

GOVT. POLYTECHNIC MAYURBHANJ LESSON PLAN- 2026-27 (WINTER)						
Discipline : CIVIL ENGG.		Semester: 5th		Name of the Teaching Faculty : DEBASISH PATRA		
Subject : SE		No. of Days / per week class allotted : 03		Semester From date : 01.07.2026		To Date : 05.11.2026
MONTH	Week	Day	Unit	Topics		
JULY	1st	5th	UNIT-I	Overview and Classification of Survey		
				Survey- Purpose and Use, Types of surveying- Primary and Secondary		
	2nd	1st		Classification: Plane, Geodetic, Cadastral, Hydrographic, Photogrammetry and Aerial		
		2nd		Principles of Surveying, Scales: Engineer's scale, Representative Fraction (RF) and diagonal scale		
		5th		Practice questions on scale		
	3rd	1st	UNIT-II	Chain Surveying		
				Instruments used in chain survey: Metric Chain, Tapes, Arrow, Ranging rod, Line ranger, Off-set rod, Open cross staff, Optical square		
		2nd		Chain survey Station, Base line, Check line, Tie line, Offset, Tie station		
		5th		Ranging: Direct and Indirect Ranging, Methods of Chaining, obstacles in chaining		
	4th	1st		Errors in length: Instrumental error, personal error, error due to natural cause, random error		
		2nd		Types of offsets: Perpendicular and Oblique		
		5th		Practice questions on corrections		
		1st		Conventional Signs, Recording of measurements in a field book		
	5th	2nd		Compass Traverse Survey		
				Compass Traversing- open, closed, Technical Terms: Geographic/ True Magnetic Meridians and Bearings		
		5th		Whole Circle Bearingsystem and Reduced Bearing system and examples on conversion of given bearing to another bearing (from one form to another)		
AUGUST	2nd	1st	UNIT-III	Bearing and Back Bearing, Calculation of internal and external angles from bearings at a station		
		2nd		Dip of Magnetic needle, Magnetic Declination		
		5th		Types of Compass-prismatic and surveyor compass, Components of Prismatic Compass and Surveyor compass and their Functions, Methods of using Prismatic Compass- Temporary adjustments and observing bearings		
	3rd	1st		Local attraction, Methods of correction of observed bearings - Correction at station and correction to included angles		
		2nd	UNIT-IV	Problems on Correction		
		5th		Methods of plotting a traverse and closing error		
		1st		Graphical adjustment of closing error		
	4th	2nd		Levelling and Contouring		
				Basic terminologies: Level surfaces, Horizontal and vertical surfaces, Datum, Bench Marks- GTS, Permanent, Arbitrary and Temporary, Reduced Level		
		5th		Rise, Fall, Line of collimation, Station, Back sight, Fore sight, Intermediate sight, Change point, Height of instruments		
	5th	1st		Types of levels: Dumpy, Tilting, Auto level, Digital level, Components of Dumpy Level and its fundamental axes		
		2nd		Temporary adjustments of Level, Types of Leveling Staff: Self-reading staff and Target staff, Reduction of level by Line of collimation and Rise and Fall Method		
		5th		Leveling Types: Simple, Differential, Fly, Profile and Reciprocal Leveling, Contour, contour intervals, horizontal equivalent		
	6th	1st		Uses of contour maps, Characteristics of contours, Methods of Contouring: Direct and indirect		
SEPTEMBER	1st	2nd	UNIT-V	Components and use of Digital planimeter, Measurement of area using digital planimeter		
		5th		JANMASTAMI		
	2nd	1st		Measurement of volume of reservoir from contour map		
		2nd		1st Interval Assessment		
		5th		Theodolite Surveying		
	3rd	1st		Types and uses of Theodolite, Components of transit Theodolite and their functions, Reading the Vernier of transit Theodolite,		
		2nd		Ganesh Puja		
		5th		NUAKHAI		
	4th	1st		Technical terms- Swinging, Transiting, Face left, Face right, Fundamental axes of transit Theodolite and their relationship, Temporary adjustment of transit Theodolite		
		2nd		Measurement of horizontal angle- Direct and Repetition method, Errors eliminated by method of repetition		
		5th		Measurement of magnetic bearing of a line, Prolonging and ranging a line, deflection angle, Measurement of vertical Angle		
	5th	1st		Theodolite traversing by Included angle method and Deflection angle method, Checks for open and closed traverse, Calculations of bearing from angles		
		2nd		Tacheometric surveying and Curve setting		
		5th		Principles of Tacheometry, Anallatic lens, Tacheometric formula for horizontal distance with telescope horizontal and staff vertical		
	1st	5th	UNIT	Practice questions		

OCTOBER	2nd	1st	UNIT-VI	Field method for determining constants of tachometer, Determining horizontal and vertical distances with tachometer by fixed hair method and staff held vertical, Limitations of tachometry
		2nd		Types of curves used in roads and railway alignments. Designation of curves, Setting simple circular curve by offsets from long chord and Rankine's method of deflection angles
		5th		Advanced surveying equipment
	3rd	1st	UNIT-VII	Principle of Electronic Distance Meter (EDM), its component parts and their Functions, use of EDM
		2nd		Use of micro optic Theodolite and Electronic Digital Theodolite, Use of Total Station, Use of function keys
		5th		Measurements of Horizontal angles, vertical angles, distances and coordinates using Total Station, Traversing, Profile Survey and Contouring with Total Station
	4th	1st	UNIT-VIII	Remote sensing, GPS and GIS
		2nd		Remote Sensing – Overview, Remote sensing system, Applications of remote sensing in Civil engineering, land use / Land cover, mapping, disaster management
		5th		MAHA NAVAMI
	5th	1st		VIJAYA DASHAMI
		2nd		Use of Global Positioning System (G.P.S.) instruments, and DGPS
		5th		Geographic Information System (GIS): Over view, Components, Applications, Software for GIS
NOVEMBER	2nd	1st		Introduction to Drone Surveying
		2nd		PROBLEMS
		5th		PREVIOUS YEAR QUESTION DISCUSSION

Debarish Taha
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