

# VELTECH HIGH TECH

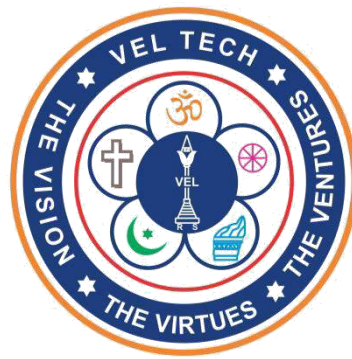
**Dr RANGARAJAN Dr. SAKUNTHALA ENGINEERING COLLEGE**

(Owned by Vel Trust 1997)

*(An ISO 9001: 2008 Certified Institution)*

**Accredited By NAAC with 'A' Grade and NBA Accredited Institution**

**(Approved by AICTE New Delhi and Govt. of Tamil Nadu, Affiliated to Anna University Chennai)**



## SYLLABUS

### WEEKLY SCHEDULE

### III SEMESTER 2017-18

## DEPARTMENT OF CIVIL ENGINEERING

### IV YEAR DEGREE COURSE

#42, Avadi – Vel Tech Road,

Avadi

Chennai – 600062

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## **INSTITUTION VISION**

Elevating well being of humanity by augmenting human resource potential through quality technical education and training

## **INSTITUTION MISSION**

- a. To effectuate supremacy in technical education through articulation of research and industry practices for social relevance.
- b. To inculcate the habit of lifelong learning
- c. To exhibit professional ethics, commitment and leadership qualities

## **DEPARTMENT VISION**

Building human resource talent by infusing the habit of creativity and productivity with holistic ethical standards.

## **DEPARTMENT MISSION**

1. To accomplish technically competent and credible civil engineers for changing societal needs.
2. To propagate lifelong learning.
3. To impart the right proportion of knowledge, attitudes and ethics in students to enable them take up positions of responsibility in the society and make significant contributions.

## **Program Educational Objectives (PEOs)**

The program educational objectives for the Civil Engineering program describe accomplishments that graduates are expected to attain within four years after graduation.

1. Ability to identify, formulate and analyze complex Civil Engineering problems in the areas of structural engineering, geotechnical engineering, water resource management and applications to reach significant conclusions by applying Mathematics, Natural sciences, Civil Engineering principles.
2. Understand and evaluate the sustainability and impact of professional engineering work in the solution of complex engineering problems related to structural design, software development, analyzing techniques, and information assurance & security in societal and environmental contexts.
3. Apply knowledge of mathematics, natural science, engineering fundamentals and structural design, software development, analyzing techniques, and information assurance & security to the solution of complex engineering problems in civil engineering.
4. Design solutions for complex civil engineering problems and design systems, components or processes that meet specified needs with appropriate consideration for public health and safety, cultural, societal, and environmental considerations.
5. Ability to create, select and apply state of the art tools and techniques in designing, developing and testing a structural component

## **Programme Outcomes**

1. An ability to relate the theoretical knowledge of mathematics, science and engineering to practical real world applications.
2. An ability to identify, formulate and derive solutions for engineering problems.
3. An ability to produce the efficient system design and components, design for various civil engineering applications for technology innovation.
4. An ability to conduct and investigate different experiments for analysis, research and synthesis purpose
5. Familiar with modern Engineering tools, Software's and Equipments.
6. An ability to understand the professional responsibility in the techno savvy world.
7. An ability to understand the impact of professional engineering solution in societal and environmental contexts and demonstrate the knowledge and need for sustainable development globally.
8. An understanding of code of conduct and ethical responsibilities.
9. An ability to work on multi-disciplinary task and team work.
10. An ability to write and communicate effectively in verbal, written and graphical form.
11. An ability to develop confidence for self education and for life-long learning.
12. An understanding of Engineering Economics and management principles to manage projects and create innovative ideas

## **WEEK DETAILS**

<b>SL.NO.</b>	<b>WEEK</b>	<b>FROM</b>	<b>TO</b>
1	<b>WEEK1</b>	<b>24-06-17</b>	<b>24-06-17</b>
2	<b>WEEK2</b>	<b>27-06-17</b>	<b>1-07-17</b>
3	<b>WEEK3</b>	<b>3-07-17</b>	<b>8-07-17</b>
4	<b>WEEK4</b>	<b>9-07-17</b>	<b>15-07-17</b>
5	<b>WEEK5</b>	<b>17-07-17</b>	<b>22-07-17</b>
6	<b>WEEK6</b>	<b>24-07-17</b>	<b>29-07-17</b>
7	<b>WEEK7</b>	<b>31-07-17</b>	<b>5-08-17</b>
8	<b>WEEK8</b>	<b>7-08-17</b>	<b>12-08-17</b>
9	<b>WEEK9</b>	<b>14-08-17</b>	<b>19-08-17</b>
10	<b>WEEK10</b>	<b>21-08-17</b>	<b>26-08-17</b>
11	<b>WEEK11</b>	<b>28-08-17</b>	<b>2-09-17</b>
12	<b>WEEK12</b>	<b>4-09-17</b>	<b>9-09-17</b>
13	<b>WEEK13</b>	<b>11-09-17</b>	<b>16-09-17</b>
14	<b>WEEK14</b>	<b>18-09-17</b>	<b>23-09-17</b>
15	<b>WEEK15</b>	<b>25-09-17</b>	<b>30-09-17</b>
16	<b>WEEK16</b>	<b>2-10-17</b>	<b>7-10-17</b>
17	<b>WEEK17</b>	<b>9-10-17</b>	<b>13-10-17</b>

## SUBJECT CONTENTS

<b>SL.NO</b>	<b>SUBJECT CODE</b>	<b>SUBJECT NAME</b>
<b>THEORY</b>		
1	MA6351	Transforms and Partial Differential Equations
2	GE6351	Environmental Science and Engineering
3	CE6301	Engineering Geology
4	CE6302	Mechanics of Solids
5	CE6303	Mechanics of Fluids
6	CE6304	Surveying I
<b>PRACTICAL</b>		
7	CE6311	Survey Practical I
8	CE6312	Computer Aided Building Drawing

### TEST / EXAM SCHEDULE

SL.NO	SUBJECT CODE	SUBJECT NAME	UNIT TEST I	UNIT TEST II	PRE MODEL EXAM	UNIT TEST IV	MODEL EXAM
1	MA6351	Transforms and Partial Differential Equations	10.07.17	27.07.17	16.08.17	07.09.17	28.09.17
2	GE6351	Environmental Science and Engineering	10.07.17	27.07.17	17.08.17	07.09.17	03.10.17
3	CE6301	Engineering Geology	11.07.17	28.07.17	18.08.17	08.09.17	06.10.17
4	CE6302	Mechanics of Solids	11.07.17	28.07.17	19.08.17	08.09.17	09.10.17
5	CE6303	Mechanics of Fluids	12.07.17	29.07.17	21.08.17	09.09.17	11.10.17
6	CE6304	Surveying I	12.07.17	29.07.17	22.08.17	09.09.17	13.10.17

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# **MA6351 TRANSFORMS AND PARTIAL DIFFERENTIAL EQUATIONS**

## **WEEK 1**

### **UNIT I PARTIAL DIFFERENTIAL EQUATIONS**

Formation of partial differential equations – Singular integrals --  
Solutions of standard types of first order partial differential equations

## **WEEK 2**

Lagrange's linear equation -- Linear partial differential equations of second and higher order with constant coefficients of both homogeneous

## **WEEK 3**

Non-homogeneous types

## **WEEK 4 UNIT TEST I**

### **UNIT II FOURIER SERIES**

Dirichlet's conditions – General Fourier series – Odd and even functions  
– Half range sine series

## **WEEK 5**

Half range cosine series – Complex form of Fourier series

## **WEEK 6**

Parseval's identity – Harmonic analysis

## **WEEK 7 UNIT TEST II**

## **WEEK 8**

### **UNIT III APPLICATIONS OF PARTIAL DIFFERENTIAL EQUATIONS**

Classification of PDE – Method of separation of variables - Solutions of one dimensional wave Equation

## **WEEK 9**

One dimensional equation of heat conduction – Steady state solution of two dimensional

Equation of heat conduction (excluding insulated edges)

## **WEEK 10 UNIT TEST III**

### **UNIT IV FOURIER TRANSFORMS**

Statement of Fourier integral theorem – Fourier transforms pair – Fourier sine

## **WEEK 11**

Cosine transforms – Properties

**WEEK 12**

Transforms of simple functions – Convolution theorem – Parseval's identity

**WEEK 13 UNIT TEST IV**

**WEEK 14**

**UNIT V Z - TRANSFORMS AND DIFFERENCE EQUATIONS Z-**

transforms - Elementary properties – Inverse Z - transform (using partial fraction and residues)

**WEEK 15**

Convolution theorem - Formation of difference equations

**WEEK-16**

Solution of difference equations using Z – transform

**WEEK-17-MODEL EXAM**

**TEXT BOOKS:**

1. Veerarajan. T., "Transforms and Partial Differential Equations", Tata McGraw Hill Education Pvt.Ltd., New Delhi, Second reprint, 2012.
2. Grewal. B.S., "Higher Engineering Mathematics", 42nd Edition, Khanna Publishers, Delhi, 2012.
3. Narayanan.S, ManicavachagomPillay.T.K and Ramanaiah.G "Advanced Mathematics for Engineering Students" Vol. II & III, S.Viswanathan Publishers Pvt Ltd.1998.

**REFERENCES:**

1. Bali.N.P and Manish Goyal, "A Textbook of Engineering Mathematics", 7th Edition, Laxmi Publications PvtLtd , 2007.
2. Ramana.B.V., "Higher Engineering Mathematics", Tata McGrawHill Publishing Company Limited, New Delhi, 2008.
3. Glyn James, "Advanced Modern Engineering Mathematics", 3rd Edition, Pearson Education, 2007.
4. Erwin Kreyszig, "Advanced Engineering Mathematics", 8th Edition, Wiley India, 2007.
5. Ray Wylie. C and Barrett.L.C, "Advanced Engineering Mathematics" Tata McGraw Hill Education Pvt Ltd, Sixth Edition, New Delhi, 2012.



6. Datta.K.B., "Mathematical Methods of Science and Engineering",  
Cengage Learning India Pvt Ltd, Delhi, 2013

## **GE6351 ENVIRONMENTAL SCIENCE AND ENGINEERING**

### **WEEK 1**

#### **UNIT I ENVIRONMENT, ECOSYSTEMS AND BIODIVERSITY**

Definition, scope and importance of Risk and hazards; Chemical hazards, Physical hazards, Biological hazards in the environment – concept of an ecosystem – structure and function of an ecosystem – producers, consumers and decomposers- Oxygen cycle and Nitrogen cycle – energy flow in the ecosystem – ecological succession processes – Introduction, types, characteristic features, structure and function of the (a) forest ecosystem (b) grassland ecosystem (c) desert ecosystem (d) aquatic ecosystems (ponds, streams, lakes, rivers, oceans, estuaries)

### **WEEK 2**

Introduction to biodiversity definition: genetic, species and ecosystem diversity – biogeographical classification of India – value of biodiversity: consumptive use, productive use, social, ethical, aesthetic and option values – Biodiversity at global, national and local levels – India as a mega-diversity nation – hot-spots of biodiversity – threats to biodiversity

### **WEEK 3**

Habitat loss, poaching of wildlife, man-wildlife conflicts – endangered and endemic species of India – conservation of biodiversity: In-situ and ex-situ conservation of biodiversity. Field study of common plants, insects, birds Field study of simple ecosystems – pond, river, hill slopes, etc

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

#### **UNIT II - ENVIRONMENTAL POLLUTION**

Definition – causes, effects and control measures of: (a) Air pollution (Atmospheric chemistry- Chemical composition of the atmosphere; Chemical and photochemical reactions in the 30 atmosphere - formation of smog, PAN, acid rain, oxygen and ozone chemistry;- Mitigation procedures- Control of particulate and gaseous emission, Control of SO<sub>2</sub>, NO<sub>x</sub>, CO and HC) (b) Water pollution

### **WEEK 5**

Physical and chemical properties of terrestrial and marine water and their environmental significance; Water quality parameters – physical, chemical and biological; absorption of heavy metals

### **WEEK 6**

Water treatment processes. (c) Soil pollution - soil waste management: causes, effects and control measures of municipal solid wastes – (d) Marine pollution (e) Noise pollution (f) Thermal pollution (g) Nuclear hazards–role of an individual in prevention of pollution – pollution case studies – Field study of local polluted site – Urban / Rural / Industrial / Agricultural

### **WEEK 7 UNIT TEST II**

### **WEEK 8**

### **UNIT III - NATURAL RESOURCES**

Forest resources: Use and over-exploitation, deforestation, case studies-timber extraction, mining, dams and their effects on forests and tribal people – Water resources: Use and overutilization of surface and ground water, dams-benefits and problems – Mineral resources: Use and exploitation, environmental effects of extracting and using mineral resources, case studies – Food resources: World food problems, changes caused by agriculture and overgrazing, effects of modern agriculture, fertilizer-pesticide problems, water logging, salinity, case studies – Energy resources: Growing energy needs, renewable and non renewable energy sources, use of alternate energy sources. Energy Conversion processes

### **WEEK 9**

Biogas – production and uses, anaerobic digestion; case studies – Land resources: Land as a resource, land degradation, man induced landslides, soil erosion and desertification – role of an individual in conservation of natural resources – Equitable use of resources for sustainable lifestyles. Introduction to Environmental Biochemistry: Proteins –Biochemical degradation of pollutants, Bioconversion of pollutants. Field study of local area to document environmental assets – river / forest / grassland / hill / mountain

### **WEEK 10 UNIT TEST III**

## **UNIT IV - SOCIAL ISSUES AND THE ENVIRONMENT**

From unsustainable to sustainable development – urban problems related to energy – water conservation, rain water harvesting, watershed management – resettlement and rehabilitation of people; its problems and concerns, case studies – role of non-governmental organization- environmental ethics: Issues and possible solutions

### **WEEK 11**

12 Principles of green chemistry- nuclear accidents and holocaust, case studies. – Wasteland reclamation – consumerism and waste products – environment production act – Air act – Water act – Wildlife protection act – Forest conservation act

### **WEEK 12**

The Biomedical Waste (Management and Handling) Rules; 1998 and amendments- scheme of labeling of environmentally friendly products (Ecomark).enforcement machinery involved in environmental legislation- central and state pollution control boards- disaster management: floods, earthquake, cyclone and landslides. Public awareness

### **WEEK 13 UNIT TEST IV**

### **WEEK 14**

## **UNIT V - HUMAN POPULATION AND THE ENVIRONMENT**

Population growth, variation among nations – population explosion – family welfare programme – environment and human health – human rights – value education

### **WEEK 15**

HIV / AIDS – women and child welfare –Environmental impact analysis (EIA)

**WEEK-16** GIS-remote sensing-role of information technology in environment and human health – Case studies

### **WEEK-17-MODEL EXAM**

### **TEXT BOOKS:**

1. Gilbert M.Masters, „Introduction to Environmental Engineering and Science“, 2nd edition, Pearson Education, 2004 31

2. Benny Joseph, „Environmental Science and Engineering“, Tata McGraw Hill, New Delhi, 2006.

## **REFERENCES:**

1. Trivedi R.K. „Handbook of Environmental Laws, Rules, Guidelines, Compliances and Standards“, Vol. I and II, Enviro Media.
2. Cunningham W.P.Cooper., T.H. Gorhani, „Environmental Encyclopedia“, Jaico Publishing House, Mumbai, 2001.
3. Dharmendra S. Sengar, „Environmental law“, Prentice hall of India PVT LTD, New Delhi, 2007.
4. Rajagopalan R, „Environmental Studies - From Crisis to Cure“, Oxford University Press, 2005

## **CE6301 ENGINEERING GEOLOGY**

### **WEEK 1**

#### **UNIT I PHYSICAL GEOLOGY**

Geology in civil engineering – branches of geology – structure of earth and its composition – weathering of rocks – scale of weathering

### **WEEK 2**

Soils - landforms and processes associated with river, wind, groundwater and sea – relevance to civil engineering. Plate tectonics

### **WEEK 3**

Earth quakes – Seismic zones in India

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

#### **UNIT II MINEROLOGY**

Physical properties of minerals – Quartz group, Feldspar group, Pyroxene - hypersthene and augite

### **WEEK 5**

Amphibole – hornblende, Mica – muscovite and biotite

### **WEEK 6**

Calcite, Gypsum and Clay minerals

### **WEEK 7 UNIT TEST II**

### **WEEK 8**

#### **UNIT III PETROLOGY**

Classification of rocks, distinction between Igneous, Sedimentary and Metamorphic rocks. Engineering properties of rocks. Description, occurrence, engineering properties, distribution and uses of Granite

**WEEK 9**

Dolerite, Basalt, Sandstone, Limestone, Laterite, Shale, Quartzite, Marble, Slate, Gneiss and Schist

**WEEK 10 UNIT TEST III**

**UNIT IV STRUCTURAL GEOLOGY AND GEOPHYSICAL METHODS**

Geological maps – attitude of beds, study of structures – folds, faults and joints – relevance to civil engineering

**WEEK 11**

Geophysical methods

**WEEK 12**

Seismic and electrical methods for subsurface investigations

**WEEK 13 UNIT TEST IV**

**WEEK 14**

**UNIT V APPLICATION OF GEOLOGICAL INVESTIGATIONS**

Remote sensing for civil engineering applications; Geological conditions necessary for design and construction of Dams, Reservoirs

**WEEK 15**

Tunnels, and Road cuttings,

**WEEK-16**

Hydrogeological investigations and mining - Coastal protection structures. Investigation of Landslides, causes and mitigation

**WEEK-17-MODEL EXAM**

**TEXT BOOKS:**

1. Varghese, P.C., Engineering Geology for Civil Engineering Prentice Hall of India Learning Private Limited, New Delhi, 2012.
2. Venkat Reddy. D. Engineering Geology, Vikas Publishing House Pvt. Lt, 2010.
3. Gokhale KVGK, "Principles of Engineering Geology", B.S. Publications, Hyderabad 2011.

4. ChennaKesavulu N. "Textbook of Engineering Geology", Macmillan India Ltd., 2009.
5. Parbin Singh. A "Text book of Engineering and General Geology", Katson publishing house, Ludhiana 2009.

## **REFERENCES:**

1. Muthiayya, V.D. "A Text of Geology", Oxford IBH Publications, Calcutta, 1969
2. Blyth F.G.H. and de Freitas M.H., Geology for Engineers, Edward Arnold, London, 2010.
3. Bell .F.G.."Fundamentals of Engineering Geology", B.S. Publications. Hyderabad 2011.
4. Dobrin, M.B "An introduction to geophysical prospecting", McGraw Hill, New Delhi, 1988

## **CE6302MECHANICS OF SOLIDS**

### **WEEK 1**

#### **UNIT I STRESS AND STRAIN**

Stress and strain at a point – Tension, Compression, Shear Stress – Hooke"s Law – Relationship among elastic constants

### **WEEK 2**

Stress Strain Diagram for Mild Steel, TOR steel, Concrete – Ultimate Stress – Yield Stress – Factor of Safety – Thermal Stresses

### **WEEK 3**

Thin Cylinders and Shells – Strain Energy due to Axial Force – Resilience – Stresses due to impact and Suddenly Applied Load – Compound Bars

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

#### **UNIT II SHEAR AND BENDING IN BEAMS**

Beams and Bending- Types of loads, supports – Shear Force and Bending Moment Diagrams for statically determinate beam with concentrated load

### **WEEK 5**

UDL, uniformly varying load. Theory of Simple Bending – Analysis of Beams for Stresses

## **WEEK 6**

Stress Distribution at a cross Section due to bending moment and shear force for Cantilever, simply supported and overhanging beams with different.

## **WEEK 7 UNIT TEST II**

## **WEEK 8**

### **UNIT III DEFLECTION**

Double integration method - Macaulay's methods

## **WEEK 9**

Area moment method - conjugate beam method for computation of slopes and deflections of determinant beams.

## **WEEK 10 UNIT TEST III**

### **UNIT IV DEFLECTION OF BEAMS AND SHEAR STRESSES**

Torsion of Circular and Hollow Shafts – Elastic Theory of Torsion – Stresses and Deflection in Circular Solid and Hollow Shafts

## **WEEK 11**

Combined bending moment and torsion of shafts - strain energy due to torsion - Modulus of Rupture – Power transmitted to shaft,

## **WEEK 12**

Shaft in series and parallel – Closed and Open Coiled helical springs – Leaf Springs – Springs in series and parallel – Design of buffer springs

## **WEEK 13 UNIT TEST IV**

## **WEEK14**

### **UNIT V COMPLEX STRESSES AND PLANE TRUSSES**

2 D State of Stress – 2 D Normal and Shear Stresses on any plane

## **WEEK 15**

Principal Stresses and Principal Planes – Mohr's circle

## **WEEK-16**

Plane trusses: Analysis of plane trusses - method of joints - method of sections

## **WEEK-17-MODEL EXAM**

### **TEXT BOOKS:**

1. Rajput.R.K. “Strength of Materials”, S.Chand and Co, New Delhi, 2007.

2. Bhavikatti. S., "Solid Mechanics", Vikas publishing house Pvt. Ltd, New Delhi, 2010.

## **REFERENCES :**

1. Gambhir. M.L., "Fundamentals of Solid Mechanics", PHI Learning Private Limited., New Delhi, 2009.
2. Timoshenko.S.B. and Gere.J.M, "Mechanics of Materials", Van Nos Reinhold, New Delhi 1995.
3. Vazirani.V.N and Ratwani.M.M, "Analysis of Structures", Vol I Khanna Publishers, New Delhi, 1995.
4. 06narkar.S.B. and Shah.H.J, "Mechanics of Structures", Vol I, Charotar Publishing House, New Delhi 1997.
5. Ugural. A.C., "Mechanics of Materials", Wiley India Pvt. Ltd., New Delhi, 2013

## **CE6303 MECHANICS OF FLUIDS**

### **WEEK 1**

#### **UNIT I FLUID PROPERTIES AND FLUID STATICS**

Fluid – definition, distinction between solid and fluid - Units and dimensions - Properties of fluids - density, specific weight, specific volume, specific gravity, temperature, viscosity

### **WEEK 2**

Compressibility, vapour pressure, capillarity and surface tension

### **WEEK 3**

Fluid statics: concept of fluid static pressure, absolute and gauge pressures - pressure measurements by manometers and pressure gauges - forces on planes – centre of pressure – buoyancy and floatation

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

#### **UNIT II FLUID KINEMATICS AND DYNAMICS**

### **WEEK 5**

Fluid Kinematics - Flow visualization - lines of flow - types of flow - velocity field and acceleration - continuity equation (one and three dimensional differential forms)- Equation of streamline - stream function - velocity potential function - circulation - flow net

### **WEEK 6**



Fluid dynamics - equations of motion - Euler's equation along a streamline - Bernoulli's equation – applications - Venturi meter, Orifice meter and Pitot tube. Linear momentum equation and its application

### **WEEK 7 UNIT TEST II**

### **WEEK 8**

### **UNIT III FLOW THROUGH PIPES**

Viscous flow - Shear stress, pressure gradient relationship - laminar flow between parallel plates - Laminar flow through circular tubes (Hagen poiseuille's)

### **WEEK 9**

Hydraulic and energy gradient - flow through pipes - Darcy -Weisbach's equation - pipe roughness -friction factor- Moody's diagram- Major and minor losses of flow in pipes - Pipes in series and in parallel

### **WEEK 10 UNIT TEST III**

### **UNIT IV BOUNDARY LAYER**

Boundary layer – definition- boundary layer on a flat plate

### **WEEK 11**

Thickness and classification – displacement , energy and momentum thickness

### **WEEK 12**

Boundary layer separation and control – drag in flat plate – drag and lift coefficients

### **WEEK 13 UNIT TEST IV**

### **WEEK 14**

### **UNIT V DIMENSIONAL ANALYSIS AND MODEL STUDIES**

Fundamental dimensions - dimensional homogeneity

### **WEEK 15**

Rayleigh's method and Buckingham

### **WEEK-16**

Pi-Theorem - Dimensionless parameters - Similitude and model studies - Distorted Models

### **WEEK-17-MODEL EXAM**

### **TEXT BOOKS:**

1. Modi P.N and Seth "Hydraulics and Fluid Mechanics including Hydraulic Machines", Standard Book House New Delhi. 2003

2. Ramamirtham, S., "Fluid Mechanics and Hydraulics and Fluid Machines", Dhanpat Rai and Sons, Delhi, 2001.
3. Bansal, R.K., "Fluid Mechanics and Hydraulics Machines", 5th edition, Laxmi Publications Pvt. Ltd, New Delhi, 2008

### **REFERENCES:**

1. Streeter, V.L., and Wylie, E.B., "Fluid Mechanics", McGraw Hill, 2000.
2. Fox W.R. and McDonald A.T., Introduction to Fluid Mechanics John-Wiley and Sons, Singapore, 1995.
3. Jain A. K. "Fluid Mechanics", Khanna Publishers, 2010 \
4. Roberson J.A and Crowe C.T., "Engineering Fluid Mechanics", Jaico Books Mumbai, 2000.
5. White, F.M., "Fluid Mechanics", Tata McGraw Hill, 5th Edition, New Delhi, 2003.

## **CE6304 SURVEYING I**

### **WEEK 1**

**UNIT I FUNDAMENTALS AND CHAIN SURVEYING** Definition- Classifications - Basic principles-Equipment and accessories for ranging and chaining – Methods of ranging - well conditioned triangles

### **WEEK 2**

Errors in linear measurement and their corrections - Obstacles

### **WEEK 3**

Traversing – Plotting – applications- enlarging the reducing the figures – Areas enclosed by straight line irregular figures- digital planimetre

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

### **UNIT II COMPASS AND PLANE TABLE SURVEYING**

Compass – Basic principles - Types - Bearing - Systems and conversions- Sources of errors - Local attraction - Magnetic declination- Dip-Traversing

### **WEEK 5**

Plotting - Adjustment of closing error – applications - Plane table and its accessories

### **WEEK 6**

Merits and demerits - Radiation - Intersection - Resection – Traversing-sources of errors – applications

### **WEEK 7 UNIT TEST II**

### **WEEK 8**

### **UNIT III LEVELLING**

Level line - Horizontal line - Datum - Bench marks -Levels and staves - temporary and permanent adjustments – Methods of levelling - Fly levelling - Check levelling - Procedure in levelling - Booking - Reduction

### **WEEK 9**

Curvature and refraction - Reciprocal levelling – Sources of Errors in levelling- Precise levelling - Types of instruments - Adjustments - Field procedure

### **WEEK 10 UNIT TEST III**

### **UNIT IV LEVELLING APPLICATIONS**

Longitudinal and Cross-section-Plotting - Contouring - Methods - Characteristics and uses of contours

### **WEEK 11**

Plotting – Methods of interpolating contours

### **WEEK 12**

Computations of cross sectional areas and volumes - Earthwork calculations - Capacity of reservoirs - Mass haul diagrams

### **WEEK 13 UNIT TEST IV**

### **WEEK 14**

### **UNIT V THEODOLITE SURVEYING**

Theodolite - Types - Description - Horizontal and vertical angles

### **WEEK 15**

Temporary and permanent adjustments – Heights and distances

### **WEEK-16**

Tangential and Stadia Tacheometry – Subtense method - Stadia constants - Anallactic lens

### **WEEK-17-MODEL EXAM**

**TEXT BOOKS:**

1. Chandra A.M., "Plane Surveying", New Age International Publishers, 2002.
2. Alak De, "Plane Surveying", S. Chand & Company Ltd., 2000

**REFERENCES:**

1. James M. Anderson and Edward M. Mikhail, "Surveying, Theory and Practice", 7th Edition, McGraw Hill, 2001.
2. Bannister and S. Raymond, "Surveying", 7th Edition, Longman 2004.
3. Roy S.K., "Fundamentals of Surveying", 2nd Edition, Prentice Hall of India, 2004.
4. Arora K.R., "Surveying Vol I & II", Standard Book house, 10th Edition 2008

**CE6311 SURVEY PRACTICAL I****LIST OF EXPERIMENTS:**

1. Study of chains and its accessories
2. Aligning, Ranging and Chaining
3. Chain Traversing
4. Compass Traversing
5. Plane table surveying: Radiation
6. Plane table surveying: Intersection
7. Plane table surveying: Traversing
8. Plane table surveying: Resection – Three point problem
9. Plane table surveying: Resection – Two point problem
10. Study of levels and leveling staff
11. Fly leveling using Dumpy level
12. Fly leveling using tilting level
13. Check leveling
14. LS and CS
15. Contouring
16. Study of Theodolite

**CE6312 COMPUTER AIDED BUILDING DRAWING**

**LIST OF EXPERIMENTS:**

1. Principles of planning, orientation and complete joinery details (Paneled and Glazed Doors and Windows)
2. Buildings with load bearing walls
3. Buildings with sloping roof
4. R.C.C. framed structures.
5. Industrial buildings – North light roof structures
6. Building Information Modeling

**TEXT BOOKS:**

1. Sikka V. B., A Course in Civil Engineering Drawing, 4th Edition, S.K. Kataria and Sons, 1998.
2. George Omura, "Mastering in AUTOCAD 2002", BPB Publications, 2002

**REFERENCES:**

1. Shah.M.G., Kale. C.M. and Patki. S.Y., "Building Drawing with an Integrated Approach to Built Environment", Tata McGraw Hill Publishers Limited, 2004.
2. Verma.B.P., "Civil Engineering Drawing and House Planning", Khanna Publishers, 1989

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