

**DEPARTMENT OF CIVIL ENGINEERING
SIRDA POLYTECHNIC SUNDERNAGAR
DISTT.- MANDI (H.P.) - 175019**

LESSON PLAN

Program Name	Civil Engineering
Subject Name	Hydraulics
Subject Code	CEPC202(Th) & CEPC214(Pr)
Semester	4th
Subject Teacher Name	Er. Pankaj Thakur

Evaluation Scheme

S. No.	Subject Name	Study Scheme (Hrs/week)		Marks Distribution in Evaluation Scheme					
				Internal Assessment			External Assessment		
		Th	Pr	Th	Pr	Total	Th	Pr	Total
1	Hydraulics	4	0	40	0	40	60	0	100
	Hydraulics Lab	0	2	0	40	40	0	60	100
Reference Books		(1) Khurmi R S, Hydraulics, Fluid Mechanics, Hydraulic machines, S. Chand Publishers (2) Rajput, R K, Fluid Mechanics, S Chand, New Delhi							

Teaching Plan

	Name of Topic	Proposed Date	Actual Date	Remarks
Unit-I Pressure Measurement and Hydrostatic Pressure	Technical terms used in Hydraulics –fluid, fluid mechanics, hydraulics, hydrostatics, and hydrodynamics - ideal and real fluid, application of hydraulics	28.01.2026		
	Ideal and real fluid, application of hydraulics	30.01.2026		
	Physical properties of fluid – density-specific volume, specific gravity	31.01.2026		
	Surface tension, capillarity, and viscosity, Newton's law of viscosity	02.02.2026		
	Various types of pressure – Atmospheric Pressure, Gauge Pressure, Absolute Pressure, Vacuum Pressure	04.02.2026		
	Concept of Pressure head and its unit, Pascal's law of fluid pressure and its uses	06.02.2026		
	Measurement of differential Pressure by different methods	07.02.2026		
	Variation of pressure with depth, Pressure diagram, hydrostatic pressure	09.02.2026		
	Determination of total pressure and center of pressure on sides and bottom of water tanks	11.02.2026		
	Determination of Center of pressure on immersed surfaces and on tank walls	13.02.2026		
	Determination of pressure on sides and bottom of tanks containing two liquids	16.02.2026		
Determination of pressure on vertical surface in contact with liquid on either side	18.02.2026			
Unit-II Fluid Flow Parameters	Types of flow – Gravity and pressure flow, Laminar, Turbulent, Uniform, Non-uniform, Steady, Unsteady flow. Reynolds number	20.02.2026		
	Types of flow – Gravity and pressure flow, Laminar, Turbulent, Uniform, Non-uniform, Steady, Unsteady flow. Reynolds number	21.02.2026		
	Discharge and its unit, continuity equation of flow	23.02.2026		
	Discharge and its unit, continuity equation of flow	25.02.2026		
	Energy of flowing liquid: potential, kinetic and pressure energy	27.02.2026		
	Energy of flowing liquid: potential, kinetic and pressure energy	28.02.2026		



Assign
As

	Bernoulli's theorem: statement, assumptions, equation	02.03.2026		
	Bernoulli's theorem: statement, assumptions, equation	06.03.2026		
Unit-III Flow through pipes	Major Head loss in pipe: Frictional loss and its computation by Darcy's Weisbach equation	07.03.2026		
	Major Head loss in pipe: Frictional loss and its computation by Darcy's Weisbach equation	09.03.2026		
	Class Test - I	11.03.2026		
	Minor losses in pipe: loss at entrance, exit, sudden contraction, sudden enlargement, and fittings	13.03.2026		
	Flow through pipes in series, pipes in parallel and Dupuit's equation for equivalent pipe	16.03.2026		
	Flow through pipes in series, pipes in parallel and Dupuit's equation for equivalent pipe	18.03.2026		
	Flow through pipes in series, pipes in parallel and Dupuit's equation for equivalent pipe	20.03.2026		
	Flow through pipes in series, pipes in parallel and Dupuit's equation for equivalent pipe	23.03.2026		
	Flow through pipes in series, pipes in parallel and Dupuit's equation for equivalent pipe	25.03.2026		
	Hydraulic gradient line and total energy line	27.03.2026		
	Unit-IV Flow through Open Channel	Geometrical properties of channel section: Wetted area, wetted perimeter, hydraulic radius for rectangular and trapezoidal channel section	28.03.2026	
Determination of discharge by Chezy's equation and Manning's equation		30.03.2026		
Determination of discharge by Chezy's equation and Manning's equation		01.04.2026		
Determination of discharge by Chezy's equation and Manning's equation		04.04.2026		
Conditions for most economical rectangular and trapezoidal channel section		06.04.2026		
Conditions for most economical rectangular and trapezoidal channel section		08.04.2026		
Class Test - II		10.04.2026		
Discharge measuring devices: Triangular and rectangular Notches		13.04.2026		
Discharge measuring devices: Triangular and rectangular Notches		17.04.2026		
Velocity measurement devices: current meter, floats and Pitot's tube		18.04.2026		
Velocity measurement devices: current meter, floats and Pitot's tube		20.04.2026		
Specific energy diagram, Froude's Number		22.04.2026		
Specific energy diagram, Froude's Number		24.04.2026		
Unit-V Hydraulic Pumps		Concept of pump, Types of pumps - centrifugal, reciprocating, submersible	25.04.2026	
	Concept of pump, Types of pumps - centrifugal, reciprocating, submersible	27.04.2026		
	Concept of pump, Types of pumps - centrifugal, reciprocating, submersible	29.04.2026		
	Suction head, delivery head, static head, Manometric head	02.05.2026		
	Suction head, delivery head, static head, Manometric head	04.05.2026		
	Selection and choice of pump	06.05.2026		
	Revision	08.05.2026		
	Revision	18.05.2026		
	Revision	20.05.2026		
	Revision	22.05.2026		
	Revision	23.05.2026		
	Revision	25.05.2026		



Assignments

Assignment No.	Contents of syllabus covered	Proposed Date	Actual Date	Remarks
A-1	Unit-I, Unit-II	02.03.2026		
A-2	Unit-III, Unit-IV	01.04.2026		

Class Test / House Test

Name of Test	Syllabus of Tests	Proposed Date	Actual Date	Remarks
Class Test - I	Unit-I, Unit-II	As per HPTSB Academic Calender		
Class Test - II	Unit-III, Some topics of Unit-IV			
House Test	Unit-I to Unit-IV			

Lab Plan

Sr. No.	Name of Practical	Proposed Date	Actual Date	Remarks
1	Use piezometer to measure pressure at a given point	31.01.2026		
2	Use U tube differential manometer to measure pressure difference between two given points	07.02.2026		
3	Find the resultant pressure and its position for given situation of liquid in a tank	07.02.2026		
4	Use Reynold's apparatus to determine type of flow	21.02.2026		
5	Use Bernoulli's apparatus to apply Bernoulli's theorem to get total energy line for a flow in a closed conduit of varying cross sections	21.02.2026		
6	Determine minor losses in pipe fittings due to sudden contraction and sudden enlargement	28.02.2026		
7	Determine minor losses in pipe fitting due to Bend and Elbow	07.03.2026		
8	Calibrate Venturimeter to find out the discharge in a pipe	28.03.2026		
9	Calibrate the Orifice to find out the discharge through a tank	04.04.2026		
10	Use Current meter to measure the velocity of flow of water in open channel	18.04.2026		
11	Use Pitot tube to measure the velocity of flow of water in open channel	25.04.2026		
12	Use triangular notch to measure the discharge through open channel	02.05.2026		
13	Use Rectangular notch to measure the discharge through open channel	23.02.2026		

Per [Signature]
24/01/2026
(Signature of Teacher)

[Signature]
(Signature of HOD)

[Signature]
Principal
SIRDA Polytechnic,
Naulakha, P. O. Kanold
Sundernagar Distt. Mandi
(H.P.)

**DEPARTMENT OF CIVIL ENGINEERING
SIRDA POLYTECHNIC SUNDERNAGAR
DISTT.- MANDI (H.P.) - 175019**

LESSON PLAN

Program Name	Civil Engineering
Subject Name	Advance surveying
Subject Code	CEPC204(Th) &CEPC216(Pr)
Semester	4TH
Subject Teacher Name	Er. Ritika Gil

Evaluation Scheme

S. No.	Subject Name	Study Scheme (Hrs/week)		Marks Distribution in Evaluation Scheme					
				Internal Assessment			External Assessment		
		Th	Pr	Th	Pr	Total	Th	Pr	Total
1	Advance surveying	3	0	40	0	40	60	0	100
	Advance surveying lab	0	4	0	40	40	0	60	100
Reference Books		Duggal, S. K., Survey I and Survey II, Tata McGraw Hill Education Pvt. Ltd., Noida Subramanian, R., Surveying and Levelling, Oxford University Press. New Delhi.							

Teaching Plan

	Name of Topic	Proposed Date	Actual Date	Remarks
Unit – I Plane Table Surveying	Principles of plane table survey.	27.01.2026		
	Accessories of plane table and their use, Telescopic alidade	29.01.2026		
	Setting of plane table; Orientation of plane table - Back sighting and Magnetic meridian method	31.01.2026		
	Setting of plane table; Orientation of plane table - Back sighting and Magnetic meridian method	03.02.2026		
	Methods of plane table surveys- Radiation, Intersection and Traversing	05.02.2026		
	Methods of plane table surveys- Radiation, Intersection and Traversing	07.02.2026		
	Merits and demerits of plane table survey	10.02.2026		
Unit-II Theodolite Surveying	Types and uses of Theodolite, Components of transit Theodolite and their functions, Reading the Vernier of transit Theodolite.	12.02.2026		
	Types and uses of Theodolite, Components of transit Theodolite and their functions, Reading the Vernier of transit Theodolite.	17.02.2026		
	Technical terms- Swinging, Transiting, Face left, Face right	19.02.2026		
	Fundamental axes of transit Theodolite and their relationship	21.02.2026		
	Temporary adjustment of transit Theodolite	24.02.2026		
	Measurement of horizontal angle- Direct and Repetition method. Errors eliminated by method of repetition	26.02.2026		
	Measurement of magnetic bearing of a line. Prolonging and ranging a line. deflection angle	28.02.2026		
	Measurement of vertical Angle	03.03.2026		
	Theodolite traversing by included angle method and Deflection angle method	05.03.2026		
	Traverse Computation-Latitude, Departure, Consecutive coordinates, independent coordinates	07.03.2026		
	Class Test - I		10.03.2026	

Unit-III Tacheometric surveying and Curve setting	Principles of Tacheometry, Tacheometer, and its component parts, Anallatic lens	12.03.2026		
	Principles of Tacheometry, Tacheometer, and its component parts, Anallatic lens	17.03.2026		
	Tacheometric formula for horizontal distance with telescope horizontal and staff vertical	19.03.2026		
	Tacheometric formula for horizontal distance with telescope horizontal and staff vertical	24.03.2026		
	Field method for determining constants of tacheometer, determining horizontal and vertical distances with tacheometer by fixed hair method and staff held vertical, Limitations of tacheometry	28.03.2026		
	Field method for determining constants of tacheometer, determining horizontal and vertical distances with tacheometer by fixed hair method and staff held vertical, Limitations of tacheometry	31.03.2026		
	Field method for determining constants of tacheometer, determining horizontal and vertical distances with tacheometer by fixed hair method and staff held vertical, Limitations of tacheometry	02.04.2026		
	Types of curves used in roads, Designation of curves	04.04.2026		
	Setting simple circular curve by offsets from long chord and Rankine's method of deflection angles	07.04.2026		
	Setting simple circular curve by offsets from long chord and Rankine's method of deflection angles	09.04.2026		
Unit-IV Advanced surveying equipment	Principle of Electronic Distance Meter (EDM), its component parts and their Functions, use of EDM.	16.04.2026		
	Class Test - II	18.04.2026		
	Principle of Electronic Distance Meter (EDM), its component parts and their Functions, use of EDM	21.04.2026		
	Use of micro-optic Theodolite and Electronic Digital Theodolite	23.04.2026		
	Use of micro-optic Theodolite and Electronic Digital Theodolite	25.04.2026		
	Use of Total Station, Use of function keys	28.04.2024		
Unit-V Remote sensing, GPS and GIS	Remote Sensing - Overview, Remote sensing system, Applications of remote sensing in Civil engineering, land use / Land cover, mapping, disaster management	30.04.2026		
	Remote Sensing - Overview, Remote sensing system, Applications of remote sensing in Civil engineering, land use / Land cover, mapping, disaster management	02.05.2026		
	Use of Global Positioning System (GPS) instruments	05.05.2026		
	Geographic Information System (GIS) Overview, Components, Applications, Software for GIS	07.05.2026		
	Geographic Information System (GIS) Overview, Components, Applications, Software for GIS	19.05.2026		
	Introduction to Drone Surveying	21.05.2026		
	Revision	23.05.2025		
	Revision	26.05.2026		

DEPARTMENT OF CIVIL ENGINEERING
SIRDA POLYTECHNIC SUNDERNAGAR
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LESSON PLAN

Program Name	Civil Engineering
Subject Name	Building Planning and Drawing
Subject Code	CEPC206(Th) & CEPC218(Pr)
Semester	4th
Subject Teacher Name	Er. Pankaj Thakur

Evaluation Scheme

S. No.	Subject Name	Study Scheme (Hrs/week)		Marks Distribution in Evaluation Scheme					
				Internal Assessment			External Assessment		
		Th	Pr	Th	Pr	Total	Th	Pr	Total
1	Building Planning and Drawing	1	0	40	0	40	60	0	100
	Building Planning and Drawing Lab		4	0	40	40	0	60	100
Reference Books		(1) Shah. M.G. Kale, CM, Patki, S.Y., Building Drawing, McGraw Hill Publishing							
		(2) Malik and Mayo, Civil Engineering Drawing, Computech Publication Ltd							

Teaching Plan

	Name of Topic	Proposed Date	Actual Date	Remarks
Unit-I Conventions and Symbols	Unit – I Conventions and Symbols: Conventions as per IS 962, symbols for different materials such as earthwork, brickwork, stonework, concrete, woodwork, and glass. Graphical symbols for doors and windows, Abbreviations, symbols for sanitary and electrical installations. Types of lines-visible lines, centre line, hidden line, section line, dimension line, extension line, pointers, arrowhead, or dots.	31.01.2026		
	Appropriate size of lettering and numerals for titles, subtitles, notes, and dimensions. Types of scale- Monumental, Intimate, criteria for Proper Selection of scale for various types of drawing. Sizes of various standard papers/sheets. Reading and interpreting readymade Architectural building drawing (To be procured from Architect, Planning Consultants, Planning Engineer).	07.02.2026		
Unit-II Planning of Building	Principles of planning for Residential and Public building- Aspect, Prospect, Orientation, Grouping, Privacy, Elegance, Flexibility, Circulation, Furniture requirements, Sanitation, Economy. Space requirement and norms for minimum dimension of different units in the residential and public buildings as per IS 962	21.02.2026		
	Principles of planning for Residential and Public building- Aspect, Prospect, Orientation, Grouping, Privacy, Elegance, Flexibility, Circulation, Furniture requirements, Sanitation, Economy. Space requirement and norms for minimum dimension of different units in the residential and public buildings as per IS 962	28.02.2026		
	Rules and byelaws of sanctioning authorities for construction work, Plot area built up area, super built-up area, plinth area, carpet area, floor area and FAR (Floor Area Ratio). Line plans for residential building of minimum three rooms including water closet (WC), bath and staircase as per principles of planning. Line plans for public building- school building, primary health centre, restaurant, bank, post office, hostel, Function Hall and Library	07.03.2026		

	Rules and byelaws of sanctioning authorities for construction work, Plot area built up area, super built-up area, plinth area, carpet area, floor area and FAR (Floor Area Ratio). Line plans for residential building of minimum three rooms including water closet (WC), bath and staircase as per principles of planning. Line plans for public building- school building, primary health centre, restaurant, bank, post office, hostel, Function Hall and Library	28.03.2026		
Unit-III Drawing of Load Bearing Structure	Drawing of Single storey Load Bearing residential building (2 BHK) with staircase. Data drawing – plan, elevation, section, site plan, schedule of openings, construction notes with specifications, area statement, Planning and design of staircase- Rise and Tread for residential and public building.	04.04.2026		
	Working drawing – developed plan, elevation, section passing through staircase or WC and bath. Foundation plan of Load bearing structure.	18.04.2026		
Unit-IV Drawing of Framed Structure	Drawing of Two storeyed Framed Structure (G+1), residential building (2 BHK) with stair- case. Data drawing – developed plan, elevation, section, site plan, schedule of openings, construction notes with specifications, area statement. Planning and design of staircase- Rise and Tread for residential and public building	25.04.2026		
	Drawing of Two storeyed Framed Structure (G+1), residential building (2 BHK) with stair- case. Data drawing – developed plan, elevation, section, site plan, schedule of openings, construction notes with specifications, area statement. Planning and design of staircase- Rise and Tread for residential and public building	02.05.2026		
	Working drawing of Framed Structure – developed plan, elevation, section passing through staircase or WC and bath. Foundation plan of Framed Structure. Details of RCC footing, Column, Beam, Chajjas, Lintel, Staircase, and slab. Drawing with CAD- Draw commands, modify commands, layer commands.	23.05.2026		

Lab Plan

Sr. No.	Name of Practical	Proposed Date	Actual Date	Remarks
1	Draw various types of lines, graphical symbols for materials, doors and windows, symbols for sanitary, water supply and electrical installations and write abbreviations as per IS 962	27.01.2026		
2	Draw various types of lines, graphical symbols for materials, doors and windows, symbols for sanitary, water supply and electrical installations and write abbreviations as per IS 962	29.01.2026		
3	Draw various types of lines, graphical symbols for materials, doors and windows, symbols for sanitary, water supply and electrical installations and write abbreviations as per IS 962	03.02.2026		
4	Draw line plan to suitable scale (1BHK, staircase, WC and Bathroom)	05.02.2026		
5	Draw line plan to suitable scale (1BHK, staircase, WC and Bathroom)	10.02.2026		
6	Draw line plan to suitable scale (1BHK, staircase, WC and Bathroom)	12.02.2026		

7	Draw line plans to suitable scale for the following Public Buildings (School Building and Community Hall).	17.02.2026		
8	Draw line plans to suitable scale for the following Public Buildings (School Building and Community Hall).	19.02.2026		
9	Draw line plans to suitable scale for the following Public Buildings (School Building and Community Hall).	24.02.2026		
10	Draw line plans to suitable scale for the following Public Buildings (School Building and Community Hall).	26.02.2026		
11	Draw submission drawing to the scale 1:100 of a single storey load bearing residential building (2BHK) with flat Roof and staircase showing: a. Developed plan and elevation b. Section passing through Stair or W.C. and Bath c. Foundation plan and schedule of openings. d. Site plan (1:200), area statement, construction notes.	03.03.2026		
12	Draw submission drawing to the scale 1:100 of a single storey load bearing residential building (2BHK) with flat Roof and staircase showing: a. Developed plan and elevation b. Section passing through Stair or W.C. and Bath c. Foundation plan and schedule of openings. d. Site plan (1:200), area statement, construction notes.	05.03.2026		
13	Draw submission drawing to the scale 1:100 of a single storey load bearing residential building (2BHK) with flat Roof and staircase showing: a. Developed plan and elevation b. Section passing through Stair or W.C. and Bath c. Foundation plan and schedule of openings. d. Site plan (1:200), area statement, construction notes.	10.03.2026		
14	Draw submission drawing to the scale 1:100 of a single storey load bearing residential building (2BHK) with flat Roof and staircase showing: a. Developed plan and elevation b. Section passing through Stair or W.C. and Bath c. Foundation plan and schedule of openings. d. Site plan (1:200), area statement, construction notes.	12.03.2026		
15	Draw submission drawing to the scale 1:100 of a single storey load bearing residential building (2BHK) with flat Roof and staircase showing: a. Developed plan and elevation b. Section passing through Stair or W.C. and Bath c. Foundation plan and schedule of openings. d. Site plan (1:200), area statement, construction notes.	17.03.2026		
16	Draw submission drawing, to the scale of 1:100, of (G+1) Framed Structure Residential Building (2BHK) with Flat Roof and staircase showing: a. Developed plan b. Elevation.c. Section passing through Staircase, WC and Bath d. Site plan (1:200) and area statement e. Schedule of openings and Construction Notes.	19.03.2026		
17	Draw submission drawing, to the scale of 1:100, of (G+1) Framed Structure Residential Building (2BHK) with Flat Roof and staircase showing: a. Developed plan b. Elevation.c. Section passing through Staircase, WC and Bath d. Site plan (1:200) and area statement e. Schedule of openings and Construction Notes.	24.03.2026		
18	Draw submission drawing, to the scale of 1:100, of (G+1) Framed Structure Residential Building (2BHK) with Flat Roof and staircase showing: a. Developed plan b. Elevation.c. Section passing through Staircase, WC and Bath d. Site plan (1:200) and area statement e. Schedule of openings and Construction Notes.	31.03.2026		
19	Draw submission drawing, to the scale of 1:100, of (G+1) Framed Structure Residential Building (2BHK) with Flat Roof and staircase showing: a. Developed plan b. Elevation.c. Section passing through Staircase, WC and Bath d. Site plan (1:200) and area statement e. Schedule of openings and Construction Notes.	02.04.2026		

20	Draw submission drawing, to the scale of 1/100, of (G+1) Framed Structure Residential Building (2BHK) with Flat Roof and staircase showing: a. Developed plan b. Elevation c. Section passing through Staircase, WC and Bath d. Site plan (1/200) and area statement e. Schedule of openings and Construction Notes.	07.04.2026		
21	Draw submission drawing, to the scale of 1/100, of (G+1) Framed Structure Residential Building (2BHK) with Flat Roof and staircase showing: a. Developed plan b. Elevation c. Section passing through Staircase, WC and Bath d. Site plan (1/200) and area statement e. Schedule of openings and Construction Notes.	09.04.2026		
22	Draw working drawing for above mentioned drawing at serial number 5 showing: a. Foundation plan to the scale 1/50 b. Detailed enlarged section of RCC column and footing with plinth filling c. Detailed enlarged section of RCC Beam, Lintel and Chajjas.	16.04.2026		
23	Draw working drawing for above mentioned drawing at serial number 5 showing: a. Foundation plan to the scale 1/50 b. Detailed enlarged section of RCC column and footing with plinth filling c. Detailed enlarged section of RCC Beam, Lintel and Chajjas.	21.04.2026		
24	Draw working drawing for above mentioned drawing at serial number 5 showing: a. Foundation plan to the scale 1/50 b. Detailed enlarged section of RCC column and footing with plinth filling c. Detailed enlarged section of RCC Beam, Lintel and Chajjas.	23.04.2026		
25	Draw working drawing for above mentioned drawing at serial number 5 showing: a. Foundation plan to the scale 1/50 b. Detailed enlarged section of RCC column and footing with plinth filling c. Detailed enlarged section of RCC Beam, Lintel and Chajjas.	28.04.2026		
26	Draw working drawing for above mentioned drawing at serial number 5 showing: a. Foundation plan to the scale 1/50 b. Detailed enlarged section of RCC column and footing with plinth filling c. Detailed enlarged section of RCC Beam, Lintel and Chajjas.	30.04.2026		
27	Draw the above-mentioned drawing at serial number 5 using CAD software and enclose the printout. a. Developed plan b. Elevation.	05.05.2026		
28	Draw the above-mentioned drawing at serial number 5 using CAD software and enclose the printout. a. Developed plan b. Elevation.	07.05.2026		
29	Draw the above-mentioned drawing at serial number 5 using CAD software and enclose the printout. a. Developed plan b. Elevation.	19.05.2026		
30	Draw the above-mentioned drawing at serial number 5 using CAD software and enclose the printout. a. Developed plan b. Elevation.	21.05.2026		
31	Draw the above-mentioned drawing at serial number 5 using CAD software and enclose the printout. a. Developed plan b. Elevation.	26.05.2026		

Ran...
24/01/2026
(Signature of Teacher)

[Signature]
(Signature of HOD)

[Signature]
Principal
SIRDA Polytechnic
Naula P. O. Kanak
Mandi H.P.
Sundernagar Distt. Mandi
(H.P.)

**DEPARTMENT OF CIVIL ENGINEERING
SIRDA POLYTECHNIC SUNDERNAGAR
DISTT.- MANDI (H.P.) - 175019**

LESSON PLAN

Program Name	Civil Engineering
Subject Name	Transportation Engineering
Subject Code	CEPC208(Th) & CEPC220(Pr)
Semester	4th
Subject Teacher Name	Er. Anu Singhta

Evaluation Scheme

S. No.	Subject Name	Study Scheme (Hrs/week)		Marks Distribution in Evaluation Scheme					
				Internal Assessment			External Assessment		
				Th	Pr	Total	Th	Pr	Total
1	Transportation Engineering	3	0	40	0	40	60	0	100
	Transportation Engineering Lab	0	2	0	40	40	0	60	100
Reference Books		(1) Khanna S.K., Justo, C.E.G and Veeraragavan, A., Highway Engineering, Nem Chand and Brothers, Roorkee. (2) L.R. Kadiyali, Transportation Engineering, Khanna Book Publishing Co., Delhi (ISBN: 978-93-82609-858) Edition 2018							

Teaching Plan

	Name of Topic	Proposed Date	Actual Date	Remarks
Unit - 1 Overview of Highway Engineering	Role of transportation in the development of nation.	28.01.2026		
	Scope and Importance of roads in India and its Characteristics	30.01.2026		
	Different modes of transportation - land way, waterway, airway	02.02.2026		
	Merits and demerits of roadway and railway	04.02.2026		
	General classification of roads	06.02.2026		
	Selection and factors affecting road alignment	09.02.2026		
Unit- 2 Geometric Design of Highway	Camber: Definition, purpose, types as per IRC - recommendations.	11.02.2026		
	Kerbs: Road margin, road formation, right of way.	13.02.2026		
	Design speed and various factors affecting design speed as per IRC - recommendations	16.02.2026		
	Gradient: Definition, types as per IRC - Recommendations	18.02.2026		
	Sight distance (SSD): Definition, types IRC - recommendations, simple numerical	20.02.2026		
	Curves: Necessity, types: Horizontal, vertical curves	20.02.2026		
	Super elevation: Definition, formula for calculating minimum	23.02.2026		
	Maximum Super elevation and method of providing super-elevation.	23.02.2026		
	Standards cross-sections of national highway in embankment and cutting.	25.02.2026		
			27.02.2026	
Unit- 3 Construction of Road Pavements	Types of road materials and their Tests			
	Test on aggregates: Flakiness and Elongation Index tests	02.03.2026		
	Angularity Number test, test on Bitumen-penetration, Ductility.	06.03.2026		
	Flash and Fire point test and Softening point test	09.03.2026		
	Pavement - Definition, Types, Structural Components of pavement and their functions	09.03.2026		
	Class Test - I	11.03.2026		
	Construction of WBM road, Merits and demerits of WBM & WMM road.	13.03.2026		
	Construction of Flexible pavement / Bituminous Road	16.03.2026		
	Types of Bitumen and its properties, Emulsion.	18.03.2026		
	Cutback Tar, Terms used in BR-prime coat, tack coat, seal coat.	20.03.2026		
	Merits and Demerits of BR	23.03.2026		
	Classification of Indian Railways, zones of Indian Railways	25.03.2026		
	Permanent way, Ideal requirement, Components, Rail Gauge, types.	27.03.2026		
	Factors affecting selection of a gauge	30.01.2026		
	Rail: Rail Joists - requirements, types	01.04.2026		
Unit- 4 Basics of Railway Engineering	Creep of rail causes and prevention	06.04.2026		
	Alignment- Factors governing rail alignment	08.04.2026		
	Class Test - II	10.04.2026		
	Track Cross sections - standard cross section of single and double line in cutting and embankment, Important terms- permanent land, formation width, side drains.	13.04.2026		
		17.04.2026		

Unit-5 Track geometrics, Construction and Maintenance	Grade compensation, super elevation,	20.04.2026		
	Limits of Super elevation on curves, cant deficiency, negative cant,	22.04.2026		
	Coning of wheel, tilting of rail	24.04.2026		
	Railway Track Geometrics: Gradient, curves- types and factors affecting	24.04.2026		
	Branching of Tracks, Points and crossings, Turn out- types, components, functions and inspection	27.04.2026		
	Track junctions: crossovers, scissor cross over, diamond crossing, track triangle	29.04.2026		
	Station-Purpose, requirement of railway station, important technical terms	04.05.2026		
	Types of rail- way station, factors affecting site selection for railway station	06.08.2026		
	Station yard: Classification- Passenger, goods, locomotive and marshalling yards	08.05.2026		
	Function & drawbacks of marshalling yards	18.05.2026		
	Track Maintenance- Necessity, Classification,	20.05.2026		
	Tools required for track maintenance with their functions, Organization of track maintenance,	22.05.2026		
	Duties of permanent way: inspector, gang mate and Key man	25.05.2026		

Assignments

Assignment No.	Contents of syllabus covered	Proposed Date	Actual Date	Remarks
A-1	Unit-I, Unit-II	02.03.2026		
A-2	Unit-III, Unit-IV	01.04.2026		

Class Test / House Test

Name of Test	Syllabus of Tests	Proposed Date	Actual Date	Remarks
Class Test - I	Unit-I, Unit-II	As per HPTSB Academic Calender		
Class Test - II	Unit-III, Some topics of Unit-IV			
House Test	Unit-I to Unit-IV			

Lab Plan

Sr. No.	Name of Practical	Proposed Date	Actual Date	Remarks
1	Draw the sketches showing standard cross sections of Expressways, Freeways, NH/SH, MDR/ODR	30.01.2026		
2	Flakiness and Elongation Index of aggregates.	06.02.2026		
3	Angularity Number of aggregates	13.02.2026		
4	Aggregate impact test	13.02.2026		
5	Los Angeles Abrasion test	20.02.2026		
6	Aggregate crushing test	20.02.2026		
7	Softening point test of bitumen	27.02.2026		
8	Penetration test of bitumen	06.03.2026		
9	Flash and Fire Point test of bitumen	13.03.2026		
10	Ductility test of Bitumen	20.03.2026		
11	Visit the constructed road for visual inspection to identify defects and suggest remedial measures	27.03.2026		
12	Prepare the photographic report containing details for experiment No. 11	10.04.2026		
13	Visit the hill road constructed site to understand its components	17.04.2026		

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**DEPARTMENT OF CIVIL ENGINEERING
SIRDA POLYTECHNIC SUNDERNAGAR
DISTT.- MANDI (H.P.) - 175019**

LESSON PLAN

Program Name	Civil Engineering
Subject Name	Railways Bridges and Tunnels
Subject Code	CEPE212 – (II)
Semester	4th
Subject Teacher Name	Er Shivani

Evaluation Scheme

S. No.	Subject Name	Study Scheme (Hrs/week)		Marks Distribution in Evaluation Scheme					
				Internal Assessment			External Assessment		
		Th	Pr	Th	Pr	Total	Th	Pr	Total
1	Railways Bridges and Tunnels	3	0	40	0	40	60	0	100
		0	0	0	0	0	0	0	0
Reference Books		(1) Vaswani, NK, — Railway EngineeringII, Roorkee Publishing House (2) Rangwala, SC, — Railway EngineeringII, Anand Charotar Book Stall							

Teaching Plan

	Name of Topic	Proposed Date	Actual Date	Remarks
PART-1: RAILWAYS	Introduction to Indian Railways, Railways surveys: Factors influencing the railways route	Friday, January 30, 2026		
	brief description of various type of railway survey Classification of permanent way describing component part	31-01-26		
	Rail Gauge, Definition, types, practice in India	02-02-26		
	Rail – types of rails	Friday, February 6, 2026		
	Rail Fastening: Rail joints, types of rail joints, fastening for rails, Fish plates, spikes bearing plat	07-02-26		
	Sleepers: Functions of sleepers, types of sleepers, requirements of an ideal material of Sleepers	09-02-26		
	Ballast: Function of ballast, requirements of an ideal material of ballast	13-02-26		
	Crossing and signalling: Brief description regarding different types of crossing/signalling	16-02-26		
	Maintenance of track: Necessity, track fixtures, maintenance and boxing of ballast, maintenance gauges, tools Drains, methods of construction	20-02-26		
PART-II: BRIDGES	Introduction	23-02-26		
	difference between a bridge and A culvert	27-02-26		
	Classification of Bridges □ Their structural elements and suitability	28-02-26		
	□ According to life-permanent and temporary	02-03-26		
	According to deck level–Deck, through and semi-through	06-03-26		
	Revision	07-03-26		
	CLASS TEST -1	09-03-26		
	□ According to material–timber, masonry, steel, RCC, pre-stressed	13-03-26		
	IRC classification	16-03-26		

Bridge Foundations Introduction to open foundation pile foundation Well foundation	20-03-26		
Revision	27-03-26		
Piers, Abutments and Wing walls	28-03-26		
Piers definition parts types-solid (masonry and RCC) open	30-03-26		
Revision	04-04-26		
	06-04-26		
Abutment sand wing walls-definition, types of abutment	10-04-26		
abutment with wing walls (straight,splayed ,return and curved)	17-04-26		
CLASS TEST -2	18-04-26		
Revision	20-04-26		
Bridge bearings Purpose of bearing, types of bearing-fixed plate rocker roller	24-04-26		
Revision	25-04-26		
Maintenance of Bridges, inspection of bridges	27-04-26		
Revision	02-05-26		
Routine maintenance	04-05-26		
Definition and necessity of tunnels	08-05-26		
Typical section of tunnels for a national highway and single and	18-05-26		
Revision	22-05-26		
Lighting in tunnels & lining of tunnels	23-05-26		
Revision	25-05-26		
PART-III: TUNNELS			

Assignments

Assignment No.	Contents of syllabus covered	Proposed Date	Actual Date	Remarks
A-1	PART -1	02-03-26		
A-2	PART -2,PART-3	10-04-26		

Class Test / House Test

Name of Test	Syllabus of Tests	Proposed Date	Actual Date	Remarks
Class Test - I	PART -1 ,some topics of PART -2	As per HPTSB Academic Calender		
Class Test - II	Some topics of PART -2, PART-3			
House Test	PART1-PART-3			

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**DEPARTMENT OF CIVIL ENGINEERING
SIRDA POLYTECHNIC SUNDERNAGAR
DISTT.- MANDI (H.P.) - 175019**

LESSON PLAN

Program Name	Civil Engineering
Subject Name	Rural Construction Technology
Subject Code	CEPE210-(II)
Semester	4TH
Subject Teacher Name	Er. Ritika Gil

Evaluation Scheme

S. No.	Subject Name	Study Scheme (Hrs/week)		Marks Distribution in Evaluation Scheme					
				Internal Assessment			External Assessment		
		Th	Pr	Th	Pr	Total	Th	Pr	Total
1	Rural Construction Technology	3	0	40	0	40	60	0	100
Reference Books		(1) CBRI, Roorkee, Advances in Building Materials and Construction. publication, 2005. (2) Gaur, Keshav Dev, Dynamics of Rural Development, Mittal Publications. Delhi.							

Teaching Plan

	Name of Topic	Proposed Date	Actual Date	Remarks
Unit-I Rural Development and Planning	Scope, development plans; various approaches to rural development planning	28.01.2026		
	Scope, development plans; various approaches to rural development planning	30.01.2026		
	Significance of rural development.	02.02.2026		
	Rural development program/projects	04.02.2026		
	Rural development program/projects	06.02.2026		
Unit-II Rural Housing	Low-cost construction material for housing	09.02.2026		
	Composite material- ferro-cement & fly ash, autoclaved calcium silicate bricks and soil-stabilized unburnt brick; Plinth protection of mud walls.	11.02.2026		
	Composite material- ferro-cement & fly ash, autoclaved calcium silicate bricks and soil-stabilized unburnt brick; Plinth protection of mud walls.	13.02.2026		
	Water-proof and fire-retardant roof treatment for thatch roofs. Pre-cast stone masonry, rattrap bond for walls, Panels for roof, ferro-cement flooring/roofing units.	16.02.2026		
	Water-proof and fire-retardant roof treatment for thatch roofs. Pre-cast stone masonry, rattrap bond for walls, Panels for roof, ferro-cement flooring/roofing units.	18.02.2026		
	Biomass - types of fuels such as firewood, agricultural residues, dung cakes	20.02.2026		
	Biomass - types of fuels such as firewood, agricultural residues, dung cakes	23.02.2026		
	Renewable energy and integrated rural energy program - Objectives, Key elements, Implementation	25.02.2026		
	Renewable energy and integrated rural energy program - Objectives, Key elements, Implementation	27.02.2026		
	Financial provisions, sources of renewable energy	02.03.2026		
	Financial provisions, sources of renewable energy	06.03.2026		
	Working of go-bar gas and biogas plants	09.03.2026		

Unit III Water Supply and Sanitation for Rural Areas	Class Test - I	11.03.2026		
	Sources of water BIS & WHO water standards	13.03.2026		
	Sources of water BIS & WHO water standards	16.03.2026		
	Quality, Storage, and distribution for rural water supply works	18.03.2026		
	Quality, Storage, and distribution for rural water supply works	20.03.2026		
	Hand pumps-types, installation, operation, and maintenance of hand pumps	23.03.2026		
	Hand pumps-types, installation, operation, and maintenance of hand pumps	25.03.2026		
	Conservation of water - rainwater harvesting, drainage in rural areas	27.03.2026		
	Conservation of water - rainwater harvesting, drainage in rural areas	30.03.2026		
	Construction of low-cost latrines: Two pit pour flush water seal, septic tank etc	01.04.2026		
	Construction of low-cost latrines: Two pit pour flush water seal, septic tank etc	06.04.2026		
	Low-cost community and individual Garbage disposal systems, Ferro-cement storage tanks	08.04.2026		
	Low-cost community and individual Garbage disposal systems, Ferro-cement storage tanks	10.04.2026		
Unit IV Low-Cost Rural Roads	Broad categories of Pavement Layers, types of Granular Sub-Bases and Bases	13.04.2026		
	Class Test - II	17.04.2026		
	Broad categories of Pavement Layers, types of Granular Sub-Bases and Bases	20.04.2026		
	Guidelines for Surfacing of Rural Road as per relevant IRC codes	22.04.2026		
	Guidelines for Surfacing of Rural Road as per relevant IRC codes	24.04.2026		
	Pradhan Mantri Gram Sadak Yojna (PMGSY)- Highlights of Scheme	27.04.2026		
	Pradhan Mantri Gram Sadak Yojna (PMGSY)- Highlights of Scheme	29.04.2026		
Unit V Low-Cost Irrigation	Design consideration and construction of tube-well, drip & sprinkler irrigation systems	04.05.2026		
	Design consideration, and construction of tube-well, drip & sprinkler irrigation systems	06.05.2026		
	Watershed and catchment area development –problems and features of watershed management	08.05.2026		
	Watershed and catchment area development –problems and features of watershed management	18.05.2026		
	Watershed management structures - K. T. weir, Gabian Structure, Cement Plug, Contour Bunding, Farm	20.05.2026		
	Watershed management structures - K. T. weir, Gabian Structure, Cement Plug, Contour Bunding, Farm	22.05.2026		
	Watershed management structures - K. T. weir, Gabian Structure, Cement Plug, Contour Bunding, Farm	25.05.2026		

Assignments

Assignment No.	Contents of syllabus covered	Proposed Date	Actual Date	Remarks
A-1	Unit-I, Unit-II	07.03.2026		
A-2	Unit-III, Unit-IV	06.04.2026		

Class Test / House Test

Name of Test	Syllabus of Tests	Proposed Date	Actual Date	Remarks
Class Test - I	Unit-I, Unit-II	As per HPTSB Academic Calender		
Class Test - II	Unit-III, Some topics of Unit-IV			
House Test	Unit-I to Unit-V			

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DEPARTMENT OF COMPUTER ENGINEERING**SIRDA POLYTECHNIC SUNDERNAGAR****DISTT.- MANDI (H.P.) - 175019****LESSON PLAN**

Program Name	CIVIL/CSE
Subject Name	Essence of Indian Knowledge and Tradition
Subject Code	AU202
Semester	4th
Subject Teacher Name	Promila Sharma

	Name of Topic	Proposed Date	Actual Date	Remarks
Unit -I Indian Knowledge system	Introduction and function of Indian Knowledge system	27-01-2026		
	The basic structure of Indian knowledge system	29-01-2026		
	The four Vedas , namely rig Veda, yajurveda, samveda, atharvaved	03-02-2026		
	The four upavedas, namely Ayurveda dhanur Veda gandharv beta sthaptya Veda	05-02-2026		
	the six vedangas namely Shiksha Kalpa vyakaran chandas nirukta and jyotisha	10-02-2026		
	itihaas (Ramayana and Mahabharata) and Purana Vishnu Purana bhagavata Purana Purana	12-02-2026		
	Dharma Shastra (manusmriti, Yajanvalkya samriti	17-02-2026		
	Darshan	19-02-2026		
	nyaya(logic and epistemology)	24-02-2026		
Unit-II modern science	modern science: introduction, characteristics importance and examples	26-02-2026		
	difference between modern science and Indian knowledge system	03-03-2026		
	role of Indian knowledge system in modern science	05-03-2026		
	CT-1	10-03-2026		
unit-III traditional knowledge	Traditional knowledge: definition, nature characteristics, scope and importance	12-03-2026		
	Indigenous knowledge: characteristics	17-03-2026		
	traditional knowledge vis-a-vis indigenous knowledge	19-03-2026		
	traditional knowledge vs Western knowledge	24-03-2026		
	the need for protecting traditional knowledge	02-04-2026		
unit IV yoga and holistic healthcare	Yoga: meaning and importance of yoga	07-04-2026		
	CT-2	09-04-2026		
	Yoga and physical health, yoga and psychological health, yoga and intellectual health, yoga and spiritual	16-04-2026		
	Introduction to ashtang yoga kriyas (shatkarma	21-04-2026		
	Pranayama and its type, active lifestyle and stress management through yoga	23-04-2026		
	Physical fitness, health and wellness: meaning and importance of wellness	28-04-2026		
	components of wellness health and physical fitness	30-04-2026		
	traditional sports and regional games for promoting wellness	05-05-2026		
	leadership through physical activities and sports ; introduction to first aid	07-05-2026		

unit V Himachal Pradesh: basic information	History culture heritage / tradition comma customs and manners	12-05-2026		
	history culture heritage / tradition comma customs and manners	14-05-2026		
	reasonal knowledge geographical knowledge features constitutional history	19-05-2026		
	tourism place and scope	21-05-2026		
	festivals and fears	26-05-2026		


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