

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

LESSON PLAN

Program Name	Civil Engineering
Subject Name	Estimation and Costing
Subject Code	CEPC303
Semester	5th
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	Estimation and Costing	4	0	40	0	40	60	0	100
Reference Books		(1) Dutta, B.N., Estimating and Costing in Civil engineering, UBS Publishers Distributors Pvt. Ltd. New Delhi.							
		(2) Rangwala, S.C., Estimating and Costing, Charotar Publishing House PVT. LTD. Anand.							

Teaching Plan

	Name of Topic	Proposed Date	Actual Date	Remarks
Unit-I Introduction	Meaning of the terms estimating & costing, Purpose of estimating and costing	04.08.2025		
	Types of Estimates, Approximate and Detailed, Approximate estimate Types, Plinth area rate method	06.08.2025		
	Cubic Content method, Approximate Quantity method	07.08.2025		
	Types of detailed estimate, Detailed estimate for new work, Revised estimate	08.08.2025		
	Supplementary estimate, Repair & Maintenance estimate	11.08.2025		
Unit-II Measurement	Units of measurement for various items of work as per BIS: 120	13.08.2025		
	Units of measurement for various items of work as per BIS: 120	14.08.2025		
	Rules for measurements	18.08.2025		
	Different methods of taking out quantities- long wall and short wall method, numerical problem on long wall and short wall method	20.08.2025		
	Long wall and short wall method, numerical problem on long wall and short wall method	21.08.2025		
	Long wall and short wall method, numerical problem on long wall and short wall method	22.08.2025		
	Centre line method, numerical problem on centre line method	25.08.2025		
	Centre line method, numerical problem on centre line method	27.08.2025		
	Centre line method, numerical problem on centre line method	28.08.2025		

Unit-III Preparation of Detailed Estimates and Abstract of Cost	Detailed Estimate and Abstract of Cost for one room residential building with flat roof	29.08.2025		
	Detailed Estimate and Abstract of Cost for one room residential building with flat roof	01.09.2025		
	Detailed Estimate and Abstract of Cost for one room residential building with flat roof	03.09.2025		
	Detailed Estimate and Abstract of Cost for one room residential building with flat roof	04.09.2025		
	Detailed Estimate and Abstract of Cost for two room residential building with flat roof	05.09.2025		
	Detailed Estimate and Abstract of Cost for two room residential building with flat roof	08.09.2025		
	Class Test - I	10.09.2025		
	Detailed Estimate and Abstract of Cost for two room residential building with flat roof	11.09.2025		
	Detailed Estimate and Abstract of Cost for two room residential building with flat roof	12.09.2025		
	Detailed estimate and abstract of Cost for Ssptic tank for 10 users	15.09.2025		
	Detailed estimate and abstract of Cost for Septic tank for 10 users	17.09.2025		
Unit-IV Road Estimation	Detailed Estimate and Abstract of Cost for Plain road with mid section area method	18.09.2025		
	Numerical Problems for Plain road with mid section area method	19.09.2025		
	Numerical Problems for Plain road with mid section area method	22.09.2025		
	Numerical Problems for Plain road with mid section area method	24.09.2025		
	Detailed Estimate and Abstract of Cost for Plain road with mean sectional area method	25.09.2025		
	Numerical Problems for Plain road with mean sectional area method	26.09.2025		
	Numerical Problems for Plain road with mean sectional area method	29.09.2025		
	Detailed Estimate and Abstract of Cost for Plain road with prismoidal formula	01.10.2025		
	Numerical Problems for Plain road with prismoidal formula	03.10.2025		
	Estimation of earth work in hill road, Numerical Problems for Hill roads	6.10.2025		
	Estimation of earth work in hill road, Numerical Problems for Hill roads	08.10.2025		
Unit-V Analysis of Rates	Calculation of Quantities of Materials for cement mortars of different proportion, cement concrete of different proportion	09.10.2025		
	Calculation of Quantities of Materials for RCC work in different proportions	10.10.2025		
	Calculation of Quantities of Materials for brick/stone masonry in cement mortar	13.10.2025		
	Class Test - II	15.10.2025		
	Calculation of Quantities of Materials for plastering and pointing	22.10.2025		
	Calculation of Quantities of Materials for whitewashing, painting	24.10.2025		
	Analysis of rates for earthwork (numerical)	29.10.2025		
	Analysis of rates for cement concrete of different proportion (numerical)	30.10.2025		
	Analysis of rates for RCC work in different proportions (numerical)	31.10.2025		
	Analysis of rates for brick/stone masonry in cement mortar (numerical)	03.11.2025		
	Analysis of rates for plastering and pointing (numerical)	06.11.2025		
	Analysis of rates for whitewashing, painting (numerical)	07.11.2025		

Unit-VI Contracts And Tendering	Meaning of contract, Qualities of a good contractor and their qualifications, Essentials of a contract	17.11.2025		
	Types of contracts, their advantages, disadvantages and suitability, system of payment	19.11.2025		
	Single and two cover-bids, Tender, tender forms and documents, tender notice, submission of tender	20.11.2025		
	Deposit of earnest money, security deposit, retention money, maintenance period, Administrative approval, Technical sanction, Budget provision, Expenditure sanction	21.11.2025		
	Methods for carrying out works- contract method, Preparation of Tender Document based on Common Schedule Rates (CSR)	24.11.2025		
	Introduction to CSR and calculation of cost based on premium on CSR	26.11.2025		

Assignments

Assignment No.	Contents of syllabus covered	Proposed Date	Actual Date	Remarks
A-1	Unit-I, Unit-II	03.09.2025		
A-2	Unit-III, Unit-IV	03.10.2025		

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			

Teacher
31/07/2025
(Signature of Teacher)

[Signature]
31/07/25
(Signature of HOD)

Principal
SIRDA Polytechnic
Sundernagar Distt. Mandi (H.P.)
21/07/25
Principal,
SIRDA Polytechnic,
Neulokha, P. O. Kanald,
Sunder Nagar, Mandi (H.P.)

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

LESSON PLAN

Program Name	Civil Engineering
Subject Name	Mechanics of Materials
Subject Code	CEPC205(Th) & CEPC217(Pr)
Semester	3rd
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	Mechanics of Materials	4	0	40	0	40	60	0	100
	Mechanics of Materials Lab	0	2	0	40	40	0	60	100
Reference Books		(1) Bedi D.S. , Strength of Materials, Khanna Publishing House, Delhi, Ed. 2018							
		(2) Ramamurtham, S, Strength of Materials, Dhanpat Rai and sons, New Delhi							

Teaching Plan

	Name of Topic	Proposed Date	Actual Date	Remarks
Unit-I Moment of Inertia	Moment of inertia (M.I.): Definition, M.I. of plane lamina, Radius of gyration, section modulus	01.08.2025		
	Parallel and Perpendicular axes theorems (without derivations)	02.08.2025		
	Moment of inertia M.I. of rectangle, square, circle, semi-circle, quarter circle and triangle section (without	05.08.2025		
	Moment of inertia of symmetrical and unsymmetrical I-section (numerical problem)	07.08.2025		
	Moment of inertia of channel section (numerical problem)	08.08.2025		
	Moment of inertia of T-section , Angle section (numerical problem)	12.08.2025		
	M.I. of Hollow sections about centroidal axes, Polar Moment of Inertia of solid circular sections.	14.08.2025		
Unit-II Simple Stresses and Strains	Definition of rigid, elastic and plastic bodies, Definition of stress, strain, elasticity, Hook's law	19.08.2025		
	Elastic limit, Modulus of elasticity, Type of Stresses-Normal, Direct, Bending and Shear Stresses	21.08.2025		
	Tensile and Compressive stresses, Standard stress strain curve for low steel bar under tension	22.08.2025		
	Yield stress, Proof stress, Ultimate stress, Strain at various critical points, Percentage elongation	23.08.2025		
	Deformation of body due to axial force, forces applied at intermediate sections	26.08.2025		
	Maximum and minimum stress induced, Composite section under axial loading	28.08.2025		
	Concept of temperature stresses and strain, Stress and strain developed due to temperature variation	29.08.2025		
	Stress and strain developed due to temperature variation homogeneous simple bar	30.08.2025		
	Stress and strain developed due to temperature variation homogeneous simple bar	02.09.2025		
	Longitudinal and lateral strain, Modulus of Rigidity, Poisson's ratio, volumetric strain, change in volume	04.09.2025		
	Modulus of Rigidity, Poisson's ratio, volumetric strain, change in volume, Bulk modulus	05.09.2025		
	Relation between modulus of elasticity, modulus of rigidity and bulk modulus (without derivation)	06.09.2025		

**Unit-III
Shear Force and
Bending Moment**

Types of supports, beams, and loads, Concept and definition of shear force and bending moment	09.09.2025		
Relation between load, shear force and bending moment (without derivation)	11.09.2025		
Class Test - I	12.09.2025		
Shear force and bending moment diagram for cantilever beam subjected to point loads, uniformly distributed loads (combination of any two types of loading)	16.09.2025		
Shear force and bending moment diagram for cantilever beam subjected to point loads, uniformly distributed loads (combination of any two types of loading)	18.09.2025		
Shear force and bending moment diagram for cantilever beam subjected to point loads, uniformly distributed loads (combination of any two types of loading)	19.09.2025		
Shear force and bending moment diagram for simply supported beams subjected to point loads, uniformly distributed loads (combination of any two types of loading)	20.09.2025		
Shear force and bending moment diagram for simply supported beams subjected to point loads, uniformly distributed loads (combination of any two types of loading)	23.09.2025		
Shear force and bending moment diagram for simply supported beams subjected to point loads, uniformly distributed loads (combination of any two types of loading)	25.09.2025		
Shear force and bending moment diagram for simply supported beams subjected to point loads, uniformly distributed loads (combination of any two types of loading), point of contra flexure	26.09.2025		

**Unit-IV
Bending and Shear
Stresses in beams**

Concept and theory of pure bending, assumptions, flexural equation (without derivation)	27.09.2025		
bending stresses and their nature, bending stress distribution diagram	30.09.2025		
Concept of moment of resistance and simple numerical problems using flexural equation	03.10.2025		
Shear stress equation (without derivation)	04.10.2025		
relation between maximum and average shear stress for rectangular and circular section, shear stress distribution diagram	09.10.2025		
Shear stress distribution for square, rectangular, circle, hollow section	10.10.2025		
Class Test - II	14.10.2025		
Shear stress distribution for angle sections, channel section, I-section, T section	21.10.2025		
Simple numerical problems based on shear equation	24.10.2025		
Simple numerical problems based on shear equation	25.10.2025		
Simple numerical problems based on shear equation	28.10.2025		

**Unit-V
Columns**

Concept of compression member, short and long column, Effective length, Radius of gyration	30.10.2025		
Slenderness ratio, Types of end condition for columns, Buckling of axially loaded columns	31.10.2025		
Euler's theory, assumptions made in Euler's theory and its limitations, Application of Euler's equation to calculate buckling load	01.11.2025		
Euler's theory, assumptions made in Euler's theory and its limitations, Application of Euler's equation to calculate buckling load	04.11.2025		
Rankine's formula and its application to calculate crippling load	06.11.2025		
Rankine's formula and its application to calculate crippling load	07.11.2025		
Rankine's formula and its application to calculate crippling load	18.11.2025		
Concept of working load/safe load, design load and factor of safety	20.11.2025		
Concept of working load/safe load, design load and factor of safety	21.11.2025		
Revision	22.11.2025		
Revision	25.11.2025		

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Assignments

Assignment No.	Contents of syllabus covered	Proposed Date	Actual Date	Remarks
A-1	Unit-I, Unit-II	04.09.2025		
A-2	Unit-III, Unit-IV	04.10.2025		

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	Study and understand the use and components of Universal Testing Machine (UTM).	02.08.2025		
2	Perform Tension test on mild steel as per IS:432(1)	23.08.2025		
3	Perform tension test on Tor steel as per IS:1608, IS:1139	23.08.2025		
4	Determine Water Absorption on bricks per IS:3495 (part II), IS:1077 or tile IS:1237	30.08.2025		
5	Determine Compressive strength of dry and wet bricks as per IS:3495(part I), IS:1077	06.09.2025		
6	Conduct Abrasion Test on flooring tiles (anyone) e.g., Mosaic tiles, Ceramic Tiles as per IS: 13630 (part7), Cement Tile as per IS: 1237	20.09.2025		
7	Perform Single Shear and double shear test on any two metals e.g., Mild steel/ brass/aluminium/copper / cast iron etc as per IS:5242	27.09.2025		
8	Plot Shear force and Bending Moment diagrams for simply supported beams	04.10.2025		
9	Conduct Flexural test on timber beam on rectangular section in both orientations as per IS:1708, IS:2408	25.10.2025		
10	Conduct Flexure test on floor tiles IS:1237, IS:13630 or roofing tiles as per IS:654, IS:2690	01.11.2025		

Parth
31/08/2025
(Signature of Teacher)

31/08/25
(Signature of HOD)

Principal
Principal,
SIRDA Polytechnic,
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