Govt. Polytechnic
Dept.of Civil
Kandhamal

LESSON PLAN : TH-1. LAND SURVEY– II,SESSION -2025-2026 (SUMMER 2026)BATCH-2023-2026 (6th Semester)		
Discipline: civil engineering	Semester: 6TH	Name of the Teaching Faculty: Ashish Nayak(Lect. Stage-II in Civil Engg.)
Subject: TH.1-LAND SURVEY– II	No. of days/ per week class allotted: 5	Semester From Date : 22-12-2025 to Date: 18-04-2026 No. of Weeks: 15
Week	Class Day	Theory/ Practical Topics
		1 TACHEOMETRY:
		(Only concepts; applications without derivation)
1ST	1	1.1 Principles, stadia constants determination
	2	1.1 Principles, stadia constants determination
	3	1.2 Stadia tacheometry with staff held vertical and with line of collimation horizontal or inclined, numerical problems
	4	1.2 Stadia tacheometry with staff held vertical and with line of collimation horizontal or inclined, numerical problems
	5	1.2 Stadia tacheometry with staff held vertical and with line of collimation horizontal or inclined, numerical problems
2ND	1	1.2 Stadia tacheometry with staff held vertical and with line of collimation horizontal or inclined, numerical problems
	2	1.2 Stadia tacheometry with staff held vertical and with line of collimation horizontal or inclined, numerical problems
	3	1.3 Elevations and distances of staff stations – numerical problems
	4	1.3 Elevations and distances of staff stations – numerical problems
		2 CURVES :
	5	2.1 compound, reverse and transition curve, Purpose & use of different types of curves in field
3RD	1	2.1 compound, reverse and transition curve, Purpose & use of different types of curves in field
	2	2.2 Elements of circular curves, numerical problems
	3	2.3 Preparation of curve table for setting out
	4	2.4 Setting out of circular curve by chain and tape and by instrument angular methods (i) offsets from long chord, (ii) successive bisection of arc, (iii) offsets from tangents, (iv) offsets from chord produced, (v) Rankine's method of tangent angles (No derivation)
	5	2.4 Setting out of circular curve by chain and tape and by instrument angular methods (i) offsets from long chord, (ii) successive bisection of arc, (iii) offsets from tangents, (iv) offsets from chord produced, (v) Rankine's method of tangent angles (No derivation)
4TH	1	2.4 Setting out of circular curve by chain and tape and by instrument angular methods (i) offsets from long chord, (ii) successive bisection of arc, (iii) offsets from tangents, (iv) offsets from chord produced, (v) Rankine's method of tangent angles (No derivation)
	2	2.5 Obstacles in curve ranging – point of intersection inaccessible
		3 BASICS ON SCALE AND BASICS OF MAP:
	3	3.1 Fractional or Ratio Scale, Linear Scale, Graphical Scale
	4	3.2 What is Map, Map Scale and Map Projections
	5	3.3 How Maps Convey Location and Extent
5TH	1	3.4 How Maps Convey characteristics of features
	2	3.5 How Maps Convey Spatial Relationship 3.5.1 Classification of Maps
	3	3.5.1 Physical Map 3.5.2 Topographic Map

	4	3.5.3 Road Map 3.5.4 Political Map
	5	3.5.5 Economic & Resources Map 3.5.6 Thematic Map 3.5.7 Climate Map
		4 SURVEY OF INDIA MAP SERIES:
6TH	1	4.1 Open Series map
	2	4.2 Defense Series Map
	3	4.3 Map Nomenclature
	4	4.3.1 Quadrangle Name
	5	4.3.2 Latitude, Longitude, UTM's
7TH	1	4.3.2 Latitude, Longitude, UTM's
	2	4.3.4 Contour Lines
	3	4.3.5 Magnetic Declination
	4	4.3.6 Public Land Survey System
	5	4.3.7 Field Notes
		5 BASICS OF AERIAL PHOTOGRAPHY, PHOTOGRAMMETRY, DEM AND ORTHO IMAGE GENERATION:
		5.1 Aerial Photography:
8TH	1	5.1.1 Film, Focal Length, Scale 5.1.2 Types of Aerial Photographs (Oblique, Straight)
		5.2 Photogrammetry:
	2	5.2.1 Classification of Photogrammetry
	3	5.2.2 Aerial Photogrammetry 5.2.3 Terrestrial Photogrammetry
		5.3 Photogrammetry Process:
	4	5.3.1 Acquisition of Imagery using aerial and satellite platform
	5	5.3.2 Control Survey
	1	5.3.3 Geometric Distortion in Imagery
9TH	2	Application of Imagery and its support data, Orientation and Triangulation
	3	Stereoscopic Measurement, 19.9.1 X-parallax, 19.2.2 Y-parallax
	4	5.4 DTM/DEM Generation
	5	5.5 Ortho Image Generation
		6 MODERN SURVEYING METHODS :
10TH	1	6.1 Principles, features and use of (i) Micro-optic theodolite, digital theodolite
	2	6.1 Principles, features and use of (i) Micro-optic theodolite, digital theodolite
	3	6.1 Principles, features and use of (i) Micro-optic theodolite, digital theodolite
	4	6.2 Working principles of a Total Station (Set up and use of total station to measure angles, distances of points under survey from total station and the co-ordinates (X,Y & Z or northing, easting, and elevation) of surveyed points relative to Total Station position using trigonometry and triangulation.
	5	6.2 Working principles of a Total Station (Set up and use of total station to measure angles, distances of points under survey from total station and the co-ordinates (X,Y & Z or northing, easting, and elevation) of surveyed points relative to Total Station position using trigonometry and triangulation.
11TH	1	6.2 Working principles of a Total Station (Set up and use of total station to measure angles, distances of points under survey from total station and the co-ordinates (X,Y & Z or northing, easting, and elevation) of surveyed points relative to Total Station position using trigonometry and triangulation.
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		7 BASICS ON GPS & DGPS AND ETS:
		7.1 GPS: - Global Positioning
12TH	1	7.1.1 Working Principle of GPS,GPS Signals,
	2	7.1.2 Errors of GPS,Positioning Methods
		7.2 DGPS: - Differential Global Positioning System
	3	7.2.1 Base Station Setup 7.2.2 Rover GPS Set up
	4	7.2.3 Download, Post-Process and Export GPS data 7.2.4 Sequence to download GPS data from flashcards
	5	7.2.5 Sequence to Post-Process GPS data
13TH	1	7.2.6 Sequence to export post process GPS data
	2	7.2.7 Sequence to export GPS Time tags to file
		7.3 ETS: - Electronic Total Station
	3	7.3.1 Distance Measurement 7.3.2 Angle Measurement
	4	7.3.3 Leveling 7.3.4 Determining position
	5	7.3.5 Reference networks 7.3.6 Errors and Accuracy
		8 BASICS OF GIS AND MAP PREPARATION USING GIS
14TH	1	8.1 Components of GIS, Integration of Spatial and Attribute Information
	2	8.2 Three Views of Information System 8.2.1 Database or Table View, Map View and Model View
	3	8.3 Spatial Data Model 8.4 Attribute Data Management and Metadata Concept
	4	8.5 Prepare data and adding to Arc Map.
	5	8.6 Organizing data as layers.8.7 Editing the layers.
15TH	1	8.8 Switching to Layout View.
	2	8.9 Change page orientation.
	3	8.10 Removing Borders.
	4	8.11 Adding and editing map information.
	5	8.12 Finalize the map

20/12/2025.

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26/12/25