GUJARAT TECHNOLOGICAL UNIVERSITY
Diploma in Architectural Assistantship
Semester: II

Subject Name: **Surveying**
Subject Code: **320026**

Teaching Scheme				Evaluation Scheme		
Theory	**Tutorial**	**Practical**	**Total**	**University Exam (Theory) (E)**	**Mid Sem Exam (Theory) (M)**	**Internal Assessment (I)**
3	0	4	7	70	30	50

Rationale:

In the field of Architecture, land survey which includes area measurement & leveling of ground is very important for it helps one prepare a detailed site plan. This course helps the students understand the various surveying methods with the helps of different devices.

Topic No.	Name of Topic	No. of Hours		
		Lect.	**Pract.**	**Total**
1.	Introduction	01	__	01
2.	Scale	03	__	03
3.	Chain and tape survey.	08	08	16
4.	Compass survey.	08	08	16
5.	Plane table survey.	04	08	12
6.	Computation of area.	04	__	04
7.	Levelling and contouring	14	32	46
	Total	42	56	98

T.R.S & EO's

1.1 Manipulate survey instruments with proper care

EO's

1.1 Appreciate the importance of taking precautions to be taken while using various survey instruments.

NOTE:

This skill will be developed simultaneously while using different types of survey instruments(including modern instruments) during demonstrations and survey based exercises)

T.R.S.

2.1 Use equipment for measuring length and bearings

EO's

2.1 Select the appropriate equipment for the given job
2.2 Follow the standard procedure measurement and record
2.3 Compute to get the relevant results

T.R.S

3.1 Prepare map for a given area/site using prismatic compass (Traverse survey)

EO's

3.1 Establish station points for traverse survey on the given site.
3.2 Follow standard procedure for and carryout the survey work.
3.3 Prepare sketch & record data of survey in field book (F.B.)
3.4 Compute all the included angles of the traverse correctly.
3.5 Apply necessary corrections to the traverse, if required.
3.6 Prepare map/drawings from the survey data using scale, symbols, and abbreviations as per IS. 962

T.R.S.

4.1 Prepare contour map using levelling instruments

EO's

4.1 Prepare "grid" on the given ground for survey
4.2 Carryout survey work using suitable method.
4.3 Record survey data properly in the field book and level book
4.4 Compute R.L's and apply arithmetic check
4.5 Select suitable scale as per IS for plotting contour map.
4.6 Plot contour map using survey data T.R.S
4.7 Interpret contour map for different purposes
4.8 Read given contour map (or Topo sheet) of an area having different topography.
4.9 Interpret given contour map for the purpose of use properly planning and designing
4.10 Plane table for marking of boundaries and mapping the given area
4.11 Establish suitable traverse on a given site
4.12 Carry out plane table survey work as per suitable/proper method.
4.13 Compute the necessary result and prepare map/drawing

T.R.S

5.1 Compute area of regular and irregular shape of plot of land using formulae and equipment

EO's

5.1 Compute area of plot/figure of geometrical shapes using formulae.
5.2 Divide large area, into small geometrical shapes and computer total area.
5.3 Use plan meter for computing area of irregular shape.

Sr. No.	Course Content:
1.	**Topic-1 INTRODUCTION:** 1.1 Definition Of Survey 1.2 Object Of Survey 1.3 Principle Of Survey 1.4 To Work From Whole To Part. 1.5 To Fix The Position Of New Station By At Least Two Known Conditions.
2.	**Topic-2 SCALE:** 2.1 Importance of Scale 2.2 Types of scale 2.1.1 Plain scale 2.1.2 Diagonal scale 2.1.3 Vernier scale 2.3 Degree of Accuracy in scale 2.4 Construction of scale 2.5 Requirement of good scale
3.	**Topic-3 CHAIN AND TAPE SURVEY:** 3.1 State the various types of chains and scale. 3.2 Sketch the details of chain. 3.3 Testing and Adjustment of chain. 3.4 Measurement of distance with uses of chain. 3.5 Explain the term ranging: 3.5.1 Direct ranging 3.5.2 Indirect or Reciprocal ranging 3.6 Accessories required for measuring distance with the help of chain. 3.6.1 Pegs, Flags, Arrows, Hammer, Optical Square. 3.7 Errors & Correction in chaining 3.8 Testing of chain 3.9 Selection of survey stations 3.10 Define Term : (1) Location sketch or Reference sketch

	(2) Index Map 3.11 Explain the Term. 3.11.1 Base Line 3.11.2 Tie Line 3.11.3 Check Line 3.11.4 Range Line 3.11.5 Perpendicular Offset 3.11.6 Oblique offset 3.12 Sketches for conventional symbols used to plot the survey work 3.13 Recording the field book 3.14 Take running measurement of a building
4.	**Topic-4 COMPASS SURVEY:** 4.1 Types of Compass 4.1.1 Working parts of prismatic and surveyor compass 4.2 Measurements of angles 4.3 Methods of using prismatic compass 4.3.1 Centering 4.3.2 Levelling 4.3.3 Observing 4.4 Closed Traverses and Open Traverses 4.5 Observing the bearing 4.5.1 Fore Bearing 4.5.2 Back Bearing 4.6 Explain the Term 4.6.1 Magnetic Meridian 4.6.2 True Meridian 4.6.3 Arbitrary Meridian 4.7 Calculation of Angles from Bearing 4.7.1 W.C.B. of Two lines 4.7.2 R.B. of Two lines 4.8 Explain the Term "Local Attraction". 4.9 Define declination of magnetic needle
5.	**Topic-5 PLANE TABLE SURVEY:** 5.1 Meaning of Term Plane Table 5.2 Accessories required for plane table survey 5.3 Advantages and dis-advantages of plane table survey 5.4 State the situation under which plane table survey is more suitable 5.5 Situation under which plane table survey is not suitable 5.6 Procedure for carrying out plane table survey 5.7 Explain the meaning of Term "Orientation of Plane Table" and its method. 5.8 Describe the various methods used for plane table survey.

6.	**Topic-6 COMPUTATION OF AREA:** 6.1 Determination of Area: 6.1.1 By the direct uses of field notes 6.1.1.1 Area of skeleton 6.1.1.2 Area Along Boundary 6.2 From previously plotted plan 6.2.1 Graphical method 6.2.2 Instrumental method 6.3 Calculation of Area by: 6.3.1 Mid-ordinate 6.3.2 Average Ordinate 6.3.3 Trapezoidal Rule 6.3.4 Simpson's Rule 6.4 Comparison of Rules 6.5 Uses of Plannimeter 6.6 Parts of Plannimeter 6.7 Calculation of Area by Plannimeter of Irregular shapes
7.	**Topic-7 LEVELLING AND CONTOURING:** 7.1 Define the term levelling 7.2 Different parts of dumpy/Tilting level 7.3 Technical Terms pertaining to levelling 7.3.1 Level Surface 7.3.2 Plumb-line 7.3.3 Horizontal line 7.3.4 Line of collimation 7.3.5 Bubble line 7.3.6 Back sight 7.3.7 Inter sight 7.3.8 Fore sight 7.3.9 Bench mark 7.3.10 Change point 7.3.11 Reduced level 7.3.12 Height of Collimation 7.3.13 Datum surface 7.3.14 Mean Sea level 7.4 Sketch the levelling staff 7.5 Explain Bench Mark: 7.5.1 G.T.S. B.M. 7.5.2 Permanent B.M. 7.5.3 Temporary B.M. 7.5.4 Arbitrary B.M.

	7.6 Adjustment of level 7.7 Reading the levelling staff 7.8 Rule out the Typical page of level book 7.9 Calculations of Reduced level 7.9.1 Line of collimation method 7.9.2 Rise and Fall method 7.10 Explain "Contour" 7.11 Reading the contour map 7.13 Uses of Contour.

Practical Work:

Practical work shall be based on sub-topics.

Term Work:

(1) Imperial size drawing on:

A. Chain and compass Survey
B. Levelling and Contouring (Traverse survey)
C. Plane Table Survey. Support Faculty :