

**Course syllabus**  
**Department of Civil Engineering, Indian Institute of Technology Madras**

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**CE2080 - Surveying**

**Credit Distribution:** C:10 L:2 T:1 P:3 E:0 O:4 TH:0

**Course Type:** Theory

**Description:** The objective of this course is to introduce you to the fundamentals of surveying which is basic to all Civil Engineering Projects. In this course, specific emphasis will be given to plane surveying. The course will run in tandem with the Surveying Practical's.

**Course Content:** Introduction, Overview of plane surveying. Distance: Distance measurement conventions and methods; use of tape; Directions: Meridians, Azimuths and Bearings, Declination computations Levelling: Concept and terminology; differential levelling instruments; field methods, contouring. Angle Measurement; Vernier transits; theodolites, Tachometric surveying. Traverse: Using theodolite; plane table; Methods of adjustments; Areas by coordinates. Construction surveys: Introduction, Building citing, foundation layout etc. Earth work: LS & CS; Volume Calculation; prismoidal correction Introduction to geodetic surveying, Modern Surveying Techniques: Electronic Distance Measurement (EDM), Electronic theodolites (total station), Photogrammetry, Remote sensing and global positioning systems, Introduction to Geographic Information Systems (GIS).

**Text Books:** Fundamentals of Surveying by S. K. Roy. PHI Learning Private Limited, 2009.

**Reference Books**

- Arora, K. R. Surveying Vol. I & II, Vol. III Standard Book House, 2011.
- Schofield, W. and M. Breach. Engineering Surveying. Elsevier, 2007.
- Benton, A. R. and Taety, P. J. Elements of plane surveying, 'McGraw Hill', 2000.
- Bannister, A. S. Raymond and R. Baker. Surveying. Pearson Education, 2006.

**Prerequisite:** NIL