Branch Specific Courses for Civil Engineering Department

Introduction to Surveying		L	T	P	Credit
CECE 102 S1	Scheme	3	0	2	04

- **BASIC CONCEPT OF SURVEYING** **(06 Hours)**
  Role of Civil Engineer in Surveying, Definition, Basic measurements, Scale and Mapping, Types of Maps and their uses, Map sheet numbers, Map projections, Principles of Surveying, Classification of Surveying, Division of Surveying, Control networks, Locating position and topographic detail

- **MEASUREMENT OF DISTANCE** **(06 Hours)**
  Linear Measurement, Chain and Tapes, Field work, Distance adjustment, Errors in taping, Accuracies, Optical distance measurement (ODM), Electromagnetic distance measurement (EDM)

- **MEASUREMENT OF ANGLES** **(12 Hours)**
  Angle Measurement, Bearing and Direction, Equipment viz. Compass and Theodolite, Field procedure, Measurement of Horizontal and Vertical Angles, Method of Repetition, Method of Reiteration, Theodolite Traverse, Adjustment of traverse, Gale's Traverse Table

- **VERTICAL CONTROL** **(10 Hours)**
  Definitions, Principle of leveling, Methods of leveling , About Equipment, Instrument adjustment, Different types of Leveling, Curvature and refraction, Leveling applications viz. Reciprocal leveling, Profile leveling and cross sectioning, Precise leveling, Digital leveling, Trigonometrical leveling, Contouring and Characteristics of Contours

- **PLANE TABLE SURVEY** **(04 Hours)**
  Definitions, Plane table accessories, Advantages & Disadvantages, Methods of plotting – Radiation, Intersection & Traversing.

- **LAYOUT SURVEYS** **(04 Hours)**
  Protection and referencing, Basic setting-out procedures using coordinates, Technique for setting out a direction, Use of grids, Setting out buildings, Roads etc., Controlling verticality, Controlling grading excavation

(Total Lecture Hours: 42)

PRACTICALS / DRAWING*:

1. Study of various types of maps and symbols used
2. Introduction of Various Basic Surveying Equipments
3. Introduction of Leveling Equipment
4. Exercise on Leveling (Differential Method)
5. Exercise on Profile leveling/Cross Sectioning and contouring
6. Introduction of Angle Measuring Equipment 1 – Various types of Compass
7. Introduction of Angle Measuring Equipment 2 – Vernier Theodolite
8. Introduction of Angle Measuring Equipment 3 – Digital Theodolite
9. Measurement of Horizontal angels by Repetition and Reiteration method
10. Exercise on Theodolite Traversing
11. Introduction of Area Measuring Equipment – Plannimeter (Mechanical and Digital)
12. Evaluation of Area of map with irregular boundary
13. Setting out of a building
14. Final Submission

**** Student has to prepare a journal with description of practical as well as to prepare drawing of given exercise in prescribed drawing sheet by the teacher and has to submit the same.***

BOOKS RECOMMENDED:

1. W. Schofield, “Engineering Surveying”, Butterworth-Heinemann Publication, New Delhi(2001)
2. Arora K. R., "Surveying and Levelling, Vol. I & II", Standard Publications, Delhi (2000).
3. Kanitkar T.P. & Kulkarni S.V., "Surveying and Levelling, Vol. I & II", Vidyarthi Gruh Prakashan, Pune(1995).
4. Punmia B.C., “Surveying and Levelling, Vol. II & III”, Laxmi Publications Pvt. Ltd., New Delhi(1994)
5. Basak, N. N., “Surveying and Levelling“, Tata McGraw-Hill Publishing Co. Ltd., New Delhi(1994)

Building Technology

CECE 113 S2

	L	T	P	Credit
Scheme	**3**	**0**	**2**	**04**

- **BUILDING MATERIALS** **(12 Hours)**
  Types of stones and bricks,uses and tests, building codes, I.S.specifications, manufacturing process, tiles, stone ware pipes ,Types of limes and cements, applications in building construction, Characteristics and tests.
  Mortars, mix proportions and uses, cement concrete, mixes and uses, formworks, placing, compacting and curing , reinforced concrete, reinforcement of foundations, columns, beams and slabs, formworks.
  Timber, polymers and plastics, energy saving materials, aluminum, glass, paints, surface coatings.

- **BUILDING STRUCTURAL COMPONENTS** **(12 Hours)**
  Foundations: Objectives, types, field applications, failures, precautionary measures.
  Maonary**:** Brick and stone, bonds, cavity, composite and partition walls, arches.
  Concrete: Plain, R.C.C., Prestressed, Precast concrete, slabs, beams, columns, lintels chajjas, cantilever, Formwork, ready mix concrete plant,batching,mixing,testing laying and curing, Strengths of concrete
  Timbering: Scaffolding, Shoring, Underpinning
  Flooring: Types , conventional flooring, terrazzo, mosaic tiles, IPS floor, timber and jack arch floors, tiles, rubber, PVC covering, leak proof techniques.

- **BUILDING JOINERY SYSTEMS** **(8 Hours)**
  Openings and staircases**:** Doors, windows, ventilators, nomenclature, fixtures and choices, Staircase terminology, types, structural forms, selection criteria
  Roofs**:** Types, terminology, Trusses, special roofs, coverings, ACC and GI sheets.
  Finishes: Plastering, pointing, mortar proportions, choices, white and colour washing, distempering, cement painting, varnishing and painting of woodwork and steel, weathering effects.

- **ELEMENTS OF BUILDING PLAN** **(4 Hours)**
  Basics and practice of building plan drawings, Basic AutoCad commands for building plans.

- **BUILDING AND ENVIRONMENT:** **(6 Hours)**
  Building materials, environment and carbon emission, Concept of Green buildings and rating systems LEED and GRIHA, Role of IGBC, CBRI

(Total Lecture Hours: 42)

BOOKS RECOMMENDED:

1. Arora D. S., "Geology for Engineers ", Mohindra Capital Publishers, Chandigarh.(1992)
2. Arora and Bindra , " A Textbook of Building Construction " , DhanpatRai& Sons, New Delhi. (1993)
3. Barry , " Building Constructions", Vol. I , II & III , ELBS Publications. (1989)
4. Ghosh D. N., " Materials of Construction ", Tata McGraw Hill Publication, New Delhi. (1991)
5. McCay , " Building Construction " , Vol. I , II & III , ELBS Publications. (1986)
6. Chudley, "Construction Technology – Volumes 1 and 2," 2nd Edition, Longman, UK, (1987).
7. Mehta Madan, Scarborough Walter, and Armpriest Diane, "Building Construction – Principles, Materials, and Systems" 2nd Edition, Pearson Education Inc.USA, (2008)
8. Edward Allen and Joseph Iano, "Fundamentals of Building Construction: Materials and Methods", Wiley Publication, (2008)