CE-404A	BASIC SURVEYING (OPEN ELECTIVE)	L T P C 4 - - 3

COURSE OBJECTIVES:

1. To study about the various surveying instruments.
2. To study the basics of chain survey in linear measurements.
3. To determine the relative positions of the existing features on the ground.
4. To obtain basic knowledge on Total Station.
5. To acquaint with procedures of leveling by dump level & auto level.

COURSE OUTCOMES:

After successful completion of the course, the students are able to

1. know about the various surveying instruments.
2. determine the relative positions of a point on the existing ground by conducting the survey.
3. use all basic surveying instruments.
4. operate Total Station instrument.
5. take the levels of existing ground and to determine the reduced levels.

UNIT I *Text Book - 1* **(12)**

Surveying & Measurements : Definitions, Classification, Principles of Surveying, Basic measurements in surveying, Instruments used for different measurements, Units of measurement (linear & Angular), Plan and map, Scales used for Maps and plans, Phases of survey work and Duties of a surveyor. Procedures for distance measurement - Ranging, Chaining/taping a line.

UNIT II *Text Book - 1* **(12)**

Chain Surveying : Principle of Chain surveying, Basic definitions, Well-Conditioned & Ill-Conditioned triangles, Selection of stations and survey lines, Procedure of Field Work in Chain Surveying, Off-sets, Booking the survey (Field Book), Conventional Symbols, Problems encountered in chaining, Obstacles in chain Surveying.

UNIT III *Text Book - 1* **(12)**

Compass Surveying : Angles and Bearings, Instruments used to measure angles and bearings, Designation of Bearings, Fore and Back Bearings, Calculation of Included Angles from Bearings and Bearings from Included Angles, Prismatic & Surveyor's Compass, Magnetic Dip & Declination, Local Attraction and Corrections.

UNIT IV *Text Book - 1,2* **(12)**

Theodolite Surveying : Types of Theodolites, Vernier Theodolite - Essential Parts, Basic definitions, Temporary adjustments, Field operations - Measurement of horizontal angles (Repetition & Reiteration), vertical angles.

Total Station : Introduction; components of Total Station; Types of Prisms and targets used in total station; various advantages of Total Stations.

UNIT V *Text Book - 1* **(12)**

Simple Leveling : Basic definitions, Curvature and Refraction, Different methods of leveling, Levels - Dumpy level, Tilting level, Auto level, Leveling staff, Level field book, Booking and reducing levels, Classification of direct differential leveling methods - Fly leveling, Check leveling, Profile leveling and Cross sectioning, Reciprocal leveling and Precise leveling, Sources of errors & Difficulties in leveling.

LEARNING RESOURCES:

TEXT BOOK(s):

1. Surveying Vol. I & II by Dr. K. R. Arora,11th Edition, Standard Book House,2012.
2. Surveying Vol. I & II by S K Duggal, 4th Edition, McGraw Hill Education (India) Private Limited, 2013.

REFERENCE BOOK(s):

1. Surveying Vol. I&II by B.C. Punmia, Laxmi Publications,2005.
2. Surveying and Levelling by N.N Basak, McGraw Hill Education (India) Private Limited,2014.
3. Plane Surveying by AM Chandra, 2nd Edition, New Age International (P) Ltd.,2006.

WEB RESOURCES:

1. http://nptel.iitm.ac.in/courses/105104101/
2. http://nptel.iitm.ac.in/courses/105107121/
3. http://nptel.iitm.ac.in/courses/105107122/