

Planning of Syllabus Coverage

LESSON PLAN

Government Polytechnic Kullu

SUBJECT:- Design of RCC Structures

BRANCH:- CIVIL ENGG.

WITH EFFECT FROM:- 12/08/2024

SEMESTER:- 5th

TOTAL PERIODS PLANNED:- 14X4=56

Sr. No.	Month	Dates	Chapter Name	DETAILED CONTENTS	Remarks
1	August	13,14,15,16,20,21,22,	UNIT-I Introduction to R.C.C Designing using Limit State Method	Design Philosophies: Working Stress Theory, Ultimate Design Theory, Limit State Theory Concept of Reinforced Cement Concrete (RCC) Reinforcement Materials: Suitability of Steel as reinforcing material Properties of mild steel and HYSD steel Loading on structure as per I.S 875. Study of BIS:456-2000-clause5, clause6, clause9, Clause18, clause19, clause22, clause 23.0, 23.2, 23.3, Clause25, clause26, clause35, clause36, clause37, clause 38, clause 39, clause 40, clause 41, clause42, clause 43, Annexure-B, C, D, E, G	
		23,27,28,29,30	UNIT-II Shear, Bond, and Development Length (LSM)	Nominal Shear stress in R.C. Section, Design shear strength of concrete, maximum shear stress, Design of shear reinforcement, Minimum shear reinforcement, Forms of shear reinforcement with numerical problems. Bond and types of bonds, Bond Stress, check for bond stress, Development length in tension and compression, anchorage value for hooks 90° bend and 45° bend. Standard Lapping of bars, check for development length. Determination of development length required for tension reinforcement of cantilevers beam and slab, Check for development length. CLASS TEST 1	
2	September	3.4.5.6.10.11.12.13.17.18.19.			
		20.24.25.26.27	UNIT-III Analysis and Design of Singly Reinforced Sections	Limit State of collapse (Flexure), Assumption stress. Strain relationship for concrete and steel, neutral axis, Stress block diagram and Strain diagram for singly reinforced section. Concept of under- reinforced, over-reinforced and balanced section, neutral axis, limiting value of moment of resistance and limiting percentage of steel required for balanced singly R.C. Section. Simple numerical problems on determining design moment of resistance and area of steel. Design of Singly reinforced simply supported beam and cantilever beam. CLASS TEST 2	
3	October	1,2,3,4,8,9,10,11,15,16,17			
		18,22,23,24,25,31	UNIT-IV Analysis and Design of Doubly Reinforced Sections (LSM) UNIT-V Design of One-Way Slab (LSM)	General features, necessity of providing doubly reinforced reinforcement, limitations. Analysis of doubly reinforced section, strain diagram, stress diagram, depth of neutral axis, moment of resistance of the section. Numerical problems on finding moment of resistance. Analysis & Design of simply supported one-way slab	
4	November		UNIT-VI Two Way Slab (LSM)	Design of two-way simply supported slab with corners free & no provision for torsion reinforcement.	
		5,6,7,8,19,20,21,22,26,27,28,29	UNIT-VII Design of Axially Loaded Column (LSM)	Assumptions in limit state of collapse-compression Definition and classification of columns, effective length of column. Specification for minimum reinforcement; cover, maximum reinforcement, number of bars in rectangular, square, and circular sections, diameter and spacing of lateral ties. (No numerical on helical ties). HOUSE TEST Analysis and Design of axially loaded: Uniaxial & Biaxial Bending along with axial loading: short, square, rectangular, and circular columns with lateral ties only; check for short column and check for minimum eccentricity may be applied.	

Teacher Name And Signature
Er.Lokesh Sharma
Sr. Lect. Civil Engg.


HOD/CIE
Civil Engg

**Planning of Syllabus Coverage
(LESSON PLAN)
Government Polytechnic Kullu at Seobag**

Subject: Estimating and Costing

Semester: 5th

Trade: Civil Engg.

With effect from: 12/08/2024

Total periods Planned: 14 x 4 = 56

S. No	Weeks	Topics To Be Covered
1	Week 1	Unit I: Introduction Meaning of the terms estimating & costing. Purpose of estimating and costing, Types of Estimates, Approximate and Detailed, Approximate estimate Types, Plinth area rate method, Cubic Content method, Approximate Quantity method
2	Week 2	Types of detailed estimate, Detailed estimate for new work, Revised estimate, Supplementary estimate, Repair & Maintenance estimate
3	Week 3	Unit II: Measurement Units of measurement for various items of work as per BIS: 1200
4	Week 4	Rules for measurements. Different methods of taking out quantities– centre line method and long wall and short wall method.
5	Week 5	Class Test 1
6	Week 6	Unit III: Preparation of Detailed Estimates and Abstract of Cost for One & two room residential building with flat roof
7	Week 7	Septic tank for 10 users, Unit IV: Road Estimation: Preparation of Detailed Estimates and Abstract of Cost for Plain road with mid section area method
8	Week 8	Mean sectional area method, Prismoidal formula. Earth work in hill road
9	Week 9	Unit V: Analysis of Rates Calculation of Quantities of Materials, Cement mortars of different proportion, Cement concrete of different proportion, RCC work in different proportions, Brick/stone masonry in cement mortar, Plastering and pointing, Whitewashing, painting
10	Week 10	Class Test 2
11	Week 11	Preparation of Detailed Analysis of Rates for finished items with given labour and rate of material, Earthwork, Cement concrete of different proportion, RCC work in different proportions, Brick/stone masonry in cement mortar, Plastering and pointing, Whitewashing, painting
12	Week 12	Unit VI: Contracts And Tendering Meaning of contract, Qualities of a good contractor and their qualifications, Essentials of a contract, Types of contracts, their advantages, dis-advantages and suitability, system of payment
13	Week 13	HOUSE TEST
14	Week 14	Single and two cover-bids Tender, tender forms and documents, tender notice, submission of tender and deposit of earnest money, security deposit, retention money, maintenance period, Administrative approval, Technical sanction, Budget provision, Expenditure sanction. Methods for carrying out works- contract method. Preparation of Tender Document based on Common Schedule Rates (CSR), Introduction to CSR and calculation of cost based on premium on CSR.

Er. Adit Rana
H.O.D Civil Engg


HOD Civil Engg

Government Polytechnic Kullu at Seobagh Distt. Kullu H.P.-175138

Department of Civil Engineering

Lesson Plan

Name of Faculty	Er. Parveen Kumar	
Discipline	Civil Engineering	
Semester	5th	
Subject	Water Resource Engineering (CEPC-305) (L-2,DCS-2 Hrs./Week)	
Lesson Plan Duration	Aug. - Dec. 2024	
Week	Topic	Theory
Week 1	Unit-I Introduction to Hydrology	<input type="checkbox"/> Hydrology: Definition and Hydrological cycle <input type="checkbox"/> Rain Gauge: Symons rain gauge, automatic rain gauge
Week 2	Unit-I Introduction to Hydrology	<input type="checkbox"/> Methods of calculating average rainfall: Arithmetic mean, Iso-hyetal, and Thiessen polygon method. <input type="checkbox"/> Runoff, Factors affecting Runoff, Computation of run-off.
Week 3	Unit-II Crop water requirement and Reservoir Planning	<input type="checkbox"/> Irrigation and its classification. <input type="checkbox"/> Crop Water requirement: Cropping seasons, Crop period, base period, Duty, Delta, CCA, GCA, intensity of irrigation, factors affecting duty, Problems on water requirement
Week 4	Unit-II Crop water requirement and Reservoir Planning	<input type="checkbox"/> Methods of application of irrigation water and its assessment. <input type="checkbox"/> Silting of reservoir, Rate of silting, factors affecting silting and control measures.
Week 5	Unit-III Dams and Spillways	<input type="checkbox"/> Dams and its classification: Earthen dams and Gravity dams (masonry and concrete).
Class Test – 1 (In 4th Week of September 2023.)		
Week 6	Unit-III Dams and Spillways	<input type="checkbox"/> Earthen Dams– Components with function, typical cross-section, seepage through embankment and foundation and its control. <input type="checkbox"/> Methods of construction of earthen dam, types of failure of earthen dam and preventive measures.
Week 7	Unit-III Dams and Spillways	<input type="checkbox"/> Gravity Dams–Forces acting on dam, Theoretical and practical profile, typical cross-section. (only theoretical concept) <input type="checkbox"/> Spillways-Definition, function & location
Week 8	Unit-IV Minor and Micro Irrigation	<input type="checkbox"/> Lift irrigation Scheme-Components and their functions, Layout. <input type="checkbox"/> Drip and Sprinkler Irrigation-Need, components, and Layout.
Week 9	Unit-IV Minor and Micro Irrigation	<input type="checkbox"/> Well irrigation: types and yield of wells, advantages and disadvantages of well irrigation.
Week 10	Unit-V Diversion Head Works & Canals	<input type="checkbox"/> Weirs–components, parts, types of weirs <input type="checkbox"/> Barrages–components and their functions. Difference between weir and Barrage.
Class Test – 2 (In 4th Week of October 2023.)		
Week 11	Unit-V Diversion Head Works & Canals	<input type="checkbox"/> Canals– Classification according to alignment and position in the canal network, Cross section of canal in embankment and cutting, partial embankment and cutting. <input type="checkbox"/> Canal lining-Purpose, material used and its properties, advantages.
Week 12	Unit-V Diversion Head Works & Canals	<input type="checkbox"/> Cross Drainage Works-Aqueduct, siphon aqueduct, super passage, level crossing. <input type="checkbox"/> Canal Regulators- Head regulator, Cross regulator, Escape, Falls and Outlets
Week 13	Unit-VI Water logging	<input type="checkbox"/> Definition, Causes, Preventive & remedial measures, Reclamation of waterlogged areas
House Test (In 2nd Week of November 2023.)		
Week 14	Revision	

NOTE: Lesson Plan is Tentative, subject to availability of Time, Students & Faculty.

Signature of Teacher
(Er. Parveen Kumar)

Signature of HOD
(Er. Adit Rana)

**Planning of Syllabus Coverage
(LESSON PLAN)
Government Polytechnic Kullu**

Subject: Earthquake Resistant Building Design
With Effect From: 12/08/2024

Semester :5th

Trade :Civil Engg.

Total periods Planned: 14 x 3 = 42

S. No	Weeks	Topics To Be Covered
1	Week 1	Elements of Engineering Seismology General features of tectonic of seismic regions Causes of earthquakes Seismic waves Earth quake size (magnitude and intensity) Epicenter Seismograph Classification of earthquakes Seismic zoning map of India
2	Week 2	Seismic Behaviour of Traditionally-Built Constructions of India Earth quake effects Traditionally built construction in India Performance of building during earthquakes and Mode of failure (Out of plane failure, in plane failure, Diaphragm failure, Connection failure, Non-structural components failure)
3	Week 3	Introduction to IS1893 (Part-I)-2016 Introduction Assumptions Design lateral forces and their calculation methods
4	Week 4	Ductile Detailing of Reinforced Concrete Buildings (IS 13920-2016) & IS 4326-2013) Common modes of failure in reinforced concrete buildings General Principal for earthquake resistant buildings & Special construction features
5	Week 5	(Class Test 1) Types of irregularities Vertical irregularities Plan irregularities
6	Week 6	Ductile detailing as per code Seismic strengthening arrangements Horizontal reinforcement Vertical reinforcement
7	Week 7	Advantages and disadvantages of masonry construction Behaviour of masonry construction during earthquakes Earthquake resistance features for burnt clay brick in weak mortar Codal Provisions for earthquake resistant earthen construction
8	Week 8	Seismic strengthening features of earthen buildings Retrofitting Measure for Traditionally Built Construction
9	Week 9	Introduction, need of retrofitting Retrofitting materials Retrofitting measure of traditionally built construction
10	Week 10	(Class Test 2) Retrofitting measure of traditionally built construction
11	Week 11	Retrofitting of masonry buildings Retrofitting of concrete structure Retrofitting of low-cost buildings
12	Week 12	Disaster Management Disaster rescue Psychology of rescue, rescue workers, rescue plan, rescue by steps, rescue equipment
13	Week 13	HOUSE TEST
14	Week 14	Safeties in rescue operations Debris clearance Causality management

Er. Neha Thakur
Lect. Civil Engg

HOD Civil Engg

**Planning of Syllabus Coverage
(LESSON PLAN)
Government Polytechnic Kullu**

Subject: Precast and Pre-stressed Concrete

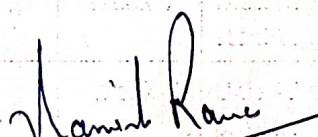
Semester :5th

Trade :Civil Engg.

With Effect From: 12/08/2024

Total periods Planned: 14 x 3 = 42

S. No	Weeks	Topics To Be Covered
1	Week 1	Unit-I Precast concrete Elements Advantages and disadvantages of precast concrete members•
2	Week 2	Non-structural Precast elements-Paver blocks, Fencing Poles, Transmission Poles, Manhole Covers, Hollow and Solid Blocks, kerb stones as per relevant BIS specifications
3	Week 3	Structural Precast elements –tunnel linings, Canal lining, Box culvert, bridge panels, foundation, sheet piles
4	Week 4	Unit-II Prefabricated building Precast Structural Building components such as slab panels, beams, columns,• footings, walls, lintels and chajjas, staircase elements, Prefabricated building using precast load bearing and non-load bearing wall• panels, floor systems-Material characteristics, Plans & Standard specifications
5	Week 5	Prefab systems and structural schemes and their classification Joints–requirements of structural joints• Manufacturing, storage, curing, transportation and erection of above elements,• equipment needed Class Test 1
6	Week 6	Unit-III Introduction to Pre-Stressed Concrete Principles of pre-stressed concrete and basic terminology.• Applications, advantages and disadvantages of pre stressed concrete•
7	Week 7	Materials used and their properties, Necessity of high-grade materials Types of Pre-stressing steel-Wire, Cable, tendon, Merits-demerits and• applications
8	Week 8	Unit-IV Methods and systems of pre-stressing Methods of pre-stressing–Internal and External pre-stressing, Pre and Post• tensioning applications
9	Week 9	Systems for pre tensioning– process, applications, merits and demerits-Hoyer system Systems for post-tensioning – process, applications, merits and demerits –• Freyssinet system, Magnel Blaton system, Gifford Udall system.
10	Week 10	Loss of pre-stress occurring subsequently: losses due to shrinkage of concrete, creep of concrete, elastic shortening, and creep in steel, (Simple Numerical problems to determine loss of pre-stress). BIS recommendations for percentage loss in case of Pre and Post tensioning• (Class Test 2)
11	Week 11	Unit-V Analysis and design of pre-stressed rectangular beam section Basic assumptions in analysis of pre-stressed concrete beams.• Cable Profile in simply supported rectangular beam section– concentric, eccentric• straight and parabolic
12	Week 12	Effect of cable profile on maximum stresses at mid span and at support. Numerical problems on determination of maximum stresses at mid spans with•
13	Week 13	linear (con-centric and eccentric) cable profiles only HOUSE TEST
14	Week 14	. Simple steps involved in Design of simply supported rectangular beam section (No numerical problems)


Er. Namish Rana
Lect. Civil Engg


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Government Polytechnic Kullu


SUBJECT:- Design of RCC Structures Lab
BRANCH:- CIVIL ENGG.

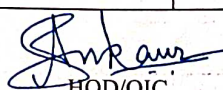
SEMESTER:- 5th

TOTAL PERIODS PLANNED:- 14X4=56

WITH EFFECT FROM:- 12/08/2024

Sr. No.	Month	Dates	Chapter Name	DETAILED CONTENTS	Remarks
1	AUGUST	12,13,19, 20,26,27	Beam	Rectangular beams – Singly reinforced • Rectangular beams- Doubly reinforced	
2	SEPTEMBER	,2,3,9, 10,16,17, 23,24,30	Slabs	• One-way slabs CLASS TEST 1 • Two-way slabs (Corner not held down)	
3	OCTOBER	1,7,8,14,1 5, 21,22	Columns	• Square columns with isolated footing of uniform depth and varying depth (sloped footings) CLASS TEST 2 • Circular column with isolated footing of uniform depth and varying depth (sloped footings). HOUSE TEST	
4	NOVEMBER	4,5, 18,19,25, 26,	Site Visit	Interpret the actual RCC Structural Drawings used on site with reference to reinforcement details of various structural elements. • Prepare a detailed report of site visit for reinforcement detailing of structural elements like beams, columns, staircase & footing. • Prepare a checklist for reinforcement provided from actual drawings used on site for various structural elements.	


Teacher Name And Signature
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SEMESTER:- 5th

TOTAL PERIODS PLANNED:- 14X4=56

SUBJECT:- Computer Applications in Civil Engineering

BRANCH:- CIVIL ENCG.

WITH EFFECT FROM:- 12/08/2024

Sr. No.	Month	Dates	Chapter Name	DETAILED CONTENTS	Remarks
1	AUGUST	14,15,16,17,21,22,23,24	Unit I: Introduction	Starting up of Auto CAD, Auto CAD Window, Toolbar, drop down menu, Command window, saving the drawing. o Introduction of Graphic screen.	
		28,29,30,31	Unit II: Drawing, Editing, Dimensioning	o Co-ordinates, drawing limits, grid, snap, orthographic features. o Drawing commands, line, circle, poly-line, multiline, ellipse, polygon etc. o Editing commands – Copy, move, offset, fillet, chamfer, trim, lengthen, mirror, rotate, array	
2	SEPTEMBER	4,5,6,7,11,12,13	Commands	o Editing commands – Copy, move, offset, fillet, chamfer, trim, lengthen, mirror, rotate, array CLASSTEST 1 Working with hatches, fills, dimensioning, text etc	
		18,19,20,21,25,26,27,28	Unit III: Submission/ Working Drawing	o Drawing T, L, I, E, H with absolute, consecutive and polar coordinate system o Preparation of line plan of a residential building CLASSTEST 2 Preparation of detailed plan of a two-room residential building, Elevation, Section, Site Plan (using different type of layers)	
3	OCTOBER	2,3,4,5,9,10,11,16,17,18,19,23,24,25,26,31		HOUSE TEST o Introduction to STAAD Pro, (Expert may be invited to demonstrate) o Introduction to MS Project/Primavera	
		1,2,6,7,8,20,21,22,23,27,28,29,30	Unit IV: Use of artificial Intelligence in Building Design	(Expert may be invited to demonstrate)	
4	NOVEMBER				

Teacher Name And Signature

Er.Lokesh Sharma

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