** Concept of Elastic method, ultimate load method and limit state method

**WEEK 2:** Advantages of Limit State Method over other methods – Design codes and specification

**WEEK 3** Limit State philosophy as detailed in IS code – Design of beams and slabs by working stress method.

### **UNIT II LIMIT STATE DESIGN FOR FLEXURE**

#### **WEEK 4: UNIT TEST I**

Analysis and design of singly and doubly reinforced rectangular and flanged beams - Analysis and design of one way

**WEEK 5:** two way and continuous slabs subjected to uniformly distributed load for various boundary conditions.

#### **WEEK 6: UNIT TEST II**

**UNIT III LIMIT STATE DESIGN FOR BOND, ANCHORAGE SHEAR & TORSION WEEK 7:** Behaviour of RC members in bond and Anchorage - Design requirements as per current code

**WEEK 8:** Behaviour of RC beams in shear and torsion - Design of RC members for combined bending shear and torsion.

**UNIT IV LIMIT STATE DESIGN OF COLUMNS**

**WEEK 9: UNIT TEST III**

Types of columns – Braced and unbraced columns

**WEEK 10:** Design of short Rectangular and circular columns for axial, uniaxial and biaxial bending

**WEEK 12: UNIT TEST IV**

**UNIT V LIMIT STATE DESIGN OF FOOTING**

Design of wall footing – Design of axially and eccentrically loaded rectangular pad

**WEEK 13:** sloped footings – Design of combined rectangular footing for two columns only.

**WEEK 14: UNIT TEST V**

**WEEK 15: ICD CLASSES**

**WEEK 16: MODEL EXAM**

**TEXT BOOKS:**

1. Varghese, P.C., “Limit State Design of Reinforced Concrete”, Prentice Hall of India, Pvt. Ltd., New Delhi, 2002.
2. Gambhir.M.L., "Fundamentals of Reinforced Concrete Design", Prentice Hall of India Private Limited, New Delhi, 2006.
3. Subramanian,N.,”Design of Reinforced Concrete Structures”,Oxford University Press, New Delhi, 2013.

**REFERENCES:**

1. Jain, A.K., “Limit State Design of RC Structures”, Nemchand Publications, Roorkee, 1998
2. Sinha, S.N., “Reinforced Concrete Design”, Tata McGraw Hill Publishing Company Ltd., New Delhi, 2002
3. Unnikrishna Pillai, S., Devdas Menon, “Reinforced Concrete Design”, Tata McGraw Hill Publishing Company Ltd., 2009
4. Punmia.B.C., Ashok Kumar Jain, Arun Kumar Jain, “Limit State Design of Reinforced Concrete”,Laxmi Publication Pvt. Ltd., New Delhi, 2007.

5. Bandyopadhyay. J.N., "Design of Concrete Structures"., Prentice Hall of India Pvt. Ltd., New Delhi, 2008.
6. IS456:2000, Code of practice for Plain and Reinforced Concrete, Bureau of Indian Standards, New Delhi, 2000
7. SP16, IS456:1978 "Design Aids for Reinforced Concrete to Bureau of Indian Standards, New Delhi, 1999
8. Shah V L Karve S R., "Limit State Theory and Design of Reinforced Concrete", Structures Publications, Pune, 2013

## **CE6506 CONSTRUCTION TECHNIQUES, EQUIPMENT AND PRACTICE**

### **UNIT I CONCRETE TECHNOLOGY**

**WEEK 1** Cements – Grade of cements - concrete chemicals and Applications – Grade of concrete - manufacturing of concrete

**WEEK 2:** – Batching – mixing – transporting – placing – compaction of concrete – curing and finishing - Testing of fresh and hardened concrete

**WEEK 3:** quality of concrete – Extreme Weather Concreting - Ready Mix Concrete - Non-destructive testing.

### **UNIT II CONSTRUCTION PRACTICES**

#### **WEEK 4: UNIT TEST I**

Specifications, details and sequence of activities and construction co-ordination – Site Clearance – Marking – Earthwork - masonry – stone masonry – Bond in masonry - concrete hollow block masonry – flooring – damp proof courses

**WEEK 5:** construction joints – movement and expansion joints – pre cast pavements – Building foundations – basements – temporary shed – centering and 53

shuttering – slip forms – scaffoldings – de-shuttering forms – Fabrication and erection of steel trusses – frames – braced domes – laying brick — weather and water proof – roof finishes – acoustic and fire protection.

#### **WEEK 6: UNIT TEST II**

### **UNIT III SUB STRUCTURE CONSTRUCTION**

**WEEK 7:** Techniques of Box jacking – Pipe Jacking -under water construction of diaphragm walls and basement-Tunneling techniques

– Piling techniques - well and caisson - sinking cofferdam **WEEK 8**  
cable anchoring and grouting-driving diaphragm walls, sheet piles -  
shoring for deep cutting - well points -Dewatering and stand by Plant  
equipment for underground open excavation. **UNIT IV SUPER  
STRUCTURE CONSTRUCTION**

**WEEK 9: UNIT TEST III**

Launching girders, bridge decks, off shore platforms – special forms  
for shells - techniques for heavy decks – in-situ pre-stressing in high  
rise structures

**WEEK 10:** Material handling - erecting light weight components on  
tall structures - Support structure for heavy Equipment and conveyors  
-Erection of articulated structures, braced domes and space decks.

**WEEK 11: UNIT TEST IV**

**UNIT V CONSTRUCTION EQUIPMENT**

**WEEK 12:** Selection of equipment for earth work - earth moving  
operations - types of earthwork equipment - tractors, motor graders,  
scrapers, front end waders, earth movers

**WEEK 13:** Equipment for foundation and pile driving. Equipment  
for compaction, batching and mixing and concreting - Equipment for  
material handling and erection of structures - Equipment for dredging,  
trenching, tunneling

**WEEK 14: UNIT TEST V**

**WEEK 15: ICD CLASSES**

**WEEK 16: CYCLE TEST III**

**TEXT BOOKS:**

1. Peurifoy, R.L., Ledbetter, W.B. and Schexnayder, C.,  
"Construction Planning, Equipment and Methods", 5th Edition,  
McGraw Hill, Singapore, 1995.
2. Arora S.P. and Bindra S.P., "Building Construction, Planning  
Techniques and Method of Construction", Dhanpat Rai and  
Sons, 1997.
3. Varghese, P.C. "Building construction", Prentice Hall of India  
Pvt. Ltd, New Delhi, 2007. 4. Shetty, M.S, "Concrete  
Technology, Theory and Practice", S. Chand and Company Ltd,  
New Delhi, 2008.



## **REFERENCES**

1. Jha J and Sinha S.K., "Construction and Foundation Engineering", Khanna Publishers, 1999.
2. Sharma S.C. "Construction Equipment and Management", Khanna Publishers New Delhi, 2002.
3. Deodhar, S.V. "Construction Equipment and Job Planning", Khanna Publishers, New Delhi, 2012.
4. Dr. Mahesh Varma, "Construction Equipment and its Planning and Application", Metropolitan Book Company, New Delhi, 1983.
5. Gambhir, M.L, "Concrete Technology", Tata McGraw Hill Publishing Company Ltd, New Delhi, 2004

## **GE6674 COMMUNICATION AND SOFT SKILLS - LABORATORY BASED**

### **UNIT I LISTENING AND SPEAKING SKILLS**

Conversational skills (formal and informal) – group discussion and interview skills – making presentations. Listening to lectures, discussions, talk shows, news programmes, dialogues from TV/radio/Ted talk/Podcast – watching videos on interesting events on Youtube

### **UNIT II READING AND WRITING SKILLS**

Reading different genres of texts ranging from newspapers to philosophical treatises – reading strategies such as graphic organizers, summarizing and interpretation Writing job applications – cover letter – resume – emails – letters – memos – reports – blogs – writing for publications.

### **UNIT III ENGLISH FOR NATIONAL AND INTERNATIONAL EXAMINATIONS AND PLACEMENTS**

International English Language Testing System (IELTS) – Test of English as a Foreign Language (TOEFL) – Graduate Record Examination (GRE) – Civil Service (Language related) – Verbal ability.

### **UNIT IV SOFT SKILLS (1)**

Motivation – self image – goal setting – managing changes – time management – stress management – leadership traits – team work – career and life planning.

### **UNIT V SOFT SKILLS (2)**

Multiple intelligences – emotional intelligence – spiritual quotient (ethics) – intercultural communication – creative and critical thinking – learning styles and strategies

## **CE6511 SOIL MECHANICS LABORATORY**

### **LIST OF EXPERIMENTS:**

#### **1. DETERMINATION OF INDEX PROPERTIES**

- a. Special gravity of soil solids
- b. Grain size distribution – Sieve analysis
- c. Grain size distribution Hydrometer analysis
- d. Liquid limit and Plastic limit tests
- e. Shrinkage limit and Differential free swell tests

#### **2. DETERMINATION OF INSITU DENSITY AND COMPACTION CHARACTERISTICS**

- a. Field density Test (Sand replacement method)
- b. Determination of moisture – density relationship using standard Proctor compaction test.

#### **3. DETERMINATION OF ENGINEERING PROPERTIES**

- a. Permeability determination (constant head and falling head methods)
- b. One dimensional consolidation test (Determination of coefficient of consolidation only)
- c. Direct shear test in cohesion-less soil
- d. Unconfined compression test in cohesive soil
- e. Laboratory vane Shear test in cohesive soil
- f. Tri-axial compression test in cohesion-less soil (Demonstration only)
- g. California Bearing Ratio Test

## **CE6512 SURVEY CAMP**

**During IV Semester Summer Vacation) (2 Weeks)**

Two weeks Survey Camp will be conducted during summer vacation  
in the following activities:

1. Triangulation
2. Trilateration and
3. Rectangulation

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