

NIRMA UNIVERSITY

Institute of Architecture and Planning

Bachelor of Architecture

Semester-I

L	W	S	C
2	-	-	2

Course Code	2AR177
Course Title	Surveying and Leveling

Course Learning Outcomes (CLO):

At the end of the course, students will be able to -

- Interpret the concept, instruments and methods of surveying and leveling
- Make use of concepts and methods of surveying and leveling
- Appraise the relevance of surveying and leveling with Architectural field

Syllabus: 15 weeks (2 hours/week)

Total Teaching hours: 30 Hrs

Unit No.	Syllabus: Topic	Studio / Sub Topic	Teaching hours:
1	Introduction of surveying	<ul style="list-style-type: none">• Surveying and Architecture• Introduction to surveying: Definition, object, uses, classification of survey,• Formulae used in measurement of land with geometrical and abstract configurations to work out Areas, volumes and other quantities.• Principles of surveying, scales and types of scale, Accuracy & Errors	2 hours
2	Linear Measurements	<ul style="list-style-type: none">• Measurement of distance with chain, tape, EDM, GPS etc., measurement on slopping ground, obstacles, Errors in measurements• Selection of survey station.• Chain line, Offset, oblique offset, tie	4 hours

w.e.f. academic year 2020-21 and onwards

		<p>line, check lines, ranging.</p> <ul style="list-style-type: none"> • Field book plotting. 	
3	Measurements of Angles	<ul style="list-style-type: none"> • Various parts of Compass, Types, • Errors affecting angular measurements • Types of traverse, Orientation of traverse surveys • Theodolite Traversing: Types of Theodolites, Definitions, temporary adjustment of theodolite 	4 hours
4	Leveling	<ul style="list-style-type: none"> • Definitions, Types of levels, methods of leveling • Various parts of dumpy level. • Leveling staff, technical terms used in leveling. • Contouring: Definition, Characteristics of contour, plotting using radial line & square grids 	6 hours
5	Plane table surveying	<ul style="list-style-type: none"> • Introduction. • Equipment required. • Working with plain table. • Errors in plane table. • Advantage and disadvantage. 	4 hours
6	Curve Setting	<ul style="list-style-type: none"> • Introduction. • Types of Curves • Elements of Curves • Methods of Curve Setting 	4 hours
7	Construction surveying	<ul style="list-style-type: none"> • Introduction. • Equipment for setting out. • Horizontal and vertical control. • Setting out a building and structure (complete layout). 	2 hours
8	Advanced Surveying	<ul style="list-style-type: none"> • EDM • Total Station • GPS • Other Advanced Methods 	4 hours

L= Lecture, W= Workshop, S= Studio, C= Credit

w.e.f. academic year 2020-21 and onwards

Suggested Readings:

1. Chandra A.M.(2006). Plane Surveying (2nd ed.). New Delhi, India: New Age International Publishers
2. Ghosh J.K.. (2010). Elementary Engineering Surveying. New Delhi, India: Stadium Press (India) Pvt.Ltd.
3. Punamia B.C. (2016). Surveying Volume 1 (17th ed.). Bengaluru, India: Laxmi Publications(P) Ltd.
4. Gopi Satheesh., Sathi Kumar R., Madhu, N. (2018). Advanced Surveying (2nd ed.). Noida, India. Pearson
5. Rangwala (2018). Surveying and Leveling. Anand, India: Charotar