

GANPAT UNIVERSITY									
FACULTY OF ENGINEERING & TECHNOLOGY									
Programme	Diploma Engineering				Branch	CIVIL ENGINEERING			
Semester	III				Version	1.0.0.0			
Effective from Academic Year	2019-20				Effective for the batch Admitted in	June 2019			
Subject code	1CI 2302		Subject Name		SURVEYING				
Teaching scheme					Examination scheme (Marks)				
(Per week)	Lecture(DT)		Practical(Lab.)		Total	CE	SEE	Total	
	L	TU	P	TW					
Credit	3	0	2	0	5	Theory	40	60	100
Hours	3	0	4	0	7	Practical	30	20	50

Pre-requisites:
The students should also know the fundamentals of mathematics (1BS121),(1BS221).

Course Learning Outcomes:
The course content should be taught and implemented with an aim to develop different skills leading to the achievement of the following competencies and course learning outcomes: CO1. Understand various methods of surveying. CO2. Apply her knowledge to read the various types of maps and scales. CO3. Estimate distance, angle and height through different instruments. CO4. Adopt appropriate survey method for field problems. CO5. At the closing stage of the course, Students will able to acquire various competencies in carrying out civil engineering survey and prepare drawings and maps.

Course Content				
Name of UNIT	Unit Content	Unit Learning Outcomes	Marks	Hrs
UNIT – 1 INTRODUCTION	1.1 Definition of surveying 1.2 Objective and use of surveying 1.3 Plain and Geodetic survey 1.4 Classification of survey 1.5 Principles of survey 1.6 Different types of scales and selection of scale 1.7 Construction of a diagonal scale	1a. Learn the basic of surveying 1b. Apply various types of scale as per needs.	06	04
UNIT – 2 CHAIN AND TAPE SURVEY	2.1 Introduction 2.2 Instrument used in chain and tape survey (Metric chain, Tapes, Arrow, Peg, Ranging rod, Open cross staff, Optical square) 2.3 Technical terms related with chain and tape survey (Survey station, Base line, Check line, Tie line, Offset) 2.4 Different methods of chaining 2.5 Errors in length due to incorrect length and related problem 2.6 Ranging- Direct Ranging & Indirect Ranging.	2a. Describe procedure for linear measurements. 2b. Prepare drawing as per recorded measurements in the field book.	08	06

	<p>2.7 Perpendicular and Oblique offset</p> <p>2.8 Location sketch of survey station and running measurements of building</p> <p>2.9 Conventional signs used in surveying work</p> <p>2.10 Recording of measurements in a field book</p>			
<p>UNIT – 3 COMPASS SURVEY</p>	<p>3.1 Introduction of Traversing</p> <p>3.2 Components of Prismatic Compass</p> <p>3.3 Functions of different parts of prismatic compass</p> <p>3.4 Differentiate between Prismatic and Surveyor compass</p> <p>3.5 Types of meridians and bearings</p> <p>3.6 Technical terms</p> <ul style="list-style-type: none"> - Dip of Magnetic needle - Declination - Fore Bearing & Back Bearing <p>3.7 Whole circle Bearing system and Reduced Bearing system & its examples</p> <p>3.8 Conversion of bearing from one system to another.</p> <p>3.9 Method of finding included angles from bearings & its examples</p> <p>3.10 Local attraction and Closing error with relevant example</p> <p>3.11 Errors in compass survey and elimination of errors.</p>	<p>3a. Describe procedure for angular measurements.</p> <p>3b. Record bearing accurately</p> <p>3c. Prepare drawing as per recorded and corrected measurements of bearings with chain and compass survey</p>	15	09
<p>UNIT – 4 LEVELLING AND CONTOURING</p>	<p>4.1 Definitions</p> <p>4.2 Basic terminology related with levelling</p> <p>4.3 Types of level</p> <p>4.4 Types of levelling staff</p> <p>4.5 Temporary adjustment of level</p> <p>4.6 Methods of levelling</p> <p>4.7 Methods of finding out the R.L. in levelling book by H.I. method & Rise and Fall method</p> <p>4.8 Correction for Curvature and Refraction</p> <p>4.9 Errors in levelling and its Elimination</p> <p>4.10 Contour</p> <p>4.11 Uses of contours</p> <p>4.12 Characteristics of contours</p> <p>4.13 Methods of Contouring</p> <p>4.14 Preparing drawing & estimation of gradients.</p>	<p>4a. Learn different methods and their procedure for levelling.</p> <p>4b. Demonstrate procedure for using the instruments and levelling staff and entering level in proper table</p> <p>4c. Carryout corrections for errors in levelling records if any</p> <p>4d. Prepare contour maps by calculating Reduce level as per data book.</p>	20	16

UNIT – 5 PLANE TABLE SURVEYING	5.1 Definitions	5a. Demonstrate procedure for plain table survey 5b. Prepare drawing as per field conditions and requirements. 5c. Find the areas from prepared drawings.	06	06
	5.2 Plane table accessories			
	5.3 Advantages & Disadvantages			
	5.4 Setting up plane table over the station			
	5.5 Methods of plotting - Radiation, Intersection & Traversing			
	5.6 Errors in plane table surveying.			
UNIT – 6 INTRODUCTION TO GLOBAL POSITIONING SYSTEM	6.1 Introduction to GPS	6a. Appreciate the applications of GPS in civil engineering	05	04
	6.2 Applications in civil engineering			
	6.3 Fundamental of GPS			
	6.4 GPS Receivers			
	6.5 Field procedures of GPS			
	6.6 Maps and types of digital map.			
		Total	60	45

List of Practical		
No.	Unit	Name of Practical
1	2 and 3	Performing ranging and chaining survey where different types of obstruction are present, take offset in different field condition.
2		Perform temporary adjustment of prismatic compass and determine bearing of different survey line and also find included angles from measured bearings.
3		Mini project: survey of given area using chain, tape and compass and prepare a drawing sheet (minimum 4 stations)
4	4	Perform temporary adjustment of level and record the level reading data in level book. Determine reduce level using both methods.
5		Project in Profile Levelling : Carry out the levelling survey on an undulated ground and prepare the drawing sheet (minimum area under survey 80m X 60 m)
6	5	Prepare a map of given area using plane table.
7	6	Demonstrate use of Global Positioning System (GPS).

List of Instruments / Equipment / Trainer Board	
1	Metric chain, Tape, Peg, Arrow, Open Cross staff, Optical Square
2	Prismatic Compass, Surveyor's Compass, Dumpy level, Tilting level
3	Auto level, Levelling staff, Plane table and its accessories, GPS and other miscellaneous instruments

List of Reference Books			
No	Title of Reference Books	Authors	Publication
1	Surveying Vol. I	B. C. Punmia, A. K. Jain, Arun K. Jain	Laxmi Publications
2	Surveying & Levelling	N. N. Basak	Mc Graw Hill Education
3	Surveying & Levelling	S. C. Rangwala	Charotar Publication

Link of Learning Web Resource	
1	https://nptel.ac.in
2	www.drawingnow.com
3	www.learn-to-draw.com

PO & CO Mapping

Sr.No.	Name of PO	Description	Co1	Co2	Co3	Co4	Co5
1	PO 1	Acquire fundamental knowledge of mathematics, science, and civil engineering.	Slight	Slight	Moderate	Slight	Slight
2	PO 2	Design and conduct experiments, as well as analyze and interpret data.	None	None	Slight	None	Slight
3	PO 3	Use the techniques, skills, and modern engineering tools necessary for engineering practice	Slight	Slight	Moderate	Slight	Slight
4	PO 4	Function in multi-disciplinary teams and identify, formulate, and solve engineering problems.	None	None	Slight	None	Moderate
5	PO 5	Clear understanding of his duties and responsibilities as a civil engineer.	None	Moderate	None	None	Slight
6	PO 6	Develop effective communication skill and provide leadership for professional development.	None	None	None	None	None
7	PO 7	Engage in life-long learning in civil engineering field and comprehend issues related to environment and sustainable development.	Slight	None	None	None	None
8	PO 8	Graduate will demonstrate knowledge of professional and ethical responsibilities.	Slight	None	None	None	None
9	PO 9	Incorporate economics and business practice including project and risk management.	None	None	None	None	None
10	PO 10	Graduated are able to share their knowledge to the industries as well as society.	Moderate	Slight	None	Slight	Slight
11	PO 11	Graduated will be able to apply their skill and knowledge for the sustainable development of nation.	Moderate	Slight	Slight	Slight	None
12	PO 12	Graduated are able to learn to work with with the team and also with the inter discipliners.	Slight	None	None	None	None