

GUJARAT TECHNOLOGICAL UNIVERSITY

DIPLOMA IN CIVIL ENGINEERING

Semester: 4

Subject Name: Surveying - II

PART A Theodolite

Sr. No.	Course Content	Hrs.
1.	Trigonometric Leveling 1.1 Methods to determine relative altitudes in various cases 1.2 Computation of RLs using above methods in various cases 1.3 Procedure to determine difference in elevation for various cases 1.4 Complete the elevation of a point for various cases.	02
2.	Tacheometric Survey 2.1 Principles of tacheometry 2.2 Determination of constants 2.3 Stadia and fixed hair method 2.4 Use of tangential method 2.5 Horizontal distance & RL of staff station for different positions	10
3.	Setting out of Curves 3.1 Use of curves 3.2 Types of curves- Horizontal & vertical curves 3.3 Simple circular curve- its elements 3.4 Problems on simple curve 3.5 Linear and Angular methods of setting out of simple circular curve. 3.6 Obstacles in setting out of curves and procedures to overcome these difficulties 3.7 Transition curve 3.8 Vertical curve	06

PART B Total station

Sr. No.	Course Content	Hrs.
4.	Basics of total station 4.1 Introduction 4.2 Advantages of total station 4.3 Disadvantages of total station 4.4 Measuring angles 4.5 Types of total station 4.6 Advancement in total station technologies 4.7 Automatic target recognition (ATR)	02

5.	Surveying using total station	08
	5.1 Introduction 5.2 Fundamental parameters of total station 5.2.1 Parameters for calculation 5.2.2 Correction factors and constants 5.3 Precautions to be taken while using total station 5.4 Field equipment 5.5 Setup 5.6 Setting up a back sight 5.7 Azimuth mark 5.8 Measurement with total station 5.9 Total station initial setting (General setting) 5.10 Field book recording 5.11 Radial shooting 5.12 Traverse 5.13 Survey station description (Codes) 5.14 Data retrieval 5.15 Field generated graphics 5.16 Construction layout using total station 5.17 Overview of computerized survey data system 5.18 Data gathering components 5.19 Data processing components 5.20 Data plotting 5.21 Equipment maintenance 5.22 Maintaining battery power 5.23 Total station job planning and estimating 5.24 Error sources 5.25 Total survey system error sources and how to avoid them 5.26 Controlling error	

Reference Books:

1. Advanced surveying by Satheesh Gopi
2. Surveying and levelling (Vol. I) T.P.Kanetkar & S.V.Kulkarni
3. Surveying (Vol. I) Dr. B.C.Punmia
4. Surveying and levelling Hussain & Nagrani
5. Surveying C.L.Kochher
6. Plane and Geodetic survey (Vol. I) David Clark
7. Higher Surveying by DR. A.M.Chandra