



C.U.SHAH UNIVERSITY – Wadhwan City

FACULTY OF: - Technology and Engineering (Diploma Engineering)

DEPARTMENT OF: - Civil Engineering

SEMESTER: - IV **CODE:** - 2TE04SUR1

NAME – Surveying-II

Teaching & Evaluation Scheme:-

Subject Code	Subject Name	Teaching Scheme (Hours)				Credits	Evaluation Scheme							
		Th	Tu	Pr	To		Theory				Practical (Marks)			Total
							Sessional Exam		University Exam		Internal		University	
							Marks	Hours	Marks	Hours	Pr	TW	Pr	
2TE04SUR1	Surveying-II	04	00	02	06	05	30	1.5	70	03	30	20	---	150

Objectives: To understand advanced concepts of surveying by using basic instruments to study modern trends in surveying.

Pre-requisite: Basic knowledge of mathematics, science and Surveying-I to understand the measurements techniques.

Course Outlines:-

Sr. No.	Course Contents	Teaching Hours
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.	8
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.	12

	3.6 Obstacles in setting out of curves and procedures to overcome these difficulties 3.7 Transition curve 3.8 Vertical curve	
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)	14
5	Surveying using total station 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	16

Learning outcomes:

Gain the ability to use modern survey equipments to measure angle, distance and prepare maps for engineering works.

Books Recommended:-

1. Surveying and Leveling by N.N.Basak, Publisher: Tata McGraw Hill 25 th Edition 2008.
2. Surveying and Leveling Vol. I, II by B. C. Punmia, Publisher: Laxmi Publication, 16th edition, 2005.
3. Plane and Geodetic survey (Vol. I) David Clark
4. Higher Surveying by DR. A. M. Chandra