CE224 SURVEYING (3L-1T-1P:5Cr, 6Hr)

Pre-requisites - None

Introduction: Definition of surveying; classification of surveying; principles of surveying; survey stations, survey lines; phases of survey work.

Linear measurement : Methods of linear measurements; instruments of chaining; ranging; errors in chaining and their corrections; obstacle in chaining; Field book recording; chain surveying.

Traverse surveying : Principles of traverse surveying; Compass surveying – Bearing and bearing system, methods of compass surveying, Local attraction, and magnetic declination; Theodolite surveying – method of repetition and reiteration; Gale's traverse table; Plane table surveying – merits and demerits, instruments, methods.

Levelling : Principles of level surveying; booking and reducing levels; errors due to curvature and refraction; different types of levelling; contouring – Characteristics, methods and its uses.

Curves: Elements of circular curves – method of setting out; elements of compound curve and reverse curve; Transition curve – elements of transition curve, method of setting out; Vertical curves – elements of vertical curve, method of setting out.

Tacheometry: Principles of tracheometric surveying; instruments; General principles of stadia method; determination of tacheometric constants; anallactic lens; tracheometric surveying.

Modern Field Survey Systems : Introduction to EDM; Types of EDM; Introduction to Total station; total station survey; introduction to GPS; GPS Surveying.

Photogrammetry: Introduction to Photogrammetry; perspective geometry of aerial photograph; relief and tilt displacements; Stereoscopy; aerial triangulation; radial triangulation.

Remote sensing : Introduction to remote sensing–Electromagnetic Spectrum, interaction of electromagnetic radiation with the atmosphere and earth surface; remote sensing data acquisition – platforms and sensors; introduction to visual and digital image processing.

COURSE OUTCOME

1. Apply the engineering and mathematical principles for surveying methods like levelling, compass survey, contouring and curve settings etc. and their applications in Civil Engineering.
2. Identify and analyze surveyed data using the principles of surveying and to communicate in the form of reports which will help in professional development.
3. Design and conduct experiments and thereby analyse and interpret the results from observations of the instruments like autolevel, tacheometry etc.
4. Select and apply the tools and techniques for modern surveying equipment and remote sensing.

TEXT BOOKS

1. Madhu, N, Sathikumar, R and Satheesh Gobi, Advanced Surveying: Total Station, GIS and Remote Sensing, Pearson India, 2006.
2. Manoj, K. Arora and Badjatia, Geomatics Engineering, Nem Chand & Bros, 2011

REFERENCE BOOKS

1. Bhavikatti, S.S., Surveying and Levelling, Vol. I and II, I. K. International, 2010
2. Chandra, A.M., Higher Surveying, Third Edition, New Age International (P) Limited, 2002.
3. Anji Reddy, M., Remote sensing and Geographical information system, B.S. Publications, 2001.