


**Government Polytechnic Udaipur Camp at Sundernagar Distt Mandi (H.P) -175018**

**Department of Civil Engineering**

**Lesson Plan for Design R.C. C Structures (Semester-5th) Session: (August- December 2024)**

Govt. Polytechnic Udaipur  
Camp at Sundernagar Distt. Mandi  
118/24

S.No.	MONTH	WEEK	DATE	CONTENTS	REMARKS
1	Aug	Week 3	14,16	Design Philosophies: Working Stress Theory, Ultimate Design Theory, Limit State Theory Concept of Reinforced Cement Concrete (RCC) Reinforcement Materials:	
		Week 4	21,22,23	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	
		Week 5	28,29,30	Nominal Shear stress in R.C. Section, Design shear strength of concrete, maximum shear stress, Design of shear reinforcement, Minimum shear reinforcement.	
2	Sep	Week 1	4,5,6	Forms of shear reinforcement with numerical problems.	
		Week 2	11,12,13	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.	Class Test-1
		Week 3	18,19,20	Determination of development length required for tension reinforcement of cantilevers beam and slab, check for development length	
		Week 4	25,26,27	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.	
3	Oct	Week 1	3,4	Simple numerical problems on determining design constants, moment of resistance and area of steel. Design of Singly reinforced simply supported beam and cantilever beam.	
		Week 2	9,10,11	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.	
		Week 3	16,18	Numerical problems on finding moment of resistance	Class Test-2
		Week 4	23,24,25	Analysis & Design of simply supported one-way slab. Design of two-way simply supported slab with corners free & no provision for torsion reinforcement.	
4	Nov	Week 1	1	Assumptions in limit state of collapse-compression Definition and classification of columns, effective length of column.	
		Week 2	6,7,8	<b>House test</b>	
		Week 3	13,14	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).	
		Week 4	20,21,22	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.	
		Week 5	27,28,29	<b>Revision</b>	

  
Signature of Teacher  
(Er. R.S. Chandel)

  
Signature of H.O.D  
(Dr. Lalit Goel)

**Government Polytechnic Lahaul Spiti at Udaipur Camp At Sundernagar Distt Mandi (H.P) -175018**  
**Department of Civil Engineering**  
**Lesson Plan for Estimate & Costing (Semester-5th)Session: (Aug- Dec 2024)**

S.No.	MONTH	WEEK	DATE	Name of Chapter	CONTENTS	REMARKS
1	August	Week 3	13,14,17	Intoduction	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	
		Week 4	20,21,24		Approximate Quantity method Types of detailed estimate Detailed estimate for new work Revised estimate Supplementary estimate Repair & Maintenance estimate	
		Week 5	27,28,31	Measurement	Units of measurement for various items of work as per BIS: 1200 Rules for measurements.	
2	September	Week 1	3,4,7	Measurement	Different methods of taking out quantities—centre line method and long wall and short wall method.	
		Week 2	10,11		Do	Class Test - I
		Week 3	17,18,21	Preparation of Detailed Estimates and Abstract of Cost for	One & two room residential building with flat roof	
		Week 4	24,25,28		Do	
3	October	Week 1	1,5	Abstract of Cost for	Septic tank for 10 users	
		Week 2	8,9		Do	
		Week 3	15,16,19	Road Estimation	Preparation of Detailed Estimates and Abstract of Cost for Plain road with-mid section area method.	Class Test - II
		Week 4	22,23,26	Road Estimation	mean sectional area method, prismatic formula.Earth work in hill road	
		Week 5	29,30		Do	
4	November	Week 1	2	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	
		Week 2	5,6		House test	
		Week 3	12,13,16		Plastering and pointing, Whitewashing, paintingPreparation of Detailed Analysis of Rates for finished items with given labour and rate of material EarthworkCement concrete of different proportion, RCC work in different proportions, Brick/stone masonry in cement mortar.Plastering and pointing, Whitewashing, painting	
		Week 4	19,20,23	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. 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	

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4	November	Week 5	26,27,30		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.	
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(Er Manoj Kumar Thakur)



Signature of HOD  
(Dr. Lalit Goel)



**Government Polytechnic Udaipur Camp at Sundernagar Distt Mandi (H.P) -175018**

**Department of Civil Engineering**

**Lesson Plan for Water Resource Engineering (Semester-5th) Session: (August- December 2024)**

S.No.	MONTH	WEEK	DATE	CONTENTS	REMARKS
1	Aug	Week 3	12,14,16	Hydrology: Definition and Hydrological cycle Rain Gauge: Symons rain gauge, automatic rain gauge,	
		Week 4	21,22,24	Methods of calculating average rainfall: Arithmetic mean, Iso-hyetal, and Thiessen polygon method.	
		Week 5	38,29,31	Runoff, Factors affecting Runoff, Computation of run-off	
2	Sep	Week 1	2,4,5,7	Irrigation and its classification. Crop Water requirement: Cropping seasons, measures.	Class Test-1
		Week 2	9,11,12	Crop period, base period, Duty, Delta, CCA, GCA, intensity of irrigation, factors affecting duty,	
		Week 3	16,18,19,21	Problems on water requirement Methods of application of irrigation water and its assessment. Silting of reservoir, Rate of silting, factors affecting silting and control	
		Week 4	23,25,26,28	Dams and its classification: Earthen dams and Gravity dams (masonry and concrete). □ Earthen Dams-Components with function, acting on dam, Theoretical and practical profile, typical cross-section. (only theoretical concept) Spillways-Definition, function & location	
		Week 5	30	typical cross-section,	
3	Oct	Week 1	3,5	seepage through embankment and foundation and its control.	Class Test-2
		Week 2	7,9,10	Methods of construction of earthen dam, types of failure of earthen dam and preventive measures. Gravity Dams-Forces	
		Week 3	14,16,19	Lift irrigation Scheme-Components and their functions, Layout. Drip and Sprinkler Irrigation-Need, components, and Layout.	
		Week 4	21,23,24,26	Well irrigation: types and yield of wells, advantages and disadvantages of well irrigation	
4	Nov	Week 1	2	Weirs-components, parts,	
		Week 2	4,6,7	<b>House test</b>	
		Week 3	11,13,14,16	types of weirs Barrages-components and their functions. Difference between weir and Barrage. Canals-Classification according to alignment and position in the canal network, Cross section of canal in embankment and cutting, partial embankment and cutting.	
		Week 4	18,20,21,23	Canal lining-Purpose, material used and its properties, advantages. Cross Drainage Works-Aqueduct, siphon aqueduct, super passage, level crossing. Canal Regulators- Head regulator,	
		Week 5	25,27,28,30	Cross regulator, Escape, Falls and Outlets Unit-VI Water logging □ Definition, Causes, Preventive & remedial measures, Reclamation of water logged areas	
5	Dec-	Week 1	2	<b>Revision</b>	

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**Signature of Teacher**  
 (Er Sujaya Sharma)

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**Department of Civil Engineering**

**Lesson Plan for ERBD (Semester-5th) Session: (August-December 2024)**

S.No.	MONTH	WEEK	DATE	CONTENTS	REMARKS
	August	Week 3	16	General features of tectonic of seismic regions, Causes of earthquakes, Seismic waves	
		Week 4	22,23	Earth quake size (magnitude and intensity), Epicenter, Seismograph, Classification of earthquakes, Seismic zoning map of India	
		Week 5	29,30	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)	
2	September	Week 1	5,6	Mode of failure (Out of plane failure, in plane failure, Diaphragm failure, Connection failure, Non-structural components failure)	Class Test-I
		Week 2	12,13	Introduction to IS1893 (Part-I)-2016 Introduction, Assumptions, Design lateral forces and their calculation methods	
		Week 3	19,20	Ductile Detailing of Reinforced Concrete Buildings (IS 13920-2016) & IS 4326-2013), Common modes of failure in reinforced concrete buildings	
		Week 4	26,27	General Principal for earthquake resistant buildings & Special construction features, Types of irregularities, Vertical irregularities,	
3	October	Week 1	3,4	Plan irregularities, Ductile detailing as per code, Seismic strengthening arrangements, Horizontal reinforcement, Vertical reinforcement	Class Test-II
		Week 2	10,11	Introduction to IS13828-1993 & IS13827-1993, Advantages and disadvantages of masonry construction, Behaviour of masonry construction during earthquakes, Earthquake resistance features for burnt clay brick in weak mortar,	
		Week 3	18	Codal Provisions for earthquake resistant earthen construction, Seismic strengthening features of earthen buildings	
		Week 4	24,25	Retrofitting Measure for Traditionally Built Construction, Introduction, need of retrofitting, Retrofitting materials,	
4	November	Week 1	1	Retrofitting measure of traditionally built construction, Retrofitting of masonry buildings, Retrofitting of concrete structure, Retrofitting of low-cost buildings	
		Week 2	7,8	<b>House Test</b>	
		Week 3	14	Disaster Management, Disaster rescue, Psychology of rescue, rescue workers,	
		Week 4	21,22	rescue plan, rescue by steps, rescue equipment, Safeties in rescue operations,	
		Week 5	28,29	Debris clearance, Causality management	

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**Government Polytechnic Lahaul Spiti at Udalpur Camp at Sundernagar Distt Mandi (H.P) -175018**  
**Department of Civil Engineering**

**Lesson Plan for Elective -4 Green Building and Energy Conservation (Semester-5th) Session: (August-December 2024)**

S.No.	MONTH	WEEK	Date	CONTENTS	REMARKS
1	August	Week 3	16 & 17	<b>Unit I: Introduction to Green Building and Design Features</b> Definition of Green Building, Benefits of Green building.	
		Week 4	22,23&24	Components/features of Green Building, Site selection, Energy Efficiency, Water efficiency, Material Efficiency, Indoor Air Quality.	
		Week 5	29,30 & 31	Site selection strategies, Landscaping, building form, orientation, advanced passive heating and cooling techniques, waste reduction during construction.	
2	September	Week 1	5,6 & 7	<b>Unit-II Energy Audit and Environmental Impact Assessment (EIA)</b> Energy Audit: Meaning, Necessity, Procedures, Types	CLASS TEST-I
		Week 2	12 & 13	Energy Management Programs □ Environmental Impact Assessment (EIA): Introduction, EIA regulations, Steps in environmental impact assessment process,	
		Week 3	19,20&21	Benefits of EIA, Limitations of EIA, Environmental clearance for the civil engineering projects.	
		Week 4	26,27&28	<b>Unit- III Energy and Energy conservation □ Renewable Energy Resources: Solar Energy, Wind Energy, Ocean Energy, Hydro Energy, Biomass Energy.</b>	
3	October	Week 1	3,4&5	□ Non-renewable Energy Resources: Coal, Petroleum, Natural Gas, Nuclear Energy, Chemical Sources of Energy, Fuel Cells, Hydrogen, Bio fuels.	
		Week 2	10&11	□ Energy conservation: Introduction, Specific objectives, present scenario, Need of energy conservation, LEED India Rating System and Energy Efficiency.	
3	October	Week 3	18&19	<b>Unit- IV Green Building : Principles: Principles and planning of Green building</b>	CLASS TEST-II
		Week 4	24,25&26	Features: Salient features of Green Building, Environmental design (ED) strategies for building construction.	
4	November	Week 1	1&2	Process: Improvement in environmental quality in civil structure Civil Engineering Curriculum Structure 118. □ Materials: Green building materials and products- Bamboo, Rice husk ash concrete, plastic bricks, Bagasse (Sugar cane) particle board, Insulated concrete forms, Reuse of waste materials –Plastic, rubber, Newspaper wood, Nontoxic paint, Green roofing.	
		Week 2	7&8	<b>HOUSE TEST</b>	
		Week 3	14&16	<b>Unit V Rating System</b> □ Introduction to (LEED) criteria, □ Indian Green Building council (IGBC) Green rating, □ Green Rating for Integrated Habitat Assessment. (GRIHA) criteria	
		Week 4	21,22&23	Heating Ventilation Air Conditioning (HVAC) unit in green Building □ Functions of Government organization working for Energy conservation and Audit(ECA)-	
		Week 5	28,29&30	□ National Productivity council(NPC) □ Ministry of New and Renewable Energy (MNRE) □ Bureau of Energy efficiency (BEE)	

  
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**Lesson Plan for Design of R.C.C Structures Lab (Semester-5th)Session: (August- December 2024)**

S.No.	MONTH	WEEK	DATE	CONTENTS	REMARKS
1	Aug	Week 3	12,13	Rectangular beams – Singly reinforced	
		Week 4	19,20	Drawing sheet Prepration	
		Week 5	27	Rectangular beams- Doubly reinforced	
2	Sep	Week 1	2,3	Drawing sheet Prepration	Class Test-1
		Week 2	9,10	One-way slabs	
		Week 3	16,17	Drawing sheet Prepration	
		Week 4	23,24	Two-way slabs (Corner not held down)	
		Week 5	30	Drawing sheet Prepration	
3	Oct	Week 1	1	Square columns with isolated footing of uniform depth and varying depth (sloped footings)	Class Test-2
		Week 2	7,8	Drawing sheet Prepration	
		Week 3	14,15	Circular column with isolated footing of uniform depth and varying depth (sloped footings).	
		Week 4	21,22	Drawing sheet Prepration	
		Week 5	28,29	Interpret the actual RCC Structural Drawings used on site with reference to reinforcement details of various structural elements.	
	Nov	Week 2	4,5	<b>House test</b>	
		Week 3	11,12	Prepare a detailed report of site visit for reinforcement detailing of structural elements like beams, columns, staircase & footing.	
		Week 4	18,19	Prepare a checklist for reinforcement provided from actual drawings used on site for various structural elements	
		Week 5	25,26	Drawing sheet Prepration	
5	Dec	Week 1	2	<b>Rivision</b>	



**Signature of Teacher**

(Er. R.S. Chandel  
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**Lesson Plan for Life Skills for Professional and Personal Life (LSPPL) (Semester-5th)Session: (August- December 2024)**

S.No.	MONTH	WEEK	DATE	CONTENTS	REMARKS
1	Aug	Week 3	12,14,17	Life Skills, Soft Skills & Interpersonal Skills: Definition of Life Skills and Soft Skills, Significance of Life Skills and Soft Skills in Personal and Professional life, Types of Soft skills and Life skills, Ways to develop Soft Skills and Life Skills.	
		Week 4	21,22,24	Concept of Interpersonal Skills and tips to improve Interpersonal Skills, Meaning of Team dynamics and Tips for Improving Team dynamics	
		Week 5	28,29,31	Communication Skills, Meaning of Communication Skills, Significance and Characteristics of Assertive Communication,	
2	Sep	Week 1	2,4,5,7	Techniques of Assertive Communication, Tips to develop Assertive Communication	Class Test-1
		Week 2	9,11,12	Life Skills: Self Awareness:Self Introspection, Meaning of Self awareness :Introspection, Self Reflection and Insight ,Strategies to improve self awareness, Importance of counseling and coaching	
		Week 3	16,18,19,21,	Stress Management: Meaning of Stress, Factors causing positive and negative types of stress Effects of Stress on mind and body, Stress Management techniques	
		Week 4	23,25,26,28	Emotional Intelligence: Meaning and Significance of EI, Strategies to develop and enhance Emotional Intelligence. Self-Esteem: Concept, Meaning and Significance of Self-Esteem ,Types of Self-Esteem, Characteristics of people with High and Low Self -Esteem, Steps and Tips for improving Self-Esteem	
		Week 5	30	Social Awareness: Meaning and Techniques of social awareness and social skills	
3	Oct	Week 1	3,5	Empathy: Meaning and types of Empathy, Benefits of Empathy, Steps for developing Empathy Compassion: Meaning and Benefits of Compassion, Steps to practice Compassion.	Class Test-2
		Week 2	7,9,10	Body Language: Elements of Body Language, Develop Positive Body language that helps in building positive relationships, Avoiding Negative Body Language. Thinking Skills: Positive Thinking, Meaning and Benefits of Positive Thinking, Tips to develop positive attitude and practice Positive Thinking	
		Week 3	14,16,19	Listening Skills: Concept, Significance and Process of Listening Skills, Kinds of Listening, Factors hindering effective Listening, Tips for Active and Empathetic Listening	
		Week 4	21,23,24,26	Resilience:Meaning and Types of Resilience, Case studies of Resilience. Time Management Skills: Concept and Significance of Time Management. Benefits of Time Management	
4	Nov	Week 1	2	Tools and techniques of Time Management, How to overcome procrastination and avoid time-wasters	
		Week 2	4,6,7	<b>House test</b>	
		Week 3	11,13,14,16	What is Value and types of values	
		Week 4	18,20,21,23	Human Dignity and Humility: Meaning of Human Dignity and Fundamental rights of a person	
		Week 5	25,27,28,30	Meaning of Humility, Significance of humility, Developing and cultivating humility	
5	Dec	Week 1	2	<b>Revision</b>	

  
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**Government Polytechnic Sundernagar Distt Mandi (H.P) -175018**  
**Department of Civil Engineering**

**Lesson Plan for CACE (G-1) (Semester-5th) Session: (Aug-Dec 2024)**

S.No.	MONTH	WEEK	DATE	CONTENTS	REMARKS
1	August	Week 3	16,17	Co-ordinates, drawing limits, grid, snap, ortho features. Drawing commands, line, circle, polyline, multiline, ellipse, polygon etc. Editing commands – Copy, move, offset, fillet, chamfer, trim, lengthen, mirror, rotate, array etc. Working with hatches, fills, dimensioning, text etc.	
		Week 4	23,24	Practice & Checking of practical files	
		Week 5	30,31	Drawing T, L, I, E, H with absolute, coordinate system	
2	September	Week 1	6,7	Drawing T, L, I, E, H with relative coordinate system.	
		Week 2	13	Practice & Checking of practical files	
		Week 3	20,21	Drawing T, L, I, E, H with polar coordinate system.	
		Week 4	27,28	Practice & Checking of practical files	
3	October	Week1	4,5	Preparation of line plan of a residential building	
		Week2	11	Practice & Checking of practical files	
		Week3	18,19	Preparation of detailed plan of a two room residential building, Elevation, Section,	
		Week4	25,26	Site Plan (using different type of layers)	
4	November	Week 1	1,2	Viva & Checking of practical files.	
		Week 2	8	Introduction to STAAD Pro, Introduction to MS Project/Primavera	
		Week 3	16	Use of artificial Intelligence in Building Design	
		Week 4	22,23	Viva & Checking of practical files.	
		Week 5	29,30	Viva & Checking of practical files.	

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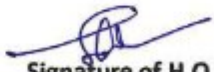
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**Department of Civil Engineering**

**Lesson Plan for CACE (G-2) (Semester-5th) Session: (Aug-Dec 2024)**

S.No.	MONTH	WEEK	DATE	CONTENTS	REMARKS
1	August	Week 3	12,13	Co-ordinates, drawing limits, grid, snap, ortho features. Drawing commands, line, circle, polyline, multiline, ellipse, polygon etc. Editing commands – Copy, move, offset, fillet, chamfer, trim, lengthen, mirror, rotate, array etc. Working with hatches, fills, dimensioning, text etc.	
		Week 4	19,20	Practice & Checking of practical files	
		Week 5	27	Drawing T, L, I, E, H with absolute, coordinate system	
2	September	Week 1	2,3	Drawing T, L, I, E, H with relative coordinate system.	
		Week 2	9,10	Practice & Checking of practical files	
		Week 3	16,17	Drawing T, L, I, E, H with polar coordinate system.	
		Week 4	23,24	Practice & Checking of practical files	
		Week 5	30		
3	October	Week1	1	Preparation of line plan of a residential building	
		Week2	7,8	Practice & Checking of practical files	
		Week3	14,15	Preparation of detailed plan of a two room residential building, Elevation, Section,	
		Week4	21,22	Site Plan (using different type of layers)	
4	November	Week 2	4,5	Introduction to STAAD Pro, Introduction to MS Project/Primavera	
		Week 3	11,12	Use of artificial Intelligence in Building Design	
		Week 4	18,19	Viva & Checking of practical files.	
		Week 5	25,26	Viva & Checking of practical files.	
5	December	Week 1	2	Viva	

  
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