SPINTRONIC TECHNOLOGY AND ADVANCE RESEARCH

LESSON PLAN

Name of the Faculty: Mrs. Suvashree Mohanty	
Branch: Civil Engineering (Diploma)	Semester: 5th Semester
Subject: SURVEYING (CEPC–301)	Theory / Sessional: Theory

Academic Session:	Subject Code:	Total Periods:	Subject Name:
2026–27	CEPC–301	45	Surveying

Sl. No.	Module	Lecture Topics	Period(s)	Cumulative Period(s)	Remark
1	Module–I: Overview and Classification of Survey	Definition, Purpose and Uses of Surveying	1	1	
2		Types and Classification of Surveying	1	2	
3		Principles of Surveying	1	3	
4		Plane, Geodetic, Cadastral, Hydrographic, Photogrammetry and Aerial Survey	1	4	
5		Scales – Engineer's Scale, RF and Diagonal Scale	1	5	
6		Assignment + Doubt Clearing + Surprise Test (Module–I)	1	6	
7	Module–II: Chain Surveying	Instruments used in Chain Survey	1	7	
8		Survey Station, Base Line, Check Line, Tie Line, Offset and Tie Station	1	8	
9		Direct and Indirect Ranging	1	9	
10		Methods of Chaining and Obstacles in Chaining	1	10	
11		Errors in Length Measurement	1	11	
12		Types of Offsets – Perpendicular and Oblique	1	12	
13		Conventional Signs and Recording in Field Book	1	13	
14		Assignment + Doubt Clearing + Surprise Test (Module–II)	1	14	
15	Module–III: Compass Traverse Survey	Compass Traversing – Open and Closed Traverse	1	15	
16		True Meridian, Magnetic Meridian and Bearings	1	16	
17		WCB and RB System	1	17	
18		Conversion of Bearings, Fore Bearing and Back Bearing	1	18	
19		Internal & External Angles, Dip of Magnetic Needle and Declination	1	19	
20		Types and Components of Compass	1	20	
21		Temporary Adjustments and Observation of Bearings	1	21	
22		Local Attraction and Correction of Bearings	1	22	
23		Plotting of Traverse and Closing Error	1	23	
24		Assignment + Doubt Clearing + Surprise Test (Module–III)	1	24	
25	Module–IV: Levelling and Contouring	Basic Terminologies in Levelling	1	25	
26		Types of Levels and Components of Dumpy Level	1	26	
27		Temporary Adjustments of Level	1	27	
28		Types of Levelling Staff	1	28	
29		Reduction of Levels by Height of Instrument Method	1	29	
30		Reduction of Levels by Rise and Fall Method	1	30	
31		Types of Levelling – Simple, Differential, Fly, Profile and Reciprocal	1	31	
32		Contours, Contour Interval and Horizontal Equivalent	1	32	
33		Characteristics, Uses and Methods of Contouring	1	33	
34		Digital Planimeter and Area Measurement	1	34	
35		Measurement of Volume of Reservoir from Contour Map	1	35	
36		Assignment + Doubt Clearing + Surprise Test (Module–IV)	1	36	
37	Module–V: Theodolite Surveying	Types, Uses and Components of Theodolite	1	37	
38		Technical Terms, Fundamental Axes and Temporary Adjustments	1	38	
39		Measurement of Horizontal Angle	1	39	
40		Measurement of Magnetic Bearing and Vertical Angle	1	40	
41		Theodolite Traversing and Traverse Checks	1	41	
42		Traverse Computation and Balancing by Bowditch's and Transit Rule	1	42	
43	Module–VI: Tacheometric Surveying and Curve Setting	Principles of Tacheometry, Distance Measurement and Curve Setting	1	43	
44	Module–VII: Advanced Surveying Equipment, GPS and GIS	EDM, Electronic Theodolite, Total Station, GPS, GIS and Drone Surveying	1	44	
45		Revision, Numerical Practice and End Semester Preparation	1	45	

REFERENCES

1. Kanetkar, T. P. & Kulkarni, S. V., *Surveying and Levelling Part–I & Part–II*, Pune Vidyarthi Griha Prakashan, Pune.
2. Basak, N. N., *Surveying and Levelling*, McGraw Hill Education (India) Pvt. Ltd., Noida.
3. Duggal, S. K., *Surveying Vol–I & Vol–II*, Tata McGraw Hill Education Pvt. Ltd., Noida.
4. Punmia, B. C., Jain Ashok Kumar & Jain Arun Kumar, *Surveying Vol–I & Vol–II*, Laxmi Publications Pvt. Ltd., New Delhi.
5. Subramaiam, H. C., *Surveying and Levelling*, Oxford University Press, New Delhi.