

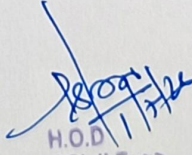
LESSON PLAN: CEPC305 PR:1. Surveying Lab FOR THE SESSION 2026-27(WINTER-2026) BATCH-2024-27, GOVT. POLYTECHNIC,KANDHMAL

Discipline: Civil Engineering	Semester: 5th	Name of the Teaching Faculty : Swastik Pradhan, Lecturer stage II in Civil Engg. ,Subrat Kumar Behera, LAB Asst. in Civil Engg.
Subject: CEPC305 PR:1. Surveying Lab	No. of days/ per week class allotted: 4	Semester From Date : 1/07/2026 to Date: 5/11/2026 No. of Weeks: 15
Week	Class Day	Theory/ Practical Topics
1st	1st	Course Introduction -Surveying objectives, safety rules, laboratory orientation
	2nd	Introduction to Survey Instruments -Chain, tape, ranging rods, cross staff, compass, level, total station, DGPS
	3rd	Chain Survey Theory -Principles, equipment, errors
	4th	Demonstration of Chain Survey -Instrument handling and ranging
2nd	1st	Practical 1 -Measure distance between two intervisible stations using chain
	2nd	Practical 1 -Measurement using tape and ranging rods
	3rd	Practical 1 -Field observations and corrections
	4th	Practical 1 -Calculations, record book, viva
3rd	1st	Area Measurement Theory -Chain survey and offsets
	2nd	Cross Staff Theory -Right-angle offsets and applications
	3rd	Demonstration -Chain and cross staff survey
	4th	Practical 2 -Determine area of open field
4th	1st	Practical 2 -Field work and measurements
	2nd	Practical 2 -Area calculations
	3rd	Practical 2 -Record submission and discussion
	4th	Compass Survey Theory -Bearings, meridians, magnetic declination
5th	1st	Prismatic Compass Demonstration -Fore bearing and back bearing
	2nd	Practical 3 -Measure FB and BB of traverse lines
	3rd	Practical 3 -Traverse observations
	4th	Practical 3 -Calculations and error checking
6th	1st	Leveling Theory -Types of leveling and instruments
	2nd	Dumpy Level/Auto Level -Temporary adjustments
	3rd	Height of Instrument Method -Demonstration
	4th	Practical 4 -Differential leveling (HI method)
7th	1st	Rise and Fall Method -Demonstration
	2nd	Practical 4 -Differential leveling (Rise & Fall)
	3rd	Practical 4 -Calculations and arithmetic check
	4th	Practical 4 -Record work and viva
8th	1st	Profile Leveling Theory -Longitudinal section and cross-section
	2nd	Survey Planning -Road alignment survey
	3rd	Practical 5 -Profile leveling (0–150 m)
	4th	Practical 5 -Profile leveling (150–300 m)
9th	1st	Practical 5 -Profile leveling (300–500 m)
	2nd	Practical 5 -Cross-sections at 30 m intervals
	3rd	Practical 5 -Plotting L-section and cross-sections
	4th	Practical 5 -Report preparation
10th	1st	Digital Theodolite Theory -Tacheometry principles

	2nd	Demonstration -Digital theodolite as tachometer
	3rd	Practical 6 -Measure horizontal distance
	4th	Practical 6 -Compute reduced levels
11th	1st	Practical 6 -Calculations and report
	2nd	Circular Curve Theory -Rankine's method
	3rd	Demonstration -Deflection angle computation
	4th	Practical 7 -Setting out circular curve
12th	1st	Practical 7 -Field verification
	2nd	Digital Planimeter Theory -Area measurement principles
	3rd	Practical 8 -Measure area of irregular figure
	4th	Practical 8 -Calculations and record work
13th	1st	Total Station Theory -Components, functions, setup
	2nd	Practical 9 -Measure horizontal distance and vertical angle
	3rd	Practical 10 -Closed traverse survey (field observations)
	4th	Practical 10 -Traverse completion (minimum five sides)
14th	1st	Practical 10 -Data download, plotting, adjustment
	2nd	DGPS Theory -Principles and applications
	3rd	Practical 11 -Determine coordinates using DGPS
	4th	GIS Theory -Introduction to GIS software
15th	1st	Practical 12 -Import survey data into GIS
	2nd	Practical 12 -Preparation of map using GIS software
	3rd	Project Review -Practical records, viva, corrections
	4th	Final Assessment -Practical examination, viva voce, record evaluation

Swastika Pradhan

25/06/2022


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