



NILASAILA INSTITUTE OF SCIENCE & TECHNOLOGY  
SERGARH-756060, BALASORE (ODISHA)  
(Approved by AICTE& affiliated to SCTE&VT, Odisha)



## LESSON PLAN

**SUBJECT : Th-1 (LAND SURVEY -II)**

**Name Of The Faculty :-** Er. Biswajit Behera

**Branch :-** Civil Engineering

**Session :-** 2023-24

**Semester :-** 6th

**Examination :-** 2024 (S)

### CHAPTER WISE DISTRIBUTION OF PERIODS

Sl.No.	Name of the chapter as per the Syllabus	No. of Periods as per the Syllabus	No. of periods actually needed
1	TACHEOMETRY	9	9
2	CURVES	8	8
3	BASICS ON SCALE AND BASICS OF MAPS	8	8
4	SURVEY OF INDIA MAP SERIES	10	10
5	BASICS OF AREAL PHOTOGRAPHY, PHOTOGRAMMETRY, DEM, ORTHO IMAGE GENERATION	10	10
6	MODERN SURVEYING METHODS	10	10
7	BASICS ON GPS AND DGPS AND ETS	10	10
8	BASICS OF GIS AND MAP PREPARATION USING GIS	10	10
	TOTAL PERIOD	75	75

Discipline: CIVIL ENGINEERING	Semester: 4 <sup>th</sup>	Name of the Teaching Faculty: Er. Biswajit Behera	
		SESSION : 2023-24	EXAMINATION : 2024 (S)
	Class Day	Topics to be Covered	
Week	1 <sup>st</sup>	<b>TACHEOMETRY:</b> 1.1 Principles, stadia constants determination	
1 <sup>st</sup>	2 <sup>nd</sup>	1.2 Stadia tacheometry with staff held vertical & numerical problems	
	3 <sup>rd</sup>	1.2 Stadia tacheometry with staff held vertical & numerical problems	
	4 <sup>th</sup>	1.2 Stadia tacheometry with staff held vertical horizontal or inclined	
	5 <sup>th</sup>	1.2 Stadia tacheometry with staff held vertical horizontal & numerals	
2 <sup>nd</sup>	1 <sup>st</sup>	1.2 Stadia tacheometry with staff held vertical inclined, numerals	
	2 <sup>nd</sup>	1.3 Elevations and distances of staff stations – numerical problems	
	3 <sup>rd</sup>	1.3 Elevations and distances of staff stations – numerical problems	
	4 <sup>th</sup>	1.3 Elevations and distances of staff stations – numerical problems	
	5 <sup>th</sup>	<b>CURVE</b> 2.1 compound, reverse and transition curve, Purpose & use of different types of curves in field	
3 <sup>rd</sup>	1 <sup>st</sup>	2.2 Elements of circular curves, numerical problems	
	2 <sup>nd</sup>	2.2 Elements of circular curves, numerical problems	
	3 <sup>rd</sup>	2.3 Preparation of curve table for setting out	
	4 <sup>th</sup>	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	
	5 <sup>th</sup>	2.4 Setting out of circular curve by chain and tape & by offsets from tangents, offsets from chord produced method	
4 <sup>th</sup>	1 <sup>st</sup>	2.4 Setting out of circular curve by chain and tape and by Rankine's method of tangent angles	
	2 <sup>nd</sup>	2.5 Obstacles in curve ranging – point of intersection inaccessible	
	3 <sup>rd</sup>	<b>BASICS ON SCALE AND MAP</b> 3.1 Fractional or Ratio Scale, Linear Scale, Graphical Scale	

4 <sup>th</sup>	4 <sup>th</sup>	3.2 What is Map, Map Scale and Map Projections
	5 <sup>th</sup>	3.3 How Maps Convey Location and Extent
5 <sup>th</sup>	1 <sup>st</sup>	3.4 How Maps Convey characteristics of features
	2 <sup>nd</sup>	3.5 How Maps Convey Spatial Relationship
	3 <sup>rd</sup>	3.5.1 Classification of Maps 3.5.1 Physical Map
	4 <sup>th</sup>	3.5.2 Topographic Ma 3.5.3 Road Map 3.5.4 Political Map
	5 <sup>th</sup>	3.5.5 Economic & Resources Map 3.5.6 Thematic Map 3.5.7 Climate Map
6 <sup>th</sup>	1 <sup>st</sup>	<b>SURVEY OF INDIA MAP SERIES:</b> 4.1 Open Series map
	2 <sup>nd</sup>	4.2 Defense Series Map
	3 <sup>rd</sup>	4.3 Map Nomenclature
	4 <sup>th</sup>	4.3.1 Quadrangle Name 4.3.2 Latitude, Longitude, UTM's
	5 <sup>th</sup>	4.3.4 Contour Lines
7 <sup>th</sup>	1 <sup>st</sup>	4.3.2 Latitude, Longitude, UTM's 4.3.4 Contour Lines
	2 <sup>nd</sup>	4.3.5 Magnetic Declination 4.3.6 Public Land Survey System
	3 <sup>rd</sup>	4.3.5 Magnetic Declination 4.3.6 Public Land Survey System
	4 <sup>th</sup>	4.3.7 Field Notes
	5 <sup>th</sup>	Revision
8 <sup>th</sup>	1 <sup>st</sup>	<b>BASICS OF AERIAL PHOTOGRAPHY, PHOTOGRAMMETRY, DEM AND ORTHO IMAGE GENERATION:</b> 5.1 Aerial Photography: 5.1.1 Film, Focal Length, Scale
	2 <sup>nd</sup>	5.1.2 Types of Aerial Photographs (Oblique, Straight) 5.2 Photogrammetry:
	3 <sup>rd</sup>	5.2.1 Classification of Photogrammetry 5.1.2 Types of Aerial Photographs (Oblique, Straight) 5.2 Photogrammetry:
	4 <sup>th</sup>	5.2.1 Classification of Photogrammetry 5.2.2 Aerial Photogrammetry
	5 <sup>th</sup>	5.2.3 Terrestrial Photogrammetry 5.2.2 Aerial Photogrammetry 5.2.3 Terrestrial Photogrammetry

9 <sup>th</sup>	1 <sup>st</sup>	5.3 Photogrammetry Process 5.3.1 Acquisition of Imagery using aerial and satellite platform
	2 <sup>nd</sup>	5.3.2 Control Survey 5.3.3 Geometric Distortion in Imagery
	3 <sup>rd</sup>	Application of Imagery and its support data Orientation and Triangulation
	4 <sup>th</sup>	Orientation and Triangulation Stereoscopic Measurement X-parallax Y-parallax
	5 <sup>th</sup>	Stereoscopic Measurement X-parallax Y-parallax
10 <sup>th</sup>	1 <sup>st</sup>	5.4 DTM/DEM Generation 5.5 Ortho Image Generation
	2 <sup>nd</sup>	5.4 DTM/DEM Generation 5.5 Ortho Image Generation
	3 <sup>rd</sup>	<b>MODERN SURVEYING METHODS :</b> 6.1 Principles, features and use of (i) Micro-optic theodolite, digital theodolite
	4 <sup>th</sup>	<b>MODERN SURVEYING METHODS :</b> 6.1 Principles, features and use of (i) Micro-optic theodolite, digital theodolite
	5 <sup>th</sup>	<b>MODERN SURVEYING METHODS :</b> 6.1 Principles, features and use of (i) Micro-optic theodolite, digital theodolite
11 <sup>th</sup>	1 <sup>st</sup>	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 of surveyed points relative to Total Station position using trigonometry and triangulation
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	3 <sup>rd</sup>	<b>INTERNAL ASSESMENT.</b>
	4 <sup>th</sup>	<b>INTERNAL ASSESMENT.</b>
	5 <sup>th</sup>	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 of surveyed points relative to Total Station position using trigonometry and triangulation
12 <sup>th</sup>	1 <sup>st</sup>	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 of surveyed points relative to Total Station position using trigonometry and triangulation
	2 <sup>nd</sup>	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 of surveyed points relative to Total Station position using trigonometry and triangulation
	3 <sup>rd</sup>	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 of

12 <sup>th</sup>	4 <sup>th</sup>	<b>BASICS ON GPS &amp; DGPS AND ETS:</b> 7.1 GPS: - Global Positioning 7.1.1 Working Principle of GPS,GPS Signals
	5 <sup>th</sup>	<b>BASICS ON GPS &amp; DGPS AND ETS:</b> 7.1 GPS: - Global Positioning 7.1.1 Working Principle of GPS,GPS Signals
13 <sup>th</sup>	1 <sup>st</sup>	7.2 DGPS: - Differential Global Positioning System 7.2.1 Base Station Setup
	2 <sup>nd</sup>	7.2 DGPS: - Differential Global Positioning System 7.2.2 Rover GPS Set up 7.2.3 Download, Post-Process and Export GPS data
	3 <sup>rd</sup>	7.2 DGPS: - Differential Global Positioning System 7.2.4 Sequence to download GPS data from flashcards 7.2.5 Sequence to Post-Process GPS data
	4 <sup>th</sup>	7.2 DGPS: - Differential Global Positioning System 7.2.4 Sequence to download GPS data from flashcards 7.2.5 Sequence to Post-Process GPS data
	5 <sup>th</sup>	7.2 DGPS: - Differential Global Positioning System 7.2.6 Sequence to export post process GPS data 7.2.7 Sequence to export GPS Time tags to file
14 <sup>th</sup>	1 <sup>st</sup>	7.3 ETS: - Electronic Total Station 7.3.1 Distance Measurement
	2 <sup>nd</sup>	7.3.3 Leveling 7.3.4 Determining position
	3 <sup>rd</sup>	7.3.5 Reference networks 7.3.6 Errors and Accuracy
	4 <sup>th</sup>	<b>BASICS OF GIS AND MAP PREPARATION USING GIS</b> 8.1 Components of GIS, Integration of Spatial and Attribute Information
	5 <sup>th</sup>	8.2 Three Views of Information System 8.2.1 Database or Table View, Map View and Model View
15 <sup>th</sup>	1 <sup>st</sup>	8.3 Spatial Data Model 8.4 Attribute Data Management and Metadata Concept
	2 <sup>nd</sup>	8.5 Prepare data and adding to Arc Map. 8.6 Organizing data as layers
	3 <sup>rd</sup>	8.7 Editing the layers. 8.8 Switching to Layout View.
	4 <sup>th</sup>	8.9 Change page orientation. 8.10 Removing Borders
	5 <sup>th</sup>	8.11 Adding and editing map information. 8.12 Finalize the map