

**GOVERNMENT POLYTECHNIC JAIPUR**

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**DEPARTMENT OF CIVIL ENGINEERING**

**LESSON PLAN**

<b>Discipline:</b> Civil Engg	<b>Semester:</b> 6th	<b>Name of the Teaching faculty:</b> Ajit Kumar Behera
<b>Subject:</b> Land Survey-II Th-1	<b>No of Days/Week class allotted:</b> 5 days	<b>Semester from Date:</b> 14/02/2023 <b>To Date:</b> 23/05/2023 <b>No of weeks:</b> 16
<b>Week</b>	<b>Class Day</b>	<b>Topics</b>
1st	1st	<b>TACHEOMETRY:</b> Principles, stadia constants determination
	2nd	Stadia tacheometry with staff held vertical and with line of collimation horizontal or inclined, numerical problems
	3rd	Stadia tacheometry with staff held vertical and with line of collimation horizontal or inclined, numerical problems
	4th	Stadia tacheometry with staff held vertical and with line of collimation horizontal or inclined, numerical problems
	5th	Elevations and distances of staff stations – numerical problems
2nd	1st	Elevations and distances of staff stations – numerical problems
	2nd	Elevations and distances of staff stations – numerical problems
	3rd	Elevations and distances of staff stations – numerical problems
	4th	Elevations and distances of staff stations – numerical problems
	5th	<b>CURVES :</b> compound, reverse and transition curve, Purpose & use of different types of curves in field
3rd	1st	Elements of circular curves, numerical problems
	2nd	Elements of circular curves, numerical problems
	3rd	Preparation of curve table for setting out
	4th	Setting out of circular curve by chain and tape and by instrument angular methods (i) offsets from long chord,
	5th	(ii) successive bisection of arc, (iii) offsets from tangents, (iv) offsets from chord produced
4th	1st	(v) Rankine’s method of tangent angles (No derivation)
	2nd	Obstacles in curve ranging – point of intersection inaccessible
	3rd	<b>BASICS ON SCALE AND BASICS OF MAP:</b> Fractional or Ratio Scale, Linear Scale, Graphical Scale
	4th	What is Map, Map Scale and Map Projections
	5th	How Maps Convey Location and Extent
5th	1st	How Maps Convey characteristics of features
	2nd	How Maps Convey Spatial Relationship
	3rd	Classification of Maps Physical Map ,Topographic Map
	4th	Road Map ,Political Map
	5th	Economic & Resources Map , Thematic Map , Climate Map

6th	1st	<b>SURVEY OF INDIA MAP SERIES:</b> Open Series map
	2nd	total energy of a liquid in motion- potential, kinetic & pressure,
	3rd	Bernoulli's theorem and its limitations
	4th	Practical applications of Bernoulli's equation. Flow over Notches and Weirs
	5th	Notches, Weirs, types of notches and weirs
7th	1st	Discharge through different types of notches and weirs-their application
	2nd	Types of flow through the pipes: uniform and non-uniform; laminar and turbulent; steady and unsteady;
	3 <sup>rd</sup>	Reynold's number and its application Losses of head of a liquid flowing through pipes
	4 <sup>th</sup>	Losses of head of a liquid flowing through pipes: Different types of major and minor losses.,
	5th	Simple numerical problems on losses due to friction using Darcy's equation Flow through the Open Channels
8th	1st	Total energy lines & hydraulic gradient lines discharge formulae-
	2nd	Chezy's and Manning's equation, best economical section
	3rd	PUMPS: Type of pumps
	4th	Centrifugal pump: basic principles, operation, discharge
	5th	Types of channel sections-rectangular, trapezoidal and circular horse power & efficiency
9th	1st	Reciprocating pumps: types
	2nd	operation, discharge, horse power & efficiency
	3rd	Hydrology, Hydrology Cycle
	4th	Rainfall: types, intensity, hyetograph
	5th	Estimation of rainfall
10th	1st	rain gauges, Its types
	2nd	Concept of catchment area, types, run-off
	3rd	estimation of flood discharge by Dicken's and Ryve's formulae
	4th	Water Requirement of Crops,
		Definition of irrigation, necessity, benefits of irrigation
11th	1st	types of irrigation, Crop season
	2nd	Duty, Delta and base period their relationship
	3rd	overlap allowance, kharif and rabi crops, Gross command area, culturable command area
	4th	Intensity of Irrigation, irrigable area, time factor, crop ratio
	5th	FLOW IRRIGATION: Canal irrigation, types of canals
12th	1st	loss of water in canals, Perennial irrigation
	2nd	Different components of irrigation canals and their functions
	3rd	Sketches of different canal cross-sections 3.5 Classification of canals according to their alignment
	4th	Various types of canal lining – Advantages and disadvantages
	5th	WATER LOGGING AND DRAINAGE
13th	1st	Causes and effects of water logging detection prevention and remedies
	2nd	DIVERSION HEAD WORKS AND REGULATORY STRUCTURES
	3rd	Necessity and objectives of diversion head works

	4th	weirs and barrages
	5th	General layout, functions of different parts of barrage
14th	1st	Functions of regulatory structures
	2nd	CROSS DRAINAGE WORKS
	3rd	Functions and necessity of Cross drainage works
	4th	aqueduct, siphon, super passage, level crossing
	5th	Concept of each with help of neat sketch
15th	1st	DAMS Necessity of storage reservoirs
	2nd	types of dams Earthen dams: types, description
	3rd	causes of failure and protection measures
	4th	Gravity dam- types, description
	5th	Spillways Types (With Sketch) and necessity
16th	1st	CLASS TEST 3, PREVIOUS YEAR QUESTIONS, QUIZ

**LearningResources:**

Sl No.	Author Name	Name of the Book
1	R.Subramanian	Surveying and Levelling
2	Dr.B.C.Punmia.	Surveying, Vol.-I&II
3	R. Agor	A text Book of Surveying & Levelling

Ajit Kumar Behera  
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