

<b>4<sup>th</sup> Semester</b>	<b>REV4G001</b>	<b>Surveying</b>	<b>L-T-P 3-0-0</b>	<b>3 CREDITS</b>
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**Module- I (12 hrs)**

Linear measurement and chain survey: Use of chains and tapes for measurement of correct length of lines, direct and indirect ranging, chaining along sloping ground. Obstacle in chaining, errors and their elimination.

Compass surveying: Use of prismatic compass, temporary adjustment, bearing of a line, local attractions, correction of bearing.

**Module- II (10 hrs)**

Levelling: Use of dumpy level and levelling staff. Temporary and Permanent adjustment of dumpy level, Reduction of levels by height of instrument and rise and fall method. Curvature and refraction error, sensitiveness of level tube, reciprocal levelling, levelling difficulties and common errors, Automatic and Electronic or Digital levels.

**Module- III (7 hrs)**

Contouring: Contour interval and horizontal equivalent, characteristics of contours, methods of contouring- different and indirect method, contour gradient.

**Module- IV (8 hrs)**

Theodolite Survey: Use of theodolite, temporary adjustment, measuring horizontal and vertical angles, theodolite traversing.

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**Module- V (8 hrs)**

Modern Surveying Instruments – Electromagnetic Spectrum, Radar, Electronic Distance Measurement, EDM Equipment, Corrections to measurement, Digital Theodolite, Total Stations, Introduction to Remote Sensing and GIS.

**Books:**

- Surveying- Vol.I, by B.C. Punmia, Laxmi Publications
- Surveying & Levelling. Vol-I by T.P.Kanethar&S.V.Kulkarni, Pune VidyarthiGrihaPrakashan
- Surveying and Leveling by R. Subramanian, Oxford University Press
- Surveying Vol-1 by R Agor, Khanna Publishers
- A Textbook of Surveying, C. Venkatramaiah, Universities Press
- Surveying And Levelling, N.N. Basak, McGraw-Hill Education