

LESSON PLAN : SURVEYING (TH-01)
GOVT. POLYTECHNIC, BERHAMPUR

Discipline :- CIVIL ENGINEERING		Semester :- FIFTH(W) 2026-27	Name of the teaching Faculty : DEEPANJALI SETHI
SUBJECT:- SURVEYING	NO. Of CLASSES ALLOTTED FOR	SEMESTER FROM :- FROM 17/07/2026 TO 05/11/2026	
WEEK	DAY	THEORY	
1ST	1st	1.1 Survey- Purpose and Use. 1.2 Types of surveying- Primary and Secondary.	
	2nd	1.3 Classification of Survey. 1.4 Principles of Surveying.	
	3rd	1.5 Classification of Scales. 1.6 Instruments used in chain survey.	
2ND	1st	1.7 Chain survey Station. 1.8 Base line, Check line, Tie line, Offset, Tie station.	
	2nd	1.9 Definitions of Ranging: 2.0 Types of Ranging, Direct and Indirect Ranging.	
	3rd	2.1 Methods of Chaining. 2.2 Obstacles in chaining.	
3RD	1st	2.3 Errors in length. 2.4 Error due to natural cause, random error.	
	2nd	2.5 Types of offsets: Perpendicular and Oblique. 2.6 Conventional Signs.	
	3rd	2.7 Recording of measurements in a field book.	
4TH	1st	2.8 Definitions of Compass Traversing 2.9 Classifications of Compass Surveying.	
	2nd	3.0 Geographic/ True Magnetic Meridians and Bearings. 3.1 Whole Circle Bearing system and Reduced Bearing system.	
	3rd	3.2 Examples on conversion of given bearing to another bearing. 3.3 Fore Bearing and Back Bearing.	
5TH	1st	3.4 Calculation of internal and external angles from bearings at a station.	
	2nd	3.5 Dip of Magnetic needle, Magnetic Declination.	
	3rd	3.6 Types of Compass. 3.7 Components of Prismatic Compass and Surveyor compass and their Functions.	
6TH	1st	3.8 Methods of using Prismatic Compass. 3.9 Temporary adjustments and observing bearings.	
	2nd	4.0 Definitions of Local attraction 4.1 Methods of correction of observed bearings.	
	3rd	4.2 Correction at station and correction to included angles.	
7TH	1st	4.3 Methods of plotting a traverse and closing error. 4.4 Graphical adjustment of closing error.	
	2nd	4.5 Basic terminologies: Level surfaces, Horizontal and vertical surfaces, Datum. 4.6 Bench Marks- GTS, Permanent, Arbitrary and Temporary, Reduced Level.	
	3rd	4.7 Intermediate sight, Change point, Height of instruments. 4.8 Types of levels.	

8TH	1st	4.9 Components of Dumpy Level and its fundamental axes. 5.0 Temporary adjustments of Level.
	2nd	5.1 Types of Leveling Staff. 5.2 Reduction of level by Line of collimation.
	3rd	5.3 Reduction of level by rise and fall method. 5.4 Leveling Types.
9TH	1st	5.5 Contour, contour intervals, horizontal equivalent. 5.6 Uses of contour maps.
	2nd	5.7 Characteristics of contours. 5.8 Methods of Contouring.
	3rd	5.9 Components and use of Digital planimeter. 6.0 Measurement of area using digital planimeter.
10TH	1st	6.1 Measurement of volume of reservoir from contour map. 6.2 Types and uses of Theodolite. 6.3 Components of transit Theodolite and their functions.
	2nd	6.4 Reading the Vernier of transit Theodolite. 6.5 Swinging, Transiting, Face left, Face right.
	3rd	6.7 Temporary adjustment of transit Theodolite. 6.8 Measurement of horizontal angle. 6.9 Errors eliminated by method of repetition.
11th	1st	7.0 Measurement of magnetic bearing of a line. 7.1 Prolonging and ranging a line, deflection angle. 7.2 Measurement of vertical Angle.
	2nd	7.3 Theodolite traversing by Included angle method and Deflection angle method. 7.4 Checks for open and closed traverse. 7.5 Calculations of bearing from angles.
	3rd	7.6 Traverse computation. 7.7 Balancing the traverse by Bowditch's rule and Transit rule. 7.8 Principles of Tacheometry.
12th	1st	7.9 Tacheometric formula for horizontal distance with telescope. 8.0 Field method for determining constants of tacheometer. 8.1 Determining horizontal and vertical distances with tacheometer by fixed hair method.
	2nd	8.2 Types of curves used in roads and railway alignments. 8.3 Setting simple circular curve by offsets from long chord 8.4 Rankine's method of deflection angles.
	3rd	8.5 Principle of Electronic Distance Meter (EDM). 8.6 Component parts and their Functions. 8.7 Use of EDM.
13th	1st	8.8 Use of micro optic Theodolite. 8.9 Use of Electronic Digital Theodolite.
	2nd	9.0 Use of Total Station, Use of function keys. 9.1 Measurements of Horizontal angles.
	3rd	9.2 Vertical angles, distances and coordinates using Total Station. 9.3 Traversing, Profile Survey and Contouring with Total Station.
14th	1st	9.4 Definitions of Remote Sensing, Remote sensing system. 9.5 Applications of remote sensing in Civil engineering.
	2nd	9.6 land use / Land cover. 9.7 Mapping, disaster management.
	3rd	9.8 Use of Global Positioning System(G.P.S.) instruments. 9.9 DGPS.
15th	1st	10.0 Definitions of Geographic Information System (GIS).
	2nd	10.1 Components, Applications, Software for GIS.
	3rd	10.2 Introduction to Drone Surveying.

Line :-
ENGINEERING
SUBJECT :-
DESIGN OF
R.C.C

19F CIVIL

H.O.D (CIVIL), LUVIL

GOVT. POLYTECHNIC BERHAMPUR**LESSON PLAN – 2026-27**

Discipline :- CIVIL ENGINEERING		Semester :- FIFTH(W) 2026-27	Name of the teaching Faculty : SIBANI SAHU
SUBJECT:- DESIGN OF R.C.C	NO. OF CLASSES ALLOTTED FOR WEEK	SEMESTER FROM :- FROM 08/07/2026 TO 05/11/2026	
WEEK	DAY	THEORY	
1ST	1st	1.1 Design Philosophies. 1.2 Design of Singly Reinforced & Doubly Reinforced beam for Flexure.	
	2nd	1.3 Nominal shear stress in RCC section.	
	3rd	1.4 Design shear strength of concrete. 1.5 Design of shear reinforcement.	
2ND	1st	1.6 Minimum Shear Reinforcement. 1.7 Forms of shear reinforcement.	
	2nd	1.8 Provisions of IS 456 2000.	
	3rd	1.9 Types of bond.	
3RD	1st	2.0 Numericals on bond.	
	2nd	2.1 Bond stress. 2.2 Check for bond stress.	
	3rd	2.3 Determination of Development length.	
4TH	1st	2.4 Determination of Development length in tension. 2.5 Determination of Development length in Compression.	
	2nd	2.6 Check of Development length as per codal provisions.	
	3rd	2.7 Anchorage value of 90 degree hook.	
5TH	1st	2.8 Lapping of bars.	
	2nd	2.9 Simple numerical on Shear reinforcement.	
	3rd	3.0 Adequacy of section for shear.	
6TH	1st	3.1 Introduction to serviceability limit state check.	
	2nd	3.2 Numericals on serviceability limit.	
	3rd	3.3 Details type of Limit states.	
7TH	1st	3.4 Definition and classification of column.	
	2nd	3.5 Limit state of compression members.	
	3rd	3.6 Effective length of column.	
8TH	1st	3.7 Provisions of IS 456 2000 for minimum steel.	
	2nd	3.8 Cover, maximum steel.	
	3rd	3.9 Spacing of ties etc.	
9TH	1st	4.0 Design of axially loaded short column.	
	2nd	4.1 Square, Rectangular column.	
	3rd	4.2 Circular column.	
10TH	1st	4.3 General features of T and L beams.	
	2nd	4.4 Advantages of T and L beams.	
	3rd	4.5 Effective width as per BIS 456 2000.	

11th	1st	4.6 Design of singly reinforcement T beam.
	2nd	4.7 Stress and Strain diagram, Depth of neutral axis.
	3rd	4.9 T and L beams with neutral axis in flange only.
12th	1st	5.0 Simple numerical on location of neutral axis. 5.1 Effective width of flange.
	2nd	5.2 Design of simply supported one-way slab for flexure.
	3rd	5.3 Shear and deflection and checks, as per the provisions of BIS 456.
13th	1st	5.4 Design of one-way cantilever slab. 5.5 Chajjas.
	2nd	5.5 Flexure including checks for Development length and Shear stress.
	3rd	5.6 Design of two-way simply supported slab.
14th	1st	5.7 Introduction to design of dog-legged staircases.
	2nd	5.8 Design of footing for axially loaded column only.
	3rd	5.9 Minimum Eccentricity.
15th	1st	6.0 Design of Footing for uniaxial bending.
	2nd	6.1 Column with uniaxial moment as per IS 456 provisions.
	3rd	6.2 Simple numericals based on uniaxial bending.

Sibani Sahu


HOD (T/C), civil

GOVT. POLYTECHNIC BERHAMPUR

LESSON PLAN – 2026-27

Discipline :- CIVIL ENGINEERING		Semester :- FIFTH(W) 2026-27	Name of the teaching Faculty : SUSHREE SASMITA SAHOO DEEPANJALI SETHI
SUBJECT:- PAVEMENT DESIGN & MAINTENANCE	NO. Of CLASSES ALLOTTED FOR WEEK	SEMESTER FROM :- FROM 01/07/2026 TO 05/11/2026	
WEEK	DAY	THEORY	
1ST	1st	Basics of pavement Design :	
	2nd	Comparison of Rigid and flexible pavement according to Design precision.	
	3rd	Life maintenance, initial cost, stages of construction, availability of materials.	
2ND	1st	Surface characteristic, penetration of water in the pavement, utility location, glare and night visibility.	
	2nd	Functions and characteristics of pavement.	
	3rd	Factors affecting selection of type of pavement.	
3RD	1st	Fundamentals of pavement design :	
	2nd	Environmental factors.	
	3rd	Road geometry and material.	
4TH	1st	Characteristics of soil and Drainage situation.	
	2nd	Design of Flexible and Concrete pavement:	
	3rd	Theoretical method Empirical method with and without soil strength test.	
5TH	1st	IRC37 guidelines for design of flexible pavement (overview only)	
	2nd	Factors affecting design of concrete pavement.	
	3rd	IRC58 guidelines for design of concrete pavement (overview only).	
6TH	1st	Need of joints.	
	2nd	Types of Joints.	
	3rd	Requirements of joints.	
7TH	1st	Spacing of joints.	
	2nd	Pavement evaluation : Definition of pavement evaluation.	
	3rd	Purpose of pavement evaluation.	
8TH	1st	Methods of Pavement evaluation.	
	2nd	Visual rating, Pavement.	
	3rd	Serviceability index, Roughness, measurements.	
9TH	1st	Benkelman Beam deflection method.	
	2nd	Pavement Maintenance :	

	3rd	Routine, periodic, and special.
10TH	1st	Need for inspection of Pavement.
	2nd	Maintenance schedule of Pavement.
	3rd	Causes of pavement failure.
11th	1st	Remedial measures on failure.
	2nd	Typical flexible and rigid pavement failures.
	3rd	Types and causes of damages in flexible pavement.
12th	1st	Surface defects, cracks. Deformations Rutting.
	2nd	Fatigue, settlement and upheaval.
	3rd	Disintegration- loss of aggregate, stripping, pothole.
13th	1st	Remedial measures - slurry seal, liquid seal, fog seal, and patching, ready mix patch.
	2nd	Types of damages to rigid pavement.
	3rd	Cracking, Spalling, slab rocking,
14th	1st	Settlement, joint sealant failure.
	2nd	Methods of repair - repair of spalled joints.
	3rd	Full depth reconstruction, and replacement of dowel bars.
15th	1st	REVISION
	2nd	REVISION
	3rd	REVISION

Deepanjali Sethi
(GF CIVIL)


H.O.D (7C), UVA

GOVT. POLYTECHNIC BERHAMPUR
LESSON PLAN – 2026-27

Discipline :- CIVIL ENGINEERING		Semester :- FIFTH(W) 2026-27	Name of the teaching Faculty : NARASINGH MAHANTY
SUBJECT:- TRAFFIC ENGINEERING	NO. OF CLASSES ALLOTTED FOR WEEK	SEMESTER FROM :- FROM 14/07/2026 TO 05/11/2026	
WEEK	DAY	THEORY	
1ST	1st	Fundamentals of Traffic Engineering. Traffic engineering- Definition, objects, scope	
	2nd	Relationship between speed, volume and density of traffic.	
	3rd	Road user's characteristics physical, mental, emotional factors.	
2ND	1st	Vehicular characteristics-width, length, height, weight, speed, efficiency of breaks.	
	2nd	Road characteristics - gradient, curve of a road, design speed, friction between road and tyre surface.	
	3rd	Reaction time - factors affecting reaction time. PIEV Theory.	
3RD	1st	Traffic Studies Traffic volume count data- representation and analysis of data.	
	2nd	Necessity of Origin and Destination study and its methods.	
	3rd	Speed studies - Spot speed studies.	
4TH	1st	Presentation of Speed studies.	
	2nd	Need and method of parking study.	
	3rd	Road Signs and Traffic Markings Traffic control devices –definition, necessity, types.	
5TH	1st	Road signs - definition, objects of road signs.	
	2nd	Classification as per IRC: 67-Mandatory or Regulatory, Cautionary or warning, informatory signs.	
	3rd	Location of cautionary or warning sign in urban and non-urban areas, Points to be considered while designing and erecting road signs.	
6TH	1st	Traffic markings definition, classification, carriageway.	
	2nd	Kerb, object marking and reflector markers.	
	3rd	Traffic Signals and Traffic Islands Definitions of Traffic signals.	
7TH	1st	Types of Traffic signals.	
	2nd	Compute signal time by fix time cycle, Webster's.	
	3rd	Types of traffic control signals.	
8TH	1st	Fixed time, manually operated, traffic actuated signals and location of signals.	
	2nd	Compute signal time by fix time cycle.	
	3rd	Webster's and IRC method and sketch timing diagram for each phase.	
9TH	1st	Definition of Traffic islands.	
	2nd	Advantages and disadvantages of providing islands.	
	3rd	Types of traffic islands.	
10th	1st	Rotary or central, channelizing or Refuge Island.	
	2nd	Road intersections or junctions.	
	3rd	Definitions of road intersection.	
11th	1st	Types of road intersection.	
	2nd	Types of Intersection at grade.	
	3rd	Basic requirements of good intersection at grade.	
12th	1st	Grade separated intersection- advantages and disadvantages.	
	2nd	Types of Grade separated intersection.	

	3rd	Flyovers-partial and full Cloverleaf pattern, Diamond intersection, Trumpet type, underpass.
13th	1st	Road Accident Studies and Arboriculture Road Accidents-Definition, types.
	2nd	Causes for collision and noncollision accidents.
	3rd	Measures to prevent road accidents.
14th	1st	Collision and condition diagram.
	2nd	Street lighting –definition, necessity, typesluminaire, foot candle, lumen, factors affecting their utilization and maintenance.
	3rd	Arboriculture- definition, objectives, factors affecting selection of type of trees.
15th	1st	Maintenance of trees-protection and care of road side trees.
	2nd	REVISION
	3rd	REVISION

Narasimh Mahanty


H.O.D. (P/C), Civil

GOVT. POLYTECHNIC BERHAMPUR**LESSON PLAN – 2026-27**

Discipline :- ENGINEERING	Semester :- FIFTH(W) 2026-27	Name of the teaching Faculty : SUSHREE SASMITA SAHOO
SUBJECT:- PROFESSIONAL SKILLS	NO. OF CLASSES ALLOTTED FOR WEEK	SEMESTER FROM :- FROM 01/07/2026 TO 05/11/2026
WEEK	DAY	THEORY
1ST	1st	Communication Skills: Active listening
	2nd	Verbal and non-verbal communication ,
	3rd	Written communication
2ND	1st	Presentation skills
	2nd	Presentation skills
	3rd	Presentation skills
3RD	1st	Conflict resolution
	2nd	Teamwork and Collaboration: Building trust within a team
	3rd	Teamwork and Collaboration: Building trust within a team
4TH	1st	Effective collaboration strategies
	2nd	Role delegation and responsibility sharing ,
	3rd	Role delegation and responsibility sharing ,
5TH	1st	Conflict resolution within a team
	2nd	Conflict resolution within a team
	3rd	Problem-Solving: Identifying root causes of issues
6TH	1st	Problem-Solving: Identifying root causes of issues
	2nd	Generating solutions and evaluating options
	3rd	Decision-making under pressure
7TH	1st	Decision-making under pressure
	2nd	Critical thinking skills
	3rd	Critical thinking skills
8TH	1st	Triple constraint issues
	2nd	Time Management: Prioritization and task management
	3rd	Time Management: Prioritization and task management
9TH	1st	Setting realistic deadlines
	2nd	Effective time planning and organization