Government Polytechnic Lahaul Spiti at Udaipur Camp At Sundernagar Distt Mandi (H.P) -175018

Department of Civil Engineering

Lesson Plan for Construction Material (Semester-3rd) Session: (Aug- Nov 2025)

S.No.	MONTH	WEEK	DATE	Name of Chapter	CONTENTS	REMARKS
1	August	Week 1	1	Overview of Construction Materials	Scope of construction materials in Building Construction.	
		Week 2	5,7,8,		Scope of construction materials in Transportation Engineering, Environmental Engineering, Irrigation Engineering (applications only).	
		Week 3	12,14	Natural Construction Materials	Selection of materials for different civil engineering structures based on strength, durability, Eco friendly and economy.	
		Week 4	19,21,22		Broad classification of materials – Natural, Artificial, special, finishing and recycled.	
		Week 5	26,28,29		Natural Construction Materials Requirements of good building stone; general characteristics of stone;	
2	September	Week 1	2,4,5		quarrying anddressing methods and tools for stone. Structure of timber,	
		Week 2	9,11,12		different methods of seasoning for preservation of timber, defects in timber, use of bamboo in construction.	Class Test - I
		Week 3	16,18,19	Artificial Construction Materials	general properties and uses of good timber, Asphalt, bitumen, and tar used in construction, properties and uses.	
		Week 4	23,25,26		Properties of lime, its types and uses.Types of soil and its suitability in construction. Properties of sand and uses	
		Week 5	30		Classification of coarse aggregate according to size	
3	October	Week 1	3		Artificial Construction Materials Constituents of brick earth, Conventional / Traditional bricks, Modular and Standard bricks, Special bricks	
		Week 2	9,10	Special Construction Materials	Manufacturing process of burnt clay brick, fly ash bricks, Aerated concrete blocks. Flooring tiles – Types, uses Manufacturing process of Cement - dry and wet (only flow chart), types of cement and its uses.	
		Week 3	14,		Field tests on cement.Classification of coarse aggregate according to size	Class Test - II
		Week 4	21,23,24		Artificial Construction Materials –fly ash bricks, Characteristics of good brick, Field tests on Bricks,	

		Week 5	28,30,31		Classification of burnt clay bricks and their suitability, Special Construction Materials Types of material and suitability in construction works of following materials: Water proofing, Termite proofing Thermal and sound insulating materials.	
	November	Week 2	4,6,7	Processed Construction Materials	**House test**	
		Week 3	11,13,14		Fibers – Types –Jute, Glass, Plastic Asbestos Fibers, (only uses)Geo polymer cement:	
		Week 4	18,20,21		Geo-cement: properties, uses Processed Construction Materials Processed Construction Material Constituents and uses of POP (Plaster of Paris), POP finishing boards, sizes, and uses.Paints- whitewash, cement paint, Distempers,	
		Week 5	25		Oil Paints and Varnishes with their uses. (Situations where used) Agro waste materials - Rice husk, Bagasse, coir fibers and their uses. Special processed construction materials; Geo synthetic, Ferro Crete,Artificial timber, Artificial sand, and their uses	

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Department of Civil Engineering

Lesson Plan for Basic Surveying (Semester-3rd) Session: (August-November 2025)

S.No.	MONTH	WEEK	Date	CONTENTS	REMARKS
1	Aug	Week 1	2	Survey- Purpose and Use.Types of surveying- Primary and Secondary. Classification: Plane, Geodetic, Cadastral,	
		Week 2	4,6	Hydrographic, Photogrammetry and Aerial.Principles of Surveying.Scales: Engineer's scale, Representative Fraction (RF) and diagonal scale.	
		Week 3	11,13	Chain Surveying:Instruments used in chain survey: Metric Chain, Tapes, Arrow, ranging rod, Line ranger, Offset rod, Open cross staff, Optical square.	
		Week 4	18,20,23		
		Week 5	25,27,30	Chain survey Station, Base line, Check line, Tie line, Offset, Tie station. Ranging: Direct and Indirect Ranging. Methods of Chaining, obstacles in chaining.	
2	Sept	Week 1	1,3,6	Errors in length: Instrumental error, personal error, error due to natural cause, random error.	
		Week 2	8,10	Principles of triangulation.Types of offsets: Perpendicular and Oblique. Conventional Signs, Recording of measurements in a field book	
		Week 3	15,17,20	Compass Traversing- open, closed.Technical Terms: Geographic/ True Magnetic Meridians and Bearings,	Class Test-I
		Week 4	22,24,27	Whole Circle Bearing system and Reduced Bearing system and examples on conversion of given bearing to another bearing (from one form to another), Fore Bearing and Back Bearing,	
		Week 5	29	Calculation of internal and external angles from bearings at a station, Dip of Magnetic needle, Magnetic Declination. Components of Prismatic Compass and their Functions,	
		Week 1	1,4	Methods of using Prismatic Compass-Temporary adjustments and observing bearings. Local attraction,	
		Week 2	6,8	Methods of correction of observed bearings - Correction at station and correction to included angles.	

	Oct	Week 3	13,15	Basic terminologies: Level surfaces, Horizontal and vertical surfaces, Datum, Benchmarks- GTS,Permanent, Arbitrary and Temporary, Reduced Leve	Class Test-II
		Week 4	22,25	Rise, Fall, Line of collimation, Station, Back sight, Fore sight, Intermediate sight, Change point,	
		Week 5	27,29	Height of instruments. Types of levels: Dumpy, Tilting, Auto level, Digital level, Components of Dumpy Level and its fundamental axes, Temporary adjustments of Level.	
4	Nov	Week 1	1	Types of Levelling Staff: Self-reading staff and Target staff. Reduction of level by Line of collimation and Rise and Fall Method. Levelling Types: Simple, Differential, Fly, Profile and Reciprocal Levelling.	
		Week 2	3	**HOUSE TEST**	
		Week 3	10,12,15	Contour, contour intervals, horizontal equivalent., Uses of contour maps, Characteristics of contours, Methods of Contouring: Direct and indirect, Components and use of Digital planimeter.	
		Week 4	17,19,22	Measurement of area using digital planimeter.	
		Week 5	24,26	Measurement of volume of reservoir from contour map	

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

Department of Civil Engineering

Lesson Plan for Mechanics of Materials (Semester-3rd) Session: (August-November 2025)

S.No.	MONTH	WEEK	Date	CONTENTS	REMARKS
1	Aug	Week 1	1	Introduction, Overview of syllabus, Evaluation scheme	
		Week 2	4,6,7	Moment of inertia (M.I.): Definition, M.I. of plane lamina, Radius of gyration, section modulus, Parallel and Perpendicular axes theorems (without derivations),	
		Week 3	11,13,14	M.I. of rectangle, square, circle, semi-circle, quarter circle and triangle section (without derivations). M.I. of symmetrical and unsymmetrical I-section,	
		Week 4	18,20,21	Channel section, T-section, Angle section, Hollow sections about centroidal axes. Polar Moment of Inertia of solid circular sections.	
		Week 5	25,27,28	Numerical Practice	
2	Sept	Week 1	1,3,4	Definition of rigid, elastic and plastic bodies, Definition of stress, strain, elasticity, Hook's law, Elastic limit, Modulus of elasticity. Type of Stresses- Normal, Direct, Bending and Shear and nature of stresses i.e., Tensile and Compressive stresses. Standard stress strain curve for tor steel bar under tension, Yield stress, Proof stress, Ultimate stress, Strain at various critical points, Percentage elongation and Factor of safety	
		Week 2	8,10,11	Deformation of body due to axial force, forces applied at intermediate sections, Maximum and minimum stress induced, Composite section under axial loading.	
		Week 3	15,17,18	Concept of temperature stresses and strain, Stress and strain developed due to temperature variation in homogeneous simple bar (no composite section) Longitudinal and lateral strain, Numerical Practice	Class Test-I
		Week 4	22,24,25	Modulus of Rigidity, Poisson's ratio, volumetric strain, change in volume, Bulk modulus (Introduction only). Relation between modulus of elasticity, modulus of rigidity and bulk modulus (without derivation). Numerical Practice	
		Week 5	29	Types of supports, beams, and loads. Concept and definition of shear force and bending moment,	

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3	Oct	Week 1	1	Relation between load, shear force and bending moment (without derivation).	
		Week 2	6,8,9	Relation between load, shear force and bending moment (without derivation). Numerical Practice	
		Week 3	13,15	Concept and theory of pure bending, assumptions, flexural equation (without derivation), bending stresses and their nature, bending stress distribution diagram. Concept of moment of resistance and simple numerical problems using flexural equation	Class Test-II
		Week 4	22,23	Shear stress equation (without derivation), relation between maximum and average shear stress for rectangular and circular section, shear stress distribution diagram. .	
		Week 5	27,29,30	Shear stress distribution for square, rectangular, circle, hollow, angle sections, channel section, I-section, T section. Simple numerical problems based on shear equation	
4	Nov	Week 2	3,6	**HOUSE TEST**	
		Week 3	10,12,13	Concept of compression member, short and long column, Effective length, Radius of gyration, Slenderness ratio, Types of end condition for columns, Buckling of axially loaded columns.	
		Week 4	17,19,20	Euler's theory, assumptions made in Euler's theory and its limitations, Application of Euler's equation to calculate buckling load. Rankine' s formula and its application to calculate crippling load.	
		Week 5	24,26	Concept of working load/safe load, design load and factor of safety.	

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Department of Civil Engineering

Lesson Plan for Building Construction (Semester-3rd) Session: (August-November 2025)

S.No.	MONTH	WEEK	Date	CONTENTS	REMARKS
1	August	Week 1	1,2	I: Overview of Building Components ,Classification of Buildings as per National Building Code Group A to I	
		Week 2	5,8	as per Types of Constructions- Load Bearing Structure, Framed Structure, Composite Structure.Building Components - Functions of Building Components, Substructure – Foundation, Plinth, Superstructure – Walls, Partition wall, Cavity wall, Sill, Lintel, Doors and Windows, Floor, Roof, Columns, Beams, Parapet	
		Week 3	12	II: Construction of Substructure , Job Layout: Site Clearance, Layout for Load Bearing Structure and Framed Structure by Center Line and Face Line Method,	
		Week 4	19,22,23	Precautions. Earthwork: Excavation for Foundation, Timbering and Strutting, Earthwork for embankment, Material for plinth Filling, Tools and plants used for earthworkFoundation: Functions of foundation, Types of foundation – Shallow Foundation, Stepped Footing,	
		Week 5	26,29,30	Wall Footing, Column Footing, Isolated and Combined Column Footing, Raft Foundation, Grillage Foundation. Deep Foundation - Pile Foundation, Well foundation.	
2	September	Week 1	2,5	III: Construction of Superstructure Stone Masonry: Terms used in stone masonry- facing, backing, hearting, through stone, corner stone, cornice. Types of stone masonry: Rubble masonry, Ashlar Masonry, and their types.	
		Week 2	9,12	Joints in stone masonry and their purpose. Selection of Stone Masonry, Precautions to be taken in Stone Masonry Construction Brick masonry: Terms used in brick masonry- header, stretcher, closer, quoins, course, face, back, hearting, bat bond, joints, lap, frog line, level and plumb.	CLASS TEST-I
		Week 3	16,19,20	Bonds in brick masonry- header bond, stretcher bond, English bond and Flemish bond. Requirements of good brick masonry. Junctions in brick masonry and their purpose and procedure. Precautions to be observed in Brick Masonry Construction.	
		Week 4	23,26,27	Comparison between stone and Brick Masonry. Tools and plants required for construction of stone and brick masonry. Hollow concrete block masonry and composite masonry	
		Week 5	30	Scaffolding and Shoring: Purpose, Types of Scaffolding, Process of Erection and Dismantling. Purpose and Types of Shoring, Underpinning. Formwork: Definition of Formwork, Requirements of Formwork, Materials used in Formwork, Types of Formworks, Removal of formwork.	
3	October	Week 1	3,4	**IV: Building Communication and Ventilation** Horizontal Communication: Doors – Horizontal Communication: Doors – Components of Doors, Full Panelled Doors, Partly Panelled and Glazed Doors, Flush Doors, Collapsible Doors, Rolling Shutters, Revolving Doors, Glazed Doors. Sizes of Door recommended by BIS.	
		Week 2	10	Windows: Component of windows, Types of Windows - Full Panelled, Partly Panelled and Glazed, wooden, Steel, Aluminium windows, Sliding Windows, Louvered Window, Bay window, Corner window, clear-storey window, Gable and Dormer window, Skylight. Sizes of Windows recommended by BIS. Ventilators	
		Week 3	14	CLASS TEST-II	

3	October	Week 4	21,24,25	Vertical Communication: Means of Vertical Communication- Stair Case, Terms used in staircase-steps, tread, riser, nosing, soffit, waist slab, baluster, balustrade, scotia, handrails, newel post, landing, headroom, winder. Types of staircases (On the basis of shape): Straight, dog-legged, open well, Spiral, quarter turn, bifurcated, three quarter turn and Half turn. (On the basis of Material): Stone, Brick, R.C.C., wooden and Metal	
		Week 5	28,31	V: Building Finishes, Floors and Roofs: Types of Floor Finishes and its suitability- Kota, Marble, Granite, Ceramic Tiles, Vitrified, Concrete Floors, wooden Flooring, Skirting and Dado. Process of Laying and Construction, Finishing and Polishing of Floors,	
4	November	Week 1	1	Roofing Materials- RCC, Mangalore Tiles, AC Sheets, G.I. sheets, Corrugated G.I. Sheets, Plastic and Fibre Sheets. Types of Roofs: Flat roof, Pitched Roof-King Post truss, Queen Post Truss, terms used in roofs V: Building Finishes	
		Week 2		HOUSE TEST	
		Week 3	11,14,15	Wall Finishes: Plastering – Necessity of Plastering, Procedure of Plastering, Single Coat Plaster, Double Coat Plaster, Rough finish, Neeru Finishing and Plaster of Paris (POP). Special Plasters- Stucco plaster, sponge finish, pebble finish. Plaster.	
		Week 4	18,21,22	Precautions to be taken in plastering, defects in plastering. Pointing – Necessity, Types of pointing and procedure of Pointing. Painting –Necessity, Surface Preparation for painting, Methods of Application.	
		Week 5	25	Revision	

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Department of Civil Engineering

Lesson Plan for Concrete Technology (Semester-3rd) Session: (August-November 2025)

S.No.	MONTH	WEEK	Date	CONTENTS	REMARKS
1	August	Week 2	5,6,7	Physical properties of OPC and PPC: fineness, standard consistency, setting time	
		Week 3	12,13,14	soundness, compressive strength. Different grades of OPC and relevant BIS codes, Storage of cement and effect of storage on properties of cement.	
		Week 4	19,20,21	BIS Specifications and field applications of different types of cements: Rapid hardening, Low heat, Portland pozzolana, Sulphate resisting, Blast furnace slag, High Alumina and White cement.	
		Week 5	26,27,28	Aggregates: Requirements of good aggregate, Classification according to size and shape. Fine aggregates: Properties, size, specific gravity, bulk density, water absorption and bulking, fineness modulus and grading zone of sand, silt content and their specification as per IS 383. Concept of crushed Sand.	
2	September	Week 1	2,3,4	Coarse aggregates: Properties, size, shape, surface texture, water absorption, soundness, specific gravity and bulk density, fineness modulus of coarse aggregate, grading of coarse aggregates, crushing value, impact value and abrasion value of coarse aggregates with specifications.Water: Quality of water, impurities in mixing water and permissible limits for solids as per IS: 456	
		Week 2	9,10,11	Concrete: Different grades of concrete, provisions of IS 456.Duff Abraham water cement (w/c) ratio law, significance of w/c ratio, selection of w/c ratio for different grades, maximum w/c ratio for different grades of concrete for different exposure conditions as per IS 456.	Class Test-I
		Week 3	16,17,18	Properties of fresh concrete: Workability: Factors affecting workability of concrete. Determination of workability of concrete by slump cone, compaction factor, Vee-Bee Consistometer. , Value of workability requirement for different types of concrete works. Segregation, bleeding, and preventive measures.Properties of Hardened concrete: Strength, Durability, Impermeability.,	
		Week 4	23,24,25	Concrete mix design: Objectives, methods of mix design, study of mix design as per IS 10262 (only procedural steps).Testing of concrete, determination of compressive strength of concrete cubes at different ages, interpretation, and co-relation of test results., Non- destructive testing of concrete: Rebound hammer test, working principle of rebound hammer and factor affecting the rebound index	

		Week 5	30	Ultrasonic pulse velocity test as per IS 13311 (part 1 and 2), Importance of NDT tests.	
3	October	Week 1	1	Concreting Operations: Batching, Mixing, Transportation, Placing, Compaction, Curing and Finishing of concrete.	
		Week 2	8,9	Forms for concreting: Different types of form works for beams, slabs, columns, materials used for form work, requirement of good form work. Stripping time for removal of form works per IS 456.	
		Week 3	14,15,16	Waterproofing: Importance and need of waterproofing, methods of waterproofing and materials used for waterproofing. , Joints in concrete construction:	Class Test-II
		Week 4	21,22,23	Types of joints, methods for joining old and new concrete, materials used for filling joints.Admixtures in concrete: Purpose, properties and application for different types of admixtures such as accelerating admixtures, retarding admixtures, water reducing admixtures,	
		Week 5	28,29,30	Air entraining admixtures and super plasticizers.Special Concrete: Properties, advantages and limitation of following types of Special concrete: Ready mix Concrete, Fibre Reinforced Concrete,	
		Week 2	4,6	**HOUSE TEST**	
		Week 3	11,12,13	High performance Concrete Self-compacting concrete and light weight concrete. Cold weather concreting: effect of cold weather on concrete, precautions to be taken while concreting in cold weather condition.	
		Week 4	18,19,20	Hot weather concreting: effect of hot weather on concrete, precautions to be taken while concreting in hot weather condition.	
		Week 5	25,26	Revision	

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Government Polytechnic Lahaul Spiti at Udaipur Camp At Sundernagar Distt Mandi (H.P) -175018

Department of Civil Engineering

Lesson Plan for Geotechnical Engg. **(Semester-3rd)** **Session: (Aug- Nov 2025)**

S.No	MONTH	WEEK	DATE	Name of Chapter	CONTENTS	REMARKS
1	August	Week 1	1,2	Overview of Geology and Geotechnical Engineering	Introduction of Geology, Branches of Geology, Importance of Geology for civil engineering structure and composition of earth	
		Week 2	4,7,8		Definition of a rock: Classification based on their genesis (mode of origin), formation, Classification, and engineering uses of igneous, sedimentary, and metamorphic rocks.	
		Week 3	11,14		Importance of soil as construction material in Civil engineering structures and as foundation bed for structures.Field application of geotechnical engineering for foundation design, pavement design.	
		Week 4	18,21,22,23	Physical and Index Properties of Soil	Design of earthretaining structures, design of earthen dam.Soil as a three-phase system, water content, determination of water content by oven drying method as per BIS code, void ratio, porosity and degree of saturation, density index	
		Week 5	25,28,29,30		Unit weight of soil mass – bulk unit weight, dry unit weight, unit weight of solids, saturated unit weight, submerged unit weight. Determination of bulk unit weight and dry unit weight by core cutter and sand replacement method	
2	Septemb er	Week 1	1,4,5,6		Consistency of soil, Atterberg limits of consistency: Liquid limit, plastic limit and shrinkage limit. Plasticity index.Particle size distribution test and	
		Week 2	8,11,12		Determination of effective diameter of soil, well graded and uniformly graded soils, BIS classification of soil.	**Class Test - I**
		Week 3	15,18,19,20	Permeability and Shear Strength of Soil	Definition of permeability, Darcy's law of permeability, coefficient of permeability, factors affecting permeability, determination of coefficient of permeability by constant head and falling head tests	
		Week 4	22,25,26,27		simple problems to determine coefficient of permeability. Seepage through earthen structures, seepage velocity, seepage pressure, phreatic line, flow lines, application of flow net, (No numerical problems).Shear failure of soil, concept of shear strength of soil	
		Week 5	29		Components of shearing resistance of soil – cohesion, internal friction	
3	October	Week 1	3,4		Mohr-Coulomb failure theory, Strength envelope, strength equation for purely cohesiveand cohesion less soils. Direct shear and vane shear test – laboratory methods.	

3	October	Week 2	6,9,10	**Bearing Capacity of Soil**	Bearing capacity and theory of earth pressure. Concept of bearing capacity, ultimate bearing capacity, safe bearing capacity and allowable bearing pressure.	
		Week 3	13		Introduction to Terzaghi's analysis and assumptions, effect of water table on bearing capacity.	**Class Test - II**
		Week 4	23,24,25		Field methods for determination of bearing capacity – Plate load and Standard Penetration Test. Test procedures as per IS:1888 & IS:2131Definition of earth pressure, Active and Passive earth pressure for no surcharge condition, coefficient of earth pressure	
		Week 5	27,30,31	**Compaction and stabilization of soil**	Concept of compaction, Standard and Modified proctor test as per IS code, Plotting of Compaction curve for determining: Optimum moisture content (OMC), maximum dry density (MDD), Zero air voids line. Factors affecting compaction, field methods of compaction – rolling, ramming and vibration.	
4	Novembe r	Week 1	1		Suitability of various compaction equipment -smooth wheel roller, sheep foot roller, pneumatic tyre roller, Rammer and Vibrator	
		Week 2	3,6,7		**HOUSE TEST**	
		Week 3	10,13,14,15		Difference between compaction and consolidation.Concept of soil stabilization, necessity of soil stabilization, different methods of soil stabilization. California bearing ratio (CBR) test - Meaning and Utilization	
		Week 4	17,20,21,22		Necessity of site investigation and soil exploration: Types of exploration, criteria for deciding the location and number of test pits and bores. Field identification of soil – dry strength test, dilatancy test and toughness test	
		Week 5	24		Revision	

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Government Polytechnic Lahaul Spiti at Udaipur Camp At Sundernagar Distt Mandi (H.P) -175018

Department of Civil Engineering

Lesson Plan for Construction material Lab Lab G-I (Semester-3rd)Session: (Aug- Nov 2025)

S.No.	MONTH	WEEK	DATE	CONTENTS	REMARKS
1	August	Week 2	6	1. Identify various sizes of available coarse aggregates from sample of 10 kg in laboratory and prepare report (60,40, 20,10 mm)	
		Week 4	13	2 Identify the available construction materials in the laboratory based on their sources.	
		Week 5	20	3. Identify the grain distribution pattern in given sample of teak wood in the laboratory and draw the various patterns. (Along and perpendicular to the grains)	
		Week 6	27	4. Prepare the lime putty by mixing lime (1 kg) with water in appropriate proportion and pre-pare report on slaking of lime.	
2	September	Week 1	3	5.Identify various layers and types of soil in foundation pit by visiting at least 3 construction sites in different locations of city and prepare report consisting of photographs and samples. Part I	
		Week 2	10	6.Identify various layers and types of soil in foundation pit by visiting at least 3 construction sites in different locations of city and prepare report consisting of photographs and samples. Part II	
		Week 3	17	7.Measure dimensions of 10 bricks and find average dimension and weight. Perform field tests- dropping, striking, and scratching by nail and correlate the results obtained	
		Week 4	24	8.Select first class, second class and third-class bricks from the stake of bricks and prepare report on the basis of its properties.	
3	October	Week 1	1	9. Identify different types of flooring tiles such as vitrified tiles, ceramic tiles, glazed tiles, mosaic tiles, anti skid tiles, checkered tiles, paving blocks and prepare report about the specifications	
		Week 2	8	10.Apply the relevant termite chemical on given damaged sample of timber.	
		Week 3	15	11. Identify the type of glasses from the given samples.	
		Week 4	22	12. Apply two or more coats of selected paint on the prepared base of a given wall surface for the area of 1m x 1m using suitable brush/rollers adopting safe practices. Part I	
		Week 5	29	13. Apply two or more coats of selected paint on the prepared base of a given wall surface for the area of 1m x 1m using suitable brush/rollers adopting safe practices. Part II	

4	November	Week 2	7	House Test	
		Week 3	12	14 Prepare the cement mortar of proportion 1:3 or 1:6 using artificial sand as a special processed construction material .	
		Week 4	19	15 Prepare mortar using cement and Fly ash or Granite/marble polishing waste in the proportion 1:6 or 1:3.	
		Week 5	26	Revision	

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Department of Civil Engineering

Lesson Plan for Construction material Lab Lab G-II (Semester-3rd)Session: (Aug- Nov 2025)

S.No	MONTH	WEEK	DATE	CONTENTS	REMARKS
1	August	Week 2	2	1. Identify various sizes of available coarse aggregates from sample of 10 kg in laboratory and prepare report (60,40, 20,10 mm) 2 Identify the available construction materials in the laboratory based on their sources.	
		Week 5	23	3. Identify the grain distribution pattern in given sample of teak wood in the laboratory and draw the various patterns. (Along and perpendicular to the grains)	
		Week 6	30	4. Prepare the lime putty by mixing lime (1 kg) with water in appropriate proportion and pre-pare report on slaking of lime.	
2	September	Week 1	6	5.Identify various layers and types of soil in foundation pit by visiting at least 3 construction sites in different locations of city and prepare report consisting of photographs and samples. Part I 6.Identify various layers and types of soil in foundation pit by visiting at least 3 construction sites in different locations of city and prepare report consisting of photographs and samples. Part II	
		Week 3	20	7.Measure dimensions of 10 bricks and find average dimension and weight. Perform field tests- dropping, striking, and scratching by nail and correlate the results obtained	
		Week 4	27	8.Select first class, second class and third-class bricks from the stake of bricks and prepare report on the basis of its properties.	
		Week 1	4	9. Identify different types of flooring tiles such as vitrified tiles, ceramic tiles, glazed tiles, mosaic tiles, anti skid tiles, checkered tiles, paving blocks and prepare report about the specifications 10.Apply the relevant termite chemical on given damaged sample of timber.	
		Week 3	18	11. Identify the type of glasses from the given samples.	

3	October	Week 4	25	12. Apply two or more coats of selected paint on the prepared base of a given wall surface for the area of 1m x 1m using suitable brush/rollers adopting safe practices. Part I 13. Apply two or more coats of selected paint on the prepared base of a given wall surface for the area of 1m x 1m using suitable brush/rollers adopting safe practices. Part II	
4	November	Week1	1	14 Prepare the cement mortar of proportion 1:3 or 1:6 using artificial sand as a special processed construction material .	
		Week 3	15	15 Prepare mortar using cement and Fly ash or Granite/marble polishing waste in the proportion 1:6 or 1:3.	
		Week 4	22	Checking of files and viva	

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Department of Civil Engineering

Lesson Plan for Basic Surveying Lab (Semester-3rd) Session: (August-November 2025)

SN	MONTH	WEEK	Date	CONTENTS	REMARKS
1	August	Week 2	4,6	1. Measure distance between two survey stations using chain, tape and ranging rods when two stations are inter-visible.	
		Week 3	11,13	2. Undertake reciprocal ranging and measure the distance between two stations.	
		Week 4	18,20	3. Determine area of open field using chain and cross staff survey.	
		Week 5	25,27	4. Measure Fore Bearing and Back Bearing of survey lines of open traverse using Prismatic Compass.	
2	September	Week 1	1,3	5. Measure Fore Bearing and back bearing of a closed traverse of 5 or 6 sides and correct the bearings and included angles for the local attraction.	
		Week 2	8,10	6. Undertake Survey Project with chain and compass for closed traverse for minimum 5 sides around a building.	Class Test-I
		Week 3	15,17	7. Plot the traverse on A1 size imperial drawing sheet for data collected in Survey Project mentioned at practical No.6.	
		Week 4	22,24	Checking of files and viva	
		Week 5	29	8. Undertake simple levelling using dumpy level/ Auto level and levelling staff.	
3	October	Week 1	1	9. Undertake differential levelling and determine Reduced Levels by Height of instrument method and Rise and fall method using dumpy level/Auto Level and levelling staff.	
		Week 2	6,8	10. Undertake fly levelling with double check using dumpy level/ Auto level and levelling staff.	
		Week 3	13,15	11. Undertake Survey Project with Levelling instrument for Profile levelling and cross- sectioning for a road with cross-section.	Class Test-II
		Week 4	22,24	12. Plot the L-section with minimum 3 cross-sections on A1 size imperial sheet for	
		Week 5	29,31	13. Undertake Survey Project for plotting contour map using block contouring method for a block of 150m x 150m with grid of 10mx10m.	
4	November	Week 2	3	**House test**	
		Week 3	10,12	14. Plot the contours on A1 size imperial drawing sheet for data collected in Survey Project mentioned at practical No.13.	
		Week 4	17,19	15. Measure area of irregular figure using Digital planimeter.	
		Week 5	24,26	Checking of files and viva	

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Department of Civil Engineering

Lesson Plan for Mechanics of Materials Lab- G-I (Semester-3rd) Session: (August-November 2025)

S.No.	MONTH	WEEK	Date	CONTENTS	REMARKS
1	August	Week 1	1	Introduction to Mechanics of Materials lab and Evaluation scheme	
		Week 2	8	Study and understand the use and components of Universal Testing Machine (UTM).	
		Week 4	22	Perform Tension test on mild steel as per IS:432(1).	
		Week 5	29	Perform tension test on Tor steel as per IS:1608, IS:1139.	
2	September	Week 1	5	Viva voce	
		Week 2	12	Determine Water Absorption on bricks per IS:3495 (part II), IS:1077 or tile IS:1237.	
		Week 3	19	Determine Compressive strength of dry and wet bricks as per IS:3495(part I), IS:1077.	
		Week 4	26	Conduct Abrasion Test on flooring tiles (anyone) e.g., Mosaic tiles, Ceramic Tiles as per IS: 13630 (part7), Cement Tile as per IS: 1237.	
3	October	Week 1	3	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.	
		Week 2	10	Viva voce	
		Week 4	24	Plot Shear force and Bending Moment diagrams for simply supported beams.	
		Week 5	31	Conduct Flexural test on timber beam on rectangular section in both orientations as per IS:1708, IS:2408.	
4	November	Week 2	7	Conduct Flexure test on floor tiles IS:1237, IS:13630 or roofing tiles as per IS:654, IS:2690.	
		Week 3	14	Viva voce	
		Week 4	21	Revision	

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Department of Civil Engineering

Lesson Plan for Mechanics of Materials Lab- G-2 (Semester-3rd) Session: (August-November 2025)

S.No.	MONTH	WEEK	Date	CONTENTS	REMARKS
1	August	Week 2	5	Introduction to Mechanics of Materials lab and Evaluation scheme	
		Week 3	12	Study and understand the use and components of Universal Testing Machine (UTM).	
		Week 4	19	Perform Tension test on mild steel as per IS:432(1).	
		Week 5	26	Perform tension test on Tor steel as per IS:1608, IS:1139.	
2	September	Week 1	2	Viva voce	
		Week 2	9	Determine Water Absorption on bricks per IS:3495 (part II), IS:1077 or tile IS:1237.	
		Week 3	16	Determine Compressive strength of dry and wet bricks as per IS:3495(part I), IS:1077.	
		Week 4	23	Conduct Abrasion Test on flooring tiles (anyone) e.g., Mosaic tiles, Ceramic Tiles as per IS: 13630 (part7), Cement Tile as per IS: 1237.	
		Week 5	30	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.	
3	October	Week 3	14	Viva voce	
		Week 4	21	Plot Shear force and Bending Moment diagrams for simply supported beams.	
		Week 5	28	Conduct Flexural test on timber beam on rectangular section in both orientations as per IS:1708, IS:2408.	
4	November	Week 2	4	Conduct Flexure test on floor tiles IS:1237, IS:13630 or roofing tiles as per IS:654, IS:2690.	
		Week 3	11	Viva voce	
		Week 4	18	Revision	
		Week 5	25	Revision	

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

Department of Civil Engineering

Lesson Plan for Concrete Technology Lab- G-I (Semester-3rd) Session: (August-November 2025)

S.No.	MONTH	WEEK	Date	CONTENTS	REMARKS
1	August	Week 1	2	Determine fineness of cement by Blaine's air permeability apparatus or by sieving.	
		Week 4	23	Determine specific gravity, standard consistency, initial and final setting times of cement.	
		Week 5	30	Determine compressive strength of cement.	
2	September	Week 1	6	Determine silt content in sand and Determine bulking of sand.	
		Week 3	20	Determine bulk density of fine aggregates and Determine bulk density of coarse aggregates.	
		Week 4	27	Determine water absorption of fine and coarse aggregates.	
3	October	Week 1	4	Determine Fineness modulus of fine aggregate by sieve analysis.	
		Week 3	18	Determine elongation and flakiness index of coarse aggregates	
		Week 4	25	Determine workability of concrete by slump cone test.	
4	November	Week 1	1	Determine workability of concrete by compaction factor test.	
		Week 3	15	To prepare concrete mix of a particular grade and determine compressive strength of concrete for 7 and 28 days.	
		Week 4	22	Demonstration of NDT equipment.	

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Department of Civil Engineering

Lesson Plan for Concrete Technology Lab- G-II (Semester-3rd) Session: (August-November 2025)

S.No.	MONTH	WEEK	Date	CONTENTS	REMARKS
1	August	Week 2	6	Determine fineness of cement by Blaine's air permeability apparatus or by sieving.	
		Week 3	13	Determine specific gravity, standard consistency, initial and final setting times of cement.	
		Week 4	20	Determine compressive strength of cement.	
		Week 5	27	Determine compressive strength of cement.	
2	September	Week 1	3	Determine silt content in sand	
		Week 2	10	Determine bulking of sand.	
		Week 3	17	Determine bulk density of fine aggregates.	
		Week 4	24	Determine bulk density of coarse aggregates.	
3	October	Week 1	1	Determine water absorption of fine and coarse aggregates.	
		Week 2	8	Determine Fineness modulus of fine aggregate by sieve analysis.	
		Week 3	15	Determine elongation and flakiness index of coarse aggregates	
		Week 4	22	Determine workability of concrete by slump cone test.	
		Week 5	29	Demonstration of NDT equipment.	
4	November	Week 3	12	Determine workability of concrete by compaction factor test.	
		Week 4	19	To prepare concrete mix of a particular grade and determine compressive strength of concrete for 7 and 28 days.	
		Week 5	26	**Revision**	

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Department of Civil Engineering

Lesson Plan for Geotechnical Engg. Lab G-I **(Semester-3rd)** **Session: (Aug- Nov 2025)**

S.No	MONTH	WEEK	DATE	CONTENTS	REMARKS
1	August	Week 2	5	Identification of rocks from the given specimen.	
		Week 3	12	Determine water content of given soil sample by oven drying method as per IS: 2720 (PartII).	
		Week 4	19	Determine specific gravity of soil by pycnometer method as per IS 2720 (Part- III).	
		Week 5	26	Determine dry unit weight of soil in field by core cutter method as per IS 2720 (Part- XXIX).	
2	September	Week 1	2	Determine dry unit weight of soil in field by sand replacement method as per IS 2720 (Part XXVIII).	
		Week 2	9	Checking of files and viva	
		Week 3	16	Determine Plastic and Liquid Limit along with Plasticity Index of given soil sample as per IS 2720 (Part-V).	
		Week 4	23	Determine Shrinkage limit of given soil sample as per IS 2720 (Part- V).	
		Week 5	30	Determine grain size distribution of given soil sample by mechanical sieve analysis as per IS 2720 (Part-	
3	October	Week 3	14	Checking of files and viva	
		Week 4	21	Use different types of soil to identify and classify soil by conducting field tests-through Visual inspection, Dry strength test, Dilatancy test and Toughness test.	
		Week 5	28	Determine coefficient of permeability by falling head test as per IS 2720 (Part- XVII).	
4	November	Week 2	4	**HOUSE TEST**	
		Week 3	11	Determine MDD and OMC by standard proctor test of given soil sample as per IS 2720 (Part VII).	
		Week 4	18		
		Week 5	25	Revision	

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(Er Manoj Kumar Thakur)

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Department of Civil Engineering

Lesson Plan for Geotechnical Engg. Lab G-II **(Semester-3rd)** **Session: (Aug- Nov 2025)**

S.No	MONTH	WEEK	DATE	CONTENTS	REMARKS
		Week 2	8	Identification of rocks from the given specimen.	
		Week 4	22	Determine water content of given soil sample by oven drying method as per IS: 2720 (PartII).	
		Week 5	29	Determine specific gravity of soil by pycnometer method as per IS 2720 (Part- III).	
2	September	Week 1	5	Determine dry unit weight of soil in field by core cutter method as per IS 2720	
		Week 2	12	Determine dry unit weight of soil in field by sand replacement method as per IS 2720 (Part XXVIII).	
		Week 3	19	Determine Plastic and Liquid Limit along with Plasticity Index of given soil sample as per IS 2720 (Part-V).	
		Week 4	26	Determine Shrinkage limit of given soil sample as per IS 2720 (Part- V).	
3	October	Week 1	3	Determine grain size distribution of given soil sample by mechanical sieve analysis as per IS 2720 (Part-IV).	
		Week 2	10	Use different types of soil to identify and classify soil by conducting field tests- through Visual inspection, Dry strength test, Dilatancy test and Toughness test.	
		Week 4	24	Determine coefficient of permeability by falling head test as per IS 2720 (Part-	
		Week 5	31	Checking of files and viva	
4	November	Week 2	7	**HOUSE TEST**	
		Week 3	14	Determine MDD and OMC by standard proctor test of given soil sample as per IS 2720 (Part VII).	
		Week 4	21	Checking of files and viva	
		Week 5	28	Revision	

Signature of Teacher
(Er Manoj Kumar Thakur)

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