

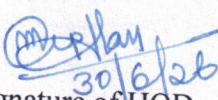
Lesson Plan

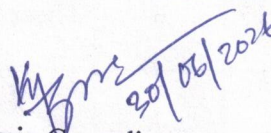
Course - Surveying (Th-1)
Semester- 5th
Program- Civil Engineering
Institute - Govt. Polytechnic, Sonpur
Session - 2026-2027
Total Load-45(3 /week)

Sl. No.	Week No.	Class No.	Topic to be Covered
1	1	Class 1	Unit I: Survey – Purpose, Uses and Importance
2	1	Class 2	Types of Surveying – Primary, Secondary, Plane, Geodetic, Cadastral, Hydrographic, Photogrammetry and Aerial Survey
3	1	Class 3	Principles of Surveying, Engineer's Scale, Representative Fraction (RF) and Diagonal Scale
4	2	Class 1	Unit II: Instruments used in Chain Survey – Chain, Tapes, Arrows, Ranging Rod, Line Ranger
5	2	Class 2	Offset Rod, Open Cross Staff, Optical Square, Chain Survey Terms – Station, Base Line, Check Line, Tie Line
6	2	Class 3	Offset, Tie Station, Direct and Indirect Ranging
7	3	Class 1	Methods of Chaining and Obstacles in Chaining
8	3	Class 2	Errors in Length – Instrumental, Personal, Natural and Random Errors
9	3	Class 3	Types of Offsets, Conventional Signs and Recording in Field Book
10	4	Class 1	Unit III: Compass Traversing – Open and Closed Traverse
11	4	Class 2	True & Magnetic Meridian, Bearings, WCB & RB Systems, Bearing Conversion
12	4	Class 3	Fore Bearing, Back Bearing, Internal & External Angles, Dip and Magnetic Declination
13	5	Class 1	Types of Compass – Prismatic and Surveyor Compass
14	5	Class 2	Components, Temporary Adjustments and Observing Bearings
15	5	Class 3	Local Attraction, Correction of Bearings, Traverse Plotting and Closing Error
16	6	Class 1	Unit IV: Basic Terminologies in Levelling – Datum, Bench Marks, RL, BS, FS, IS, CP, HI
17	6	Class 2	Types of Levels – Dumpy, Tilting, Auto and Digital Level, Components and Temporary Adjustments
18	6	Class 3	Types of Levelling Staff and Reduction of Levels by HI and Rise & Fall Methods
19	7	Class 1	Simple, Differential, Fly, Profile and Reciprocal Levelling
20	7	Class 2	Contours – Contour Interval, Horizontal Equivalent, Characteristics and Uses
21	7	Class 3	Methods of Contouring – Direct and Indirect
22	8	Class 1	Measurement of Area using Digital Planimeter
23	8	Class 2	Measurement of Reservoir Volume from Contour Maps

24	8	Class 3	Revision and Numerical Problems on Levelling and Contouring
25	9	Class 1	Unit V: Types, Uses and Components of Transit Theodolite
26	9	Class 2	Vernier Reading, Swinging, Transiting, Face Left and Face Right
27	9	Class 3	Fundamental Axes and Temporary Adjustments of Theodolite
28	10	Class 1	Measurement of Horizontal Angle – Direct and Repetition Methods
29	10	Class 2	Magnetic Bearing, Prolonging and Ranging of Line, Deflection Angle
30	10	Class 3	Vertical Angle Measurement, Included Angle and Deflection Angle Traverse
31	11	Class 1	Checks for Open and Closed Traverse, Bearing Calculations
32	11	Class 2	Traverse Computation – Latitude, Departure, Consecutive & Independent Coordinates
33	11	Class 3	Bowditch Rule, Transit Rule, Gale's Traverse Table and Numerical Problems
34	12	Class 1	Unit VI: Principles of Tacheometry, Anallatic Lens
35	12	Class 2	Tacheometric Formula, Determination of Constants, Horizontal & Vertical Distance
36	12	Class 3	Limitations of Tacheometry, Types and Designation of Curves
37	13	Class 1	Setting Simple Circular Curve by Offsets from Long Chord
38	13	Class 2	Rankine's Method of Deflection Angles
39	13	Class 3	Numerical Problems and Revision of Tacheometry and Curve Setting
40	14	Class 1	Unit VII: EDM – Principle, Components and Applications
41	14	Class 2	Micro-Optic Theodolite, Electronic Digital Theodolite, Total Station and Function Keys
42	14	Class 3	Horizontal Angle, Vertical Angle, Distance, Coordinates, Traversing, Profile Survey and Contouring using Total Station
43	15	Class 1	Unit VIII: Remote Sensing – Overview, System and Applications in Civil Engineering
44	15	Class 2	GPS, DGPS, GIS – Components, Applications and GIS Software
45	15	Class 3	Introduction to Drone Surveying and Overall Course Revision

Signature of Faculty
Civil Engg, GP Sonpur


Signature of HOD
Civil Engg, GP Sonpur


Academic Co-ordinator
Civil Engg, GP Sonpur