GUJARAT TECHNOLOGICAL UNIVERSITY
PDDC - CIVIL ENGINEERING
Semester: 2

Subject Name: Advanced Surveying

Sr. No.	Course content
1.	**Tacheometric surveying**- Stadia system- Fixed and Movable hair methods- Staff held vertical and normal- instrument constant- Analytic lens- Tangential system - Direct reading tacheometer- Subtense bar
2.	**Curves**- Types of Curves- Elements of a curve -Simple curve- Different methods of setting out of a curve- Introduction to compound, reverse, transition and vertical curves
3.	**Hydrographic survey**-Shoreline and river survey- Soundings- Methods, equipment and ranges- Locating sounding- Plotting- Three point problem-
4.	**Photogrammetry**- Classification of photogrammetry, Photogrammetric Process, Acquisition of Imagery and its Support of data, Stereoscopic 3D viewing and measurement.
5.	**Modern Surveying Instruments**: Introduction, Electromagnetic spectrum, Electromagnetic distance measurement, Total station.
6.	**Astronomy:** Definitions-Celestial coordinate system, Sidereal Time, Apparent Solar Time, Mean Solar Time, Standard Time, Equation of Time.
7.	**Remote Sensing**- Introduction, Principles of energy interaction in atmosphere and earth surface features, Image interpretation techniques, visual interpretation, Digital image processing, Global Positioning system
8.	**Geographical Information System**-Definition of GIS, Key Components of GIS, Functions of GIS, Spatial data, Geospatial analysis, Integration of Remote sensing and GIS and Applications in Civil Engineering.

TERM WORK:

Term work should be based on the above topic and should include project on tachometry and curve setting practice

References Books:

1. Arora, K.R., Surveying, Volume I,II &III Standard Book House, New Delhi
2. Duggal, S.K., Surveying, Volume I and II, 2nd Edition, Tata McGraw Hill Publishing Company Ltd., New Delhi
3. Kanetkar, T.P. and Kulkarni, S.V., Surveying and Leveling, Volume –I & II, Pune Vidyarthi Griha Prakhashan, Pune
4. Punmia, B.C., Surveying, Volume-I, II & III Laxmi Publications, New Delhi
5. Bhatia, B., Remote Sensing and GIS, Oxford University Press, New Delhi.
6. Kanetkar, T.P. and Kulkarni, S.V., Surveying and Leveling, Volume –I & II, Pune Vidyarthi Griha Prakhashan, Pune
7. Lillesand, T.M. Kiefer, R.W. and Chipman, J.W., Remote sensing and Image interpretation, 5th edition, John Wiley and Sons India
8. Patel, A.N. and Singh, S., Remote Sensing Principles and Applications,Jodhpur