LESSON PLAN

Name of Faculty: JAGEER KHAN **Discipline: Civil Engg. SUB: Engineering Graphics**

SEM:1st

Lesson Plan Duration: 16 Weeks

Teaching Load: Practical - 2Turns/week (3Hrs./ Turn)

WEEK	TURN	TOPIC	Coveredon Date
1	1	**UNIT I** **1. Introduction to Engineering Drawing and Graphics** 1.1 Introduction to use and care of drawing instruments, drawing materials, layout and sizes of drawing sheets and drawing boards.	
	2	1.2 Symbols and conventions	
2	3	a) Conventions of Engineering Materials, Sectional Breaks and Conventional lines.	
	4	1.3 Geometrical construction-geometrical figures such as triangles, rectangles, circles, ellipses and curves, hexagons,	
3	5	pentagons bisecting a line and arc, division of line and circle with the help of drawing instruments.	
	6	**2. Technical Lettering of Alphabet and Numerals** Definition and classification of lettering, Free hand (of height	
4	7	of 5,8,12 mm) and instrumental lettering (of height 20 to 35 mm) : upper case and lower case, single and double stroke, vertical and inclined (Gothic lettering) at 75 degree to horizontal and with suitable height to width ratio 7:4	
	8	**3. Dimensioning**	
	9	3.1 Necessity of dimensioning, method and principles of dimensioning (mainly theoretical instructions). 3.2 Dimensioning of overall sizes, circles, threaded holes, chamfered surfaces, angles, tapered surfaces, holes, equally	
5	10	**4. Scales**	
6	11	4.1 Scales –Needs and importance (theoretical instructions), Type of scales, Definition of Representative Fraction (R.F.) and Length of Scale. 4.2 To draw/construct plain and diagonal scales.	
	12	**UNIT II** **1. Orthographic Projections**	
		1.1 Theory of orthographic projections	
7	13	1.2 Three views of orthographic projections of different objects of given pictorial view of a block in 1st and 3rd angle.	
	14	1.3 Projection of Points in different quadrant	
8	15	1.4 Projection of Straight Line (1st angle) i. Line parallel to both the planes. ii. Line perpendicular to any one of the reference plane and parallel to others iii. Line inclined to any one of the references and parallel to another plane.	
	16	1.5 Projection of Plane – Different lamina like square rectangular, triangular, circle and Hexagonal pentagon. Trace of planes (HT and VT).	
9	17	1.6 Identification of surfaces.	
	18	**2. Sectioning** 2.1 Importance and salient features 2.2 Drawing of full section, half section, partial or broken out sections, Offset	
10	19	sections, revolved sections and removed sections (theoretical only).	
	20	2.3 Orthographic sectional views of different objects.	
	21	**UNIT III** **1. Introduction of projection of right solids**such as prism & pyramid (square, Pentagon, Hexagonal) cube, cone & cylinder (Axes perpendicular to H.P and parallel to V.P.)	
11	22	**2. Introduction of sections of right solids**- Section planes, Sections of Hexagonal prism, pentagon pyramid, cylinder and cone (Section plane parallel to anyone reference planes and perpendicular to V.P. and inclined to H.P.)	
12	23	**3. Development of Surfaces**– Development of lateral surfaces of right solids like cone, cylinder, pentagonal prism, pyramid and hexagonal pyramid (Simple problems)	
	24	**UNIT IV** **1. Fundamentals of isometric projections and isometric scale.**	
13	25	**2. Isometric views of different laminas**like circle, pentagon and hexagon.	
	26	**3. Isometric views of different regular solids**like cylinder, cone, cube, cuboid, pyramid and prism.	
14	27	**4. Isometric views from given different orthographic projections(front, side and top view)**	
	28	**UNIT V** **Introduction to AutoCAD**Basic introduction and operational instructions of various commands in AutoCAD.	
15	29		
	30	**Drawing of different objects on AutoCAD**(given pictorial/isometric view of a block).	
16	31		
	32	**Viva**	

Lesson Plan

Name of the Faculty :	**SAVROOP KAUR**		**Discipline :**	**Civil Engineering**
Subject :	**PLUMBING SERVICES**		**Semester :**	**1st**
Lesson Plan Duration :	**(04 Aug 2025 to 24 Nov 2025)**			
				L T P
				2 - -
Week	**Theory**		**Delivery Date of Lecture**	Whether the Lesson Plan Followed? **Yes/No**
	Lecture Day	**Topic**		
		(including Assignments / Seminar / Group		
Ist	1st	**CH-1 Plumber's Tools** Selection, use and care of tools required for plumbing work, such as threading die		
	2nd	bit brace & Ratchet brace Pipe wrench, spanner set,Pipe cutter, pipe vice		
2nd	1st	Hacksaw, chisel, files and other common hand tools, bench drilling machine, soldering iron		
	2nd	**UNIT-2 Pipes and Pipe Fitting**Selection and use of different pipes like GI Pipes, Plastic pipes,		
3rd	1st	PVC pipes & HDPE pipes,Cast iron pipes,Plumbing symbols		
	2nd	Bends, Elbows, SocketsTees, Unions		
4th	1st	Pipe cutting, Pipe bending,Pipe Threading, Pipe joints		
	2nd	Pipe fitting,Alignment of pipes		
	3rd	Branching of pipes,Safety precautions		
		Sessional Test -1		
5th	1st	**UNIT -3 Water Supply System** Sources of water		
	2nd	Rainwater harvesting,Water supply		
6th		Distribution reservoirs; Pumps		
	1st	Valves; Fire hydrants,Storage of water in buildings; Types of tanks; Laying water supply pipe lines		
	2nd	**UNIT-4 Domestic Drainage** Drainage system (two pipe, one pipe, single stack and other systems)		
7th	1st	Trap, Cesspool, Sceptic tank,Cleaning blocked pipes and drains		
	2nd	Laying sanitary and sewer pipes,		
8th	1st	Inspection and testing (pressure & leakage		
	2nd	Fixing accessories,Problems in drainage and their solution		
		Sessional Test -2		
9th	1st	**UNIT-5 Sanitary Appliances** Flush toilet, Squat toilet, Wash basin		
	2nd	Sink, Floor traps,Urinal, Bathtub		
10 th	1st	Shower, Bidet		
	2nd	Mixing tap		
11 th		Popup waste		
	1st	**Heating System** : Introduction		
	2nd	Heat transfer		
12 th	1st	Water heater, Geyser		
	2nd	Domestic hot water supply system		
13th	1st	Central heating		
	2nd	Solar water heater		
		Sessional Test -3		
14th	1st	Revision of syllabus		
	2nd	Revision of syllabus		
15th	1st	Practice set		
	2nd	Practice set		
16th	Revision of syllabus , Display /Intimation of 3rd Sessional marks			

Lesson Plan

Name of the Faculty **Dinesh Kumar**
Discipline **:** **Civil Engg.**
DURATION **04/08/2025-26/11/2025**
Semester **:** **3 rd Sem.**
Subject **:** **FLUID MECHANICS**
Lesson Plan Duration **16 WEEKS**

Week	Theory	
	Lecture Day	**Topic (including assignment / test)**
1.	1	Introduction: Fluids: Real and ideal fluids Fluid Mechanics, Hydrostatics, Hydrodynamics, Hydraulics
	2.	Properties of Fluids (definition only 2.1Mass density, specific weight, specific gravity, viscosity, surface tension - cohesion, adhesion and, capillarity, vapour pressure and compressibility
2.	1.	Hydrostatic Pressure: Pressure, intensity of pressure, pressure head,
	2.	Pascal's law and its applications. Total pressure, resultant pressure, and centre of pressure.
3.	1.	Total pressure and centre of pressure on horizontal, vertical and inclined plane surfaces of rectangular, triangular, trapezoidal shapes and circular.(No derivation - Simple Numerical Problems)
	2.	Measurement of Pressure Atmospheric pressure, gauge pressure,
4.	1.	Vacuum pressure and absolute pressure.
	2.	Piezometer, simple manometer and differential manometer. Bourden gauge and dead weight pressure gauge.
5.	1.	Fundamentals of Fluid Flow:
	2.	Types of Flow: Steady and unsteady flow, laminar and turbulent flow, uniform and non-uniform flow
6.	1.	Discharge and continuity Equation (flow equation) {No derivation}, Simple numerical problems. Equation (flow equation) {No derivation}, Simple numerical problems.
	2.	Types of hydraulic energy: Potential energy, kinetic energy, pressure energy. Bernoulli's theorem; statement and description (without proof of theorem), Simple numerical problems.
7.	1.	Flow Measurements Brief description with simple numerical problem of Venturimeter and orifice meter
	2.	Pitot tube Orifices and mouthpieces, Current meters Notches and weirs
8.	1	Flow through Pipes: Definition of pipe flow; Reynolds number, laminar and turbulent flow - explained through Reynold's experiment
	2.	Critical velocity and velocity distributions in a pipe for laminar flow. Head loss in pipe lines due to friction, sudden expansion and sudden contraction, entrance, exit, obstruction and change of direction (No derivation of formula), Simple numerical problems
9.	1.	Hydraulic gradient line and total energy line. Pipes in series and parallel

	2.	Water hammer phenomenon and its effects (only definition and description)
10.	1.	REVISION
	3.	Flow through open channels: Definition of an open channel, uniform flow and non-uniform flow
11.	1.	Discharge through channels using i) Chezy's formula (no derivation) ii) Manning's formula (no derivation)
	2.	Most economical channel sections (no derivation, only simple numerical problems) i)Rectangular ii)Trapezoidal
12.	1.	REVISION
	2.	i)Rectangular ii)Trapezoidal
13.	1.	Hydraulic Pumps
	2.	Head loss in open channel due to friction
14.	1.	Hydraulic Pumps
	2.	Reciprocating pump
15.	1.	centrifugal pumps (No numerical and derivation (may be demonstrated with the help of working models)
	2.	centrifugal pumps (No numerical and derivation (may be demonstrated with the help of working models)
16.	1.	REVISION
	2.	REVISION

LESSON PLAN

Name of the faculty : Raghubir Giri

Discipline : Civil Engg.

Semester : 3rd Semester

Subject : Structural Mechanics

Week	Lecture Day	Delivery Date of	Theory Topic (Including assignment/test)	Delivery Date of Practical	Practical Day	Practical Topic
1st	1st		Classification of materials, elastic materials, plastic materials, ductile materials, brittle materials Introduction to tensile test, compressive test, impact test, fatigue test, torsion test on metals.		1st	Determination of yield stress, ultimate stress, percentage elongation
					2nd	---------do----------
	2nd		Concept of stress, normal and shear stresses, Concept of strain and deformation, longitudinal and transverse strain, Numerical Problems on stress and strain.		3rd	---------do----------
					4th	_____do_____
2nd	3th		Poisson's ratio, volumetric strain, Hooke's law, moduli of elasticity and rigidity, Bulk modulus of elasticity, relationship between the elastic constants. Stresses and strains in bar subjected to tension and		5th	---------do----------
					6th	---------do----------
	4th		Stress-strain diagram for mild steel and HYSD steel, mechanical properties, Numerical problems		7th	---------do----------
					8th	---------do----------
3rd	5th		factor of safety. Temperature stresses and strains Concept of a beam and supports (Hinges, Roller and Fixed		9th	Plot the stress strain diagram and compute the value of young's modulus on mild steel
					10th	_____do_____
	6th		types of beams: simply supported, cantilever, propped, over hang, cantilever and continuous beams Revision		11th	---------do----------
					12th	---------do----------
4th	7th		Types of loads (dead load, live load, snow load, wind load seismic		13th	--------do----------
			load as per IS Codes etc) and types of loading (point, uniformly distributed and uniformly varying loads)		14th	--------do----------
	8th		Concept of bending moment and shear force, sign conventions Numerical problems		15th	--------do----------
					16th	--------do----------
5th	9th		Bending Moment and shear force diagrams for cantilever Bending Moment and shear force diagrams for simply supported		17th	Testing of HYSD Steel
					18	----------do----------
	10th		Bending Moment and shear force diagrams for overhanging beams subjected to concentrated Numerical problems		19th	----------do----------
					20th	----------do----------
6th	11th		Relationship between load, shear force and bending moment.		21st	----------do----------
			Sessional – 1st		22nd	----------do----------
	12th		Problems on above topic Revision		23rd	----------do----------
					24th	----------do----------
7th	13th		point of maximum bending moment, and point of contraflexure Concept of moment of inertia and second moment of area and radius of gyration,		25th	Determination of Young's modulus of elasticity for steel wire with Searl's apparatus
					26th	----------do----------
	14th		theorems of parallel and perpendicular axis Revision		27	----------do----------
					28th	----------do----------
8th	15th		second moment of area of common geometrical sections: rectangle second moment of area of common geometrical sections: triangle, circle		29th	----------do----------
					30th	----------do----------

8th	16th		Second moment of area for L, T Numerical problems		31st	----------do----------
					32nd	----------do----------
9th	17th		Second moment of area for I sections, section modulus. Concept of pure/simple bending		33rd	Determination of modulus of rupture of a concrete beam
					34th	----------do----------
	18th		Assumptions made in the theory of simple bending Revision		35th	----------do----------
					36th	----------do----------
10th	19th		derivation and application of bending equation to circular cross-section		37th	----------do----------
			2nd Sessional		38th	----------do----------
	20th		Assignment, Tutorial		39th	----------do----------
					40th	_____-do_____
11th	21st		Problem solving, derivation and application of bending equation to I section		41th	Determination of maximum deflection and young's modulus of elasticity in simplysupported beam with load at middle thirdpoint
					42th	_____do-_____
	22th		derivation and application of bending equation to T&L sections		43th	----------do----------
			Problem solving lecture		44th	----------do----------
12th	23th		Moment of resistance Calculations of bending stresses in simply supported beam		45th	----------do----------
					46th	----------do----------
	24th		shear stress (introduction only), Problem solving		47th	----------do----------
					48th	----------do----------
13th	25th		Determination of slope and deflection using Moment Area Theorem for simply supported beam for pointed load and U.D. L		49th	Verification of forces in a framed structure
					50th	----------do----------
	26th		Numerical problems		51th	----------do----------
					52th	_____do_____
14th	27th		Theory of columns Problem solving using Eulers and Rankine Formula		53rd	----------do----------
					54	----------do----------
	28th		Assumptions and analysis of trusses by: Method of joints Revision		55th	----------do----------
					56th	----------do----------
15th	29th		Assumptions and analysis of trusses by:Method of sections Numerical problems		57th	Problems on above topic
					58th	----------do----------
	30th		3rd Sessional		59th	----------do----------
			Revision of all sessional exams		60th	----------do----------
16th	31th		Revision of all sessional exams		61th	Revision
					62th	----------do----------
	32th		Revision of all sessional exams		63th	----------do----------
			Revision of all sessional exams		64th	----------do----------

Lesson Plan

Name of the Faculty :	**PANKAJ KUMAR**		**Discipline :**	**Civil Engineering**
Subject :	**BUILDING CONSTRUCTION (P)**		**Semester :**	**3rd**
Lesson Plan Duration :	**04/08/2025 -26/11/2025 (16 Weeks)**			
			L T P	
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Week	**Theory**		**Delivery Date of Lecture**
	Lecture Day	**Topic**	
		(Including Assignments / Seminar / Group Discussion / Sessional Tests)	
Ist	1st	1. Demonstration of tools and plants used in building construction	
	2nd	1. Demonstration of tools and plants used in building construction	
	3rd	1. Demonstration of tools and plants used in building construction	
	4th	1. Demonstration of tools and plants used in building construction	
2nd	1st	2. To prepare Layout of a building: 2BHK with front veranda	
	2nd	2. To prepare Layout of a building: 2BHK with front veranda	
	3rd	2. To prepare Layout of a building: 2BHK with front veranda	
	4th	2. To prepare Layout of a building: 2BHK with front veranda	
3rd	1st	3. To construct brick bonds (English Bond) in One, One & half and Two brick thick: (a) Walls for L, T and Cross Junction (b) Columns	
	2nd	3. To construct brick bonds (English Bond) in One, One & half and Two brick thick: (a) Walls for L, T and Cross Junction (b) Columns	
	3rd	3. To construct brick bonds (English Bond) in One, One & half and Two brick thick: (a) Walls for L, T and Cross Junction (b) Columns	
	4th	3. To construct brick bonds (English Bond) in One, One & half and Two brick thick: (a) Walls for L, T and Cross Junction (b) Columns	
4th	1st	4. To construct brick bonds (Flemish Bond) in One, One & half and Two brick thick: (a) Walls for L, T and Cross Junction (b) Columns	
	2nd	4. To construct brick bonds (Flemish Bond) in One, One & half and Two brick thick: (a) Walls for L, T and Cross Junction (b) Columns	
	3rd	4. To construct brick bonds (Flemish Bond) in One, One & half and Two brick thick: (a) Walls for L, T and Cross Junction (b) Columns	
	4th	4. To construct brick bonds (Flemish Bond) in One, One & half and Two brick thick: (a) Walls for L, T and Cross Junction (b) Columns	
5th	1st	5. Demonstration of "Timbering of Excavated Trenching" through a model and visit at construction site	
	2nd	5. Demonstration of "Timbering of Excavated Trenching" through a model and visit at construction site	
	3rd	5. Demonstration of "Timbering of Excavated Trenching" through a model and visit at construction site	
	4th	5. Demonstration of "Timbering of Excavated Trenching" through a model and visit at construction site	
6th	1st	6. Demonstration of "Laying Damp Proof Courses" through a model and visit at construction site	
	2nd	6. Demonstration of "Laying Damp Proof Courses" through a model and visit at construction site	
	3rd	6. Demonstration of "Laying Damp Proof Courses" through a model and visit at construction site	
	4th	**Sessional Test-1**	
7th	1st	7. Demonstration of "Construction of Masonry Walls" through a model and visit at construction site	
	2nd	7. Demonstration of "Construction of Masonry Walls" through a model and visit at construction site	
	3rd	7. Demonstration of "Construction of Masonry Walls" through a model and visit at construction site	

	4th	7. Demonstration of "Construction of Masonry Walls" through a model and visit at construction site	
8th	1st	8. Demonstration of "Brick Layers Scaffolding" through a model and visit at construction site	
	2nd	8. Demonstration of "Brick Layers Scaffolding" through a model and visit at construction site	
	3rd	8. Demonstration of "Brick Layers Scaffolding" through a model and visit at construction site	
	4th	8. Demonstration of "Brick Layers Scaffolding" through a model and visit at construction site	
9th	1st	9. Demonstration of "Steel Scaffolding" through a model and visit at construction site	
	2nd	9. Demonstration of "Steel Scaffolding" through a model and visit at construction site	
	3rd	9. Demonstration of "Steel Scaffolding" through a model and visit at construction site	
	4th	9. Demonstration of "Steel Scaffolding" through a model and visit at construction site	
10th	1st	10. Demonstration of "Laying of Vitrified Tile Flooring" through visit at construction site	
	2nd	10. Demonstration of "Laying of Vitrified Tile Flooring" through visit at construction site	
	3rd	10. Demonstration of "Laying of Vitrified Tile Flooring" through visit at construction site	
	4th	**Sessional Test -2**	
11th	1st	11. Demonstration of "Plastering and Pointing Exercise" through visit at construction site	
	2nd	11. Demonstration of "Plastering and Pointing Exercise" through visit at construction site	
	3rd	11. Demonstration of "Plastering and Pointing Exercise" through visit at construction site	
	4th	11. Demonstration of "Plastering and Pointing Exercise" through visit at construction site	
12th	1st	12. Demonstration of "Constructing RCC work – Foundations, Columns, Beams and Slabs" through visit at construction site	
	2nd	12. Demonstration of "Constructing RCC work – Foundations, Columns, Beams and Slabs" through visit at construction site	
	3rd	12. Demonstration of "Constructing RCC work – Foundations, Columns, Beams and Slabs" through visit at construction site	
	4th	12. Demonstration of "Constructing RCC work – Foundations, Columns, Beams and Slabs" through visit at construction site	
13th	1st	13. Demonstration of "Pre-construction and post construction termite treatment of building and woodwork" through visit at construction site	
	2nd	13. Demonstration of "Pre-construction and post construction termite treatment of building and woodwork" through visit at construction site	
	3rd	13. Demonstration of "Pre-construction and post construction termite treatment of building and woodwork" through visit at construction site	
	4th	13. Demonstration of "Pre-construction and post construction termite treatment of building and woodwork" through visit at construction site	
14th	1st	14. Demonstration of "False Ceiling" through visit at construction site	
	2nd	14. Demonstration of "False Ceiling" through visit at construction site	
	3rd	14. Demonstration of "False Ceiling" through visit at construction site	
	4th	14. Demonstration of "False Ceiling" through visit at construction site	
15th	1st	15. Demonstration of "Interlocking Tiles" through visit at construction site	
	2nd	15. Demonstration of "Interlocking Tiles" through visit at construction site	
	3rd	15. Demonstration of "Interlocking Tiles" through visit at construction site	
	4th	**Sessional Test -3**	
16th		Revision of syllabus, display/Intimation of 3rd Sessional marks, Academic evaluation analysis of Sessionals	

16		Revision of syllabus, display/intimation of S Sessional marks, Academic evaluation-analysis of Sessionals.

Lesson plan

Name of the Faculty		**Vijender Kumar**	**Semester**	**3rd**
			Lecture per week	**2**
Discipline		**Civil Engineering**		
Subject		**Internet of Things (MOOC)**	**Delivery Date of Lecture**	**Remarks**
Duration		**04 August 2025 - 26 Nov. 2025 (16 weeks)**		
Week	**Lecture Day**	**Topic (including assignment / test)**		
1st	1st	**1. INTRODUCTION TO INTERNET OF THINGS** 1.1 Internet of things (IOT) Introduction.		
	2nd	**1.1** Internet of things (IOT) Introduction.		
2nd	1st	**1.2** Characteristics of Internet of things:		
	2nd	**1.2.1** Intelligence, Connectivity, Dynamic Nature, Enormous scale.		
3rd	1st	**1.3** Benefits of internet of things.		
	2nd	**1.4** Future of internet of things.		
4th	1st	**2. ARCHITECTURE AND WORKING OF INTERNET OF THINGS** Introduction		
	2nd	2.1 Internet of things (IOT) Working.		
5th	1st	**2.1.1** Elements of internet of things: Sensors, Networks, Standard, Intelligent Analysis, Intelligent Actions.		
	2nd	**2.2** Internet of things (IOT) Communication Models.		
6th	1st	**2.3** Internet of things (IOT) Security problems.		
	2nd	**2.4** Key Elements of Internet of things.		
7th	1st	**1st Sessional Test**		
	2nd	**2.5** Architectural Overview of Internet of things.		
8th	1st	**1. APPLICATION AND INDUSTRIAL IMPACT OF IOT** **3.1** Applications of Internet of things.		
	2nd	**3.2** Wireless Sensor Network.		
9th	1st	**3.3** IOT Fundamental Terms: Device, Database, Application, Analysis Components, Web Services, Resources.		
	2nd	**3.4** Industrial internet of things.		
10th	1st	**3.4.1** Industry 4.0 & Industrial internet of Things.		
	2nd	**3.4.2** IOT Companies		
11 th	1st	Revision		
	2nd	**2nd Sessional Test**		
12th	1st	**4. ADVANCED TECHNOLOGIES IN IOT:** Introduction		
	2nd	**4.1** Machine to Machine Learning.		
13th	1st	**4.2** Near Field Communication (NFC).		
	2nd	**4.3** Autonomous Vehicle.		
14th	1st	**4.4** Advance Message.		
	2nd	**4.5** Queuing Protocol (AMQ).		
15th	1st	Revision		
	2nd	**3rd Sessional Test**		
16th	1st	Revision		
	2nd	Revision		

Lesson Plan

Name of the Faculty :	**PANKAJ KUMAR**		**Discipline :**	**Civil Engineering**
Subject :	**BUILDING CONSTRUCTION (THEORY)**		**Semester :**	**3rd**
Lesson Plan Duration :	**04/08/2025 -26/11/2025 (16 Weeks)**			
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Week	**Theory**		**Delivery Date of Lecture**	
	Lecture Day	**Topic**		
		(Including Assignments / Seminar / Group Discussion / Sessional Tests)		
Ist	1st	1. Foundation 1.1 Introduction: Definition of a building, Different parts of a building, classification of buildings		
	2nd	1.2 Types of foundation – Shallow foundation (thumb rules for depth and width of foundation) and Deep foundation 1.3 Excavation of foundation – Trenches, Shoring, Underpinning, Timbering and De watering		
2nd	1st	2. Walls 2.1 Classification of walls based on load - Load bearing, non-load bearing, retaining walls		
	2nd	2.2 Classification of walls as per materials of construction 2.3 Partition walls: Constructional details, suitability and uses of brick and wooden partition walls		
3rd	1st	2.4 Scaffolding, construction details and suitability of mason's brick layers and tubular scaffolding		
	2nd	3. Masonry Work 3.1 Glossary of terms used in brick masonry - Header, Stretcher, Queen closer, King closer etc.		
4th	1st	3.2 Brick Masonry Bonds – English and Flemish Bonds 3.3 Construction of brick walls – New wall Construction,		
	2nd	Methods of bonding new brick work with old (Toothing and Raking Methods) 3.4 Mortars: types, selection of mortar and its preparation		
5th	1st	4. Arches and Lintels 4.1 Glossary of terms used in arches -Intrados, Extrados, Crown, Key stone etc.		
	2nd	4.2 Types of Arches – Semi-circular, Segmental and Parabolic arches 4.3 Lintels – Cast-in-situ and pre-cast lintels		
6th	1st	**Sessional Test-1**		

	2nd	5 Doors and Windows 5.1 Glossary of terms used – Door Frame, Door Shutter, Hold fast, Horns, Jamb, Reveal, Soffit, Styles, Rails: Top, Bottom and Lock rails etc. 5.2 Doors and window frames – Materials and Sections, Fixtures and Fasteners	
7th	1st	5.3 Doors – Framed and Panelled door, Glazed or sash door, Flush door, Sliding door, Rolling steel shutter doors 5.4 Windows – Fixed window, Sliding window, Glazed or sash window, Corner window	
	2nd	5.5 Ventilators 6. Damp Proofing and Water Proofing 6.1 Dampness and its ill effects in buildings	
8th	1st	6.2 Sources of dampness in building 6.3 Damp proofing of basement, Plinth and walls, Kitchen, Washroom, Rooof	
	2nd	7. Floors 7.1 Glossary of terms used – Floor finish, Topping, Under layer, Base course, Rubble filling and their purpose	
9th	1st	7.2 Types of floor finishes – Concrete flooring, Ceramic tile flooring, Stone (marble and kota) flooring, Wooden flooring 7.3 Special emphasis on level / slope / reverse slope in bathrooms, toilets, kitchen, balcony	
	2nd	8. Roofs 8.1 Types of roofs, concept of flat and pitched roofs 8.2 Glossary of terms for pitched roofs – Batten, Eaves, Facia board, Gable, Hip, Lap, Purlin,	
10th	1st	Rafter, Rag bolt, Ridge, Rain water gutter, Anchoring bolts 8.3 False ceilings – Gypsum false ceiling, POP false Ceiling, PVC false ceiling, Wooden false ceiling, Cellotex false ceiling	
	2nd	**Sessional Test -2**	
11th	1st	9. Stairs 9.1 Glossary of terms used in stairs: Landing, Stringer, Newel, Baluster, Riser	
	2nd	Tread, Width of staircase, Hand-rail, Nosing	
12th	1st	9.2 Types of stairs on the basis of materials used: RCC and Steel stairs	
	2nd	9.3 Various types of layout – Straight flight, Dog legged, Quarter turn, Half turn	
13th	1st	9.4 Ramps and Elevators – Excavation and construction 9.5 Escalators pits and landings – Excavation and construction	
	2nd	10. Surface Finishes 10.1 Plastering – Plain plaster, Stone cladding and Tile work	

14th	1st	10.2 Pointing – Different types of pointing and their methods	
	2nd	10.3 Painting – Preparation of surface, Primer coat and application of paints on wooden, steel and plastered wall surfaces	
15th	1st	10.4 Selection of appropriate paints/finishes for interior and exterior surfaces	
	2nd	**Sessional Test -3**	
16th		Revision of syllabus, display/Intimation of 3rd Sessional marks, Academic evaluation-analysis of Sessionals.	

LESSON PLAN		
NAME OF THE FACULTY		**Sh. PANKAJ KUMAR**
BRANCH		**CIVIL**
SEMESTER		**3RD**
SUBJECT		**SURVEYING - I**
LESSON PLAN DURATION		**04/08/2025-26/11/2025**
WEEK	**THEORY**	
	LECTURE/ DAY	**TOPIC**
1	1	Introduction and Basic Concepts
	2	Basic principles of surveying
2	3	Units of measurements
	4	Chain and Compass Surveying
3	5	Operations in Chain Surveying (Ranging, Measurement, Offsetting)
	6	Use of prismatic compass: Setting and taking observations
4	7	Concept of following with simple numerical problems:
	8	c) Whole circle bearing and reduced bearing
5	9	d) Fore and back bearing
	10	Local attraction – Problems, causes, detection, errors and corrections,
6	11	REVISION
	12	Levelling
7	13	Identification of various parts of Auto level, leveling staff types, uses and least count of leveling staff
	14	Temporary adjustment and permanent adjustment of Auto level
8	15	Level book and reduction of levels by
	16	REVISION
9	17	Methods of Leveling (Simple levelling, differential levelling, fly levelling, check leveling and profile levelling (L-section and X-section) only (Numerical problems) Problem on reduction of levels, Errors in levelling
	18	Plane Table Surveying
10	19	Equipment used in plane table survey
	20	(c) Orientation
11	21	Methods of plane table surveying
	22	Complete lecture on Errors in plane table survey
12	23	Definition and Purpose of contours
	24	Factors effecting contour interval
13	25	Methods of contouring: Direct and indirect
	26	Use of stadia measurements in contour survey
14	27	Interpolation of contours
	28	use of contour map
15	29	Drawing cross section from a contour map; marking alignment of a road
	30	Railway line and a canal on a contour map
16	29	REVISION

16	30	REVISION

Lesson Plan

Name of the Faculty :	**MOHIT SAINI**		**Discipline :**		**Civil Engineering**	
Subject	**SURVEY -I**		**Semester**	**:**	**3rd**	
Lesson Plan Duration :	**(04-08-2025 to 24 -11-2025)**				**L**	**T**	**P**
					-	**-**	**6**
Week	**Theory**		**Delivery Date of Lecture**		**Whether the Lesson Plan**	
	Lecture Day	**Topic**				
		(Including Assignments / Seminar / Group Discussion / Sessional Tests)				
Ist	1st	**I Compass Surveying** i) a) Study of prismatic compass				
	2nd	a) Study of prismatic compass				
2nd	1st	b) Setting the compass and taking observations				
	2nd	b) Setting the compass and taking observations				
	1st	c) Measuring angles between the lines meeting at a point				
3rd	2nd	**c) Measuring angles between the lines meeting at a point**				
4th	1st	II. Levelling i) a) Study of Auto level and levelling staff b) Temporary adjustments of Auto levels				
	2nd	a) Study of Auto level and levelling staff				
	1st	b) Temporary adjustments of Auto levels				
5th	2nd	c) Taking staff readings on different stations from the single setting and finding differences of level between them				
6th	1st	**Internal Viva**				
	2nd	**Sessional Test-1**				
7th	1st	ii) To find out difference of level between two distant points by shifting the instrument				
	2nd	III. Plane Table Surveying				
8th	1st	i) a) Study of the plane table survey equipment				
	2nd	b) Setting the plane table				
9 th	1st	c) Marking the North direction				
	2nd	d) Plotting a few points by radiation method				
10th	1st	ii) a) Orientation by - Trough compass - Back sighting				
	2nd	b) Plotting few points by intersection, radiation and resection method				

11th	1st	iii) Traversing an area with a plane table (at least five lines) IV. Layout of Buildings (from given drawing of two room residential building) by use of surveying instruments.		
	2nd	**Internal Viva**		
12th	1st	**Sessional Test -2**		
	2nd	V. Contouring: i) Preparing a contour plan by radial line method by the use of a Auto level.		
13th	1st	V. Contouring: i) Preparing a contour plan by radial line method by the use of a Auto level.		
	2nd	iii) Preparing a contour plan of a Road/Railway track/Canal by taking cross sections.		
14th	1st	iii) Preparing a contour plan of a Road/Railway track/Canal by taking cross sections.		
	2nd	iv) Computation of earth work and reservoir capacity from a contour map		
15th	1st	**Internal Viva**		
	2nd	**Sessional Test -3**		
16th		Revision of syllabus		
		II. Levelling i) a) Study of Auto level and levelling staff b) Temporary adjustments of Auto levels		

Lesson Plan

Name of t	**Dinesh Kumar**		**Discipline :**	**Civil Engineering**
Subject	**Railway Bridge and Tunnel**		**Semester :**	**5th**
Lesson Plan Duration :	**04/08/205-26/11/2025 (16 Weeks)**			
				L T P
				3 - -
Week	Theory		Delivery Date of Lecture	Whether the Lesson Plan Followed? Yes/ No
	Lecture Day	Topic		
		(Including Assignments / Seminar / Group Discussion / Sessional Tests)		
Ist	1st	Introduction to the subject and its necessity,		
	2nd	Introduction: Indian Railways		
	3rd	Railway surveys:Factors influencing the railways route,		
2nd	1st	brief description of various types of railway survey		
	2nd	Permanent way,Rail Gauge:		
	3rd	Classification of permanent way describing its component parts practice in India		
3rd	1st	Rails Introduction		
	2nd	Types of rails,Rail Fastenings: Rail joints, types of rail joints		
	3rd	Fastenings for rails		
4th	1st	Fish plates, bearing plates		
	2nd	Sleepers: Functions of sleepers		
	3rd	Requirements of an ideal material for sleepers		
5th	1st	Types of sleepers.		
	2nd	Ballast: Function of ballast, requirements of an ideal material for ballast		
	3rd	Crossings and signalling:		
6th	1st	Sessional Test-1		
	2nd	Crossings and signalling: Brief description regarding different types of crossings		
	3rd	Different types of signalling.		
7th	1st	Maintenance of track: Necessity, maintenance of track		
	2nd	Inspection of soil,Track and fixtures;		

	3rd	Maintenance and boxing of ballast maintenance gauges, tools.		
8th	1st	Earth work and drainage: Features of rail road, bed level, width of formation, side slopes		
	2nd	Drains, methods of construction,Requirement of drainage system		
	3rd	Station and yards: Purpose and types of stations and yards		
9th	1st	Introduction, Bridge – its function and component parts,Difference between a bridge and a culvert		
	2nd	Classification of Bridges:		
	3rd	Their structural elements and suitability:According to life-permanent and temporary,According to deck level – Deck, through and semi-through,According to material –timber, masonry, steel, RCC, pre-stressedAccording to structural form;Grade Seperators-Railway Road Over Bridges (ROB), Road Under Bridge (RUB)		
10th	1st	Beam type –RCC, T-Beam, steel girder bridges, plate girder and box girder, balanced cantilever,		
	2nd	Trussed bridges,Suspension type – unstiffened and stiffened and table (its description with sketches),According to the position of highest flood level submersible and non submersible		
	3rd	Trussed bridges,Suspension type – unstiffened and stiffened and table (its description with sketches),According to the position of highest flood level submersible and non submersible		
11th	1st	Bridge Foundations: Introduction to open foundation, pile foundation, well foundation , Piers, Abutments and Wingwalls:		
	2nd	Sessional Test-2		
	3rd	Piers-definition, parts; types –solid (masonry and RCC), open,Abutments and wing walls – definition, types of abutments (straight and tee), abutment with wing walls (straight, splayed, return and curved)		

12th	1st	Piers-definition, parts; types –solid (masonry and RCC), open,Abutments and wing walls – definition, types of abutments (straight and tee), abutment with wing walls (straight, splayed, return and curved)		
	2nd	Bridge bearings:Purpose of bearings; types of bearings – fixed plate Rocker and rollerElastomaric bearings.		
	3rd	Bridge bearings:Purpose of bearings; types of bearings – fixed plate Rocker and rollerElastomaric bearings.		
13th	1st	Maintenance of Bridges,Tunnels		
	2nd	Inspection of bridges		
	3rd	Routine maintenance,Definition and necessity of tunnels		
14th	1st	Section of tunnels:Typical section of tunnels for a national highway and single and double broad gauge railway track		
	2nd	Ventilation:		
	3rd	Ventilation –necessity and methods of ventilation, by blowing,Exhaust and combination of blowing and exhaust		
15th	1st	Drainage of tunnels,Lighting of tunnels:		
	2nd	Drainage method of draining water in tunnels		
	3rd	Drainage method of draining water in tunnels,Lighting of tunnels Sessional Test -3		
16th		Revision of syllabus, display/Intimation of 3rd Sessional marks, Academic evaluation-analysis of Sessionals.		

Lesson plan

Name of the Faculty		**Vijender Kumar**	**Semester**	**5th**
			Lecture per week	**4**
Discipline		**Civil Engineering**		
Subject		**Estimation & Costing (Practical)**	**Delivery Date of Lecture**	**Remarks**
Duration		**04 August 2025 - 26 Nov. 2025 (16 weeks)**		
Week	**Lecture Day**	**Topic (including assignment / test)**		
1st	1st	**1. Preparation of Detailed and Abstract Estimates from Drawings by following (CSR& HSR) rates for:** 1.1 A small residential building with a flat roof comprising of two rooms with W.C., bath, kitchen and verandah		
2nd	1st	1.2 Earthwork for unlined channel, 1.3 WBM road and pre-mix carpeting		
3rd	1st	1.4 Single span RCC slab culvert 1.5 Earthwork for plain and hill roads		
4th	1st	1.6 RCC work in beams, slab, column and lintel, foundations 1.7 10 users septic tank		
5th	1st	**2. Calculation of quantities of materials for:** 2.1 Cement mortars of different proportion		
6th	1st	2.2 Cement concrete of different proportion 2.3Brick/stone masonry in cement mortar of different proportion		
7th	1st	**1st Sessional Test/ Viva-voce**		
8th	1st	2.4 Plastering, pointing and painting 2.5 D.P.C. and flooring		
9th	1st	**3. Exercises on preparing tender documents for the following:** 3.1 Earth work 3.2 Construction of a small house as per given drawing		
10th	1st	3.3 RCC works 3.4 Pointing, plastering and flooring 3.5 White-washing, distempering and painting		
11 th	1st	**2nd Sessional Test/ Viva-voce**		
12th	1st	3.6 Wood work including polishing 3.7 Sanitary and water supply installations		
13th	1st	3.8 False ceiling, aluminum (glazed) partitioning		
14th	1st	3.9 Tile flooring including base course		
15th	1st	**3rd Sessional Test/ Viva-voce**		
16th	1st	**Revision**		

Name of the Faculty :	Mrs. Savroop Kaur
Discipline	Civil Engg.
Semester	5th
Subject	REINFORCED CEMENT CONCRETE DESIGN
Lecture per week	03 Hrs

Week	Theory		
	Lecture Day	**Topic (Including assignment / Test)**	**Delivery Date**
1	1	**1.1 Introduction**, 1.1.1 Concept of RCC and PCC, 1.1.2 Difference between RCC and PCC, 1.1.3 Reinforcement Materials: Suitability of steel as reinforcing material	
	2	1.1.3 Reinforcement Materials: Suitability of steel as reinforcing material, 1.1.4 Properties of mild steel and HYSD steel	
	3	1.1.5 Loading on structures as per IS: 875, 1.2 Introduction to following methods of RCC design	
2	4	1.2.1 Working stress method: Definition and basic assumptions.	
	5	1.2.2 Limit state method: Definition and basic assumptions	
	6	1.2.3 Difference between W.S.M and L.S.M	
3	7	**Unit 2 shear and development length** 2.1.1 Shear as per IS: 456 by working stress method	
	8	2.1.2 Shear strength of concrete without shear reinforcement, nominal shear stress, maximum shear stress and shear reinforcement, functions of vertical stirrups. 2.1.3 Conditions and different forms of providing shear reinforcement	
	9	2.1.4 Concept, purpose and methods for achieving development length 2.1.5 Concept of bond and bond stress.	
4	10	**2.2 Concept of Limit State Method** 2.2.1 Definitions, methods and assumptions made in limit state of collapse (flexure) 2.2.2 Characteristics strength of materials	
	11	2.2.3 Characteristics loads 2.3.4 Design value for material & loads 2.3.5 Stress blocks parameters.	
	12	Revision	
5	13	**1st Sessional Test**	
	14		
	15		
6	16	**3.1 Singly Reinforced beam** 3.1.1 Concept of singly R/F beam, neutral axis, depth of Neutral axis, maximum depth of neutral axis, limiting percentage of steel, limiting moment of resistance, value of limiting moment of resistance.	
	17	3.1.2 Types of beam sections- Balanced, under and over R/F sections. 3.1.3 Details of reinforced in beam as per IS: 456	
	18	3.1.4 Design of singly reinforced beam by limit state method and types of problems.	
7	19	**3.2 Doubly Reinforced Beams** 3.2.1 Concept of doubly reinforced beam, difference between doubly and singly R/F beam.	
	20	3.2.2 Circumstances under which doubly R/F beam are provided. 3.2.3 Concept depth of neutral axis of doubly R/F beam, area of tensile steel and compression steel, ultimate moment of resistance, maximum design stress in compression	
	21	3.2.4 Design of simply supported doubly reinforced rectangular beam by limit state method and types of problems	
	22	**3.3 Behaviour of T beam,** Concept of isolated T-beam and L-beam	

8	23	**4.1 One Way Slab-** 4.1.1 Concept of one way slab 4.1.2 General considerations of design of slabs as per IS: 456	
	24	4.1.3 Design steps of simply supported one way slab including sketches showing enforcement details (plan and section) by Limit State Method.	
9	25	**4.2 Two Way Slab-** 4.2.1 Concept of two way slab	
	26	4.2.2 Difference between one-way slab and two way slab	
	27	4.2.3 Design steps of two-way simply supported slab with corners free to lift, no provisions for Torsional reinforcement by Limit State Method including sketches showing R/F details (plan and two sections)	
10	28	**2nd Sessional Test**	
	29		
	30		
11	31	**5.1 Axially Loaded Column** 5.1.1 Definition and classification of columns 5.1.2 Effective length of column,	
	32	5.1.3 Specifications for longitudinal and lateral reinforcement as per IS: 456	
	33	5.1.4 Design of axially loaded square, rectangular and circular short columns by Limit State Method including sketching of reinforcement (sectional elevation and plan)	
12	34	**5.2 Pre-stressed Concrete** 5.2.1 Concept of pre-stressed concrete	
	35	5.2.2 Methods of pre-stressing: pre-tensioning and post-tensioning	
	36	5.2.3 Advantages and disadvantages of pre-stressing	
13	37	5.2.4 Losses in pre-stress	
	38	Practice of Numericals	
	39	Revision	
14	40	3rd Sessional Test	
	41		
	42		
15	43	Practice of Numericals	
	44	Revision	
	45	Revision	

GOVERNMENT POLYTECHNIC AMBALA

Name of the		Mohit Narwal	Semester	5th
Discipline		Civil Engineering	Lecture per week	2
Subject		HIGHWAY ENGINEERING	Delivery Date of Lecture	Remarks
Lesson plan		04 AUG 2024 - 26 NOV 2024 (15 weeks)		
1st	1	1. Introduction to Concrete 1.1 Definition of concrete, properties of concrete		
	2	Advantages and disadvantages of concrete		
2nd	1	2. Ingredients of Concrete 2.1 Cement: Introduction		
	2	2.2 Aggregates: 2.2.1 Classification of aggregates according to size and shape		
3rd	1	2.2.2 Characteristics of aggregates: Particle size and shape, surface texture, specific gravity of aggregate; bulk density, water absorption, surface moisture, bulking of sand, deleterious materials soundness		
	2	2.2.3 Grading of aggregates aggregates: coarse aggregate, fine aggregate; All-in- aggregate; fineness modulus; interpretation of grading charts		
4th	1	2.3 Water: Water Quality requirements as per IS: 456-2000		
	2	Revision / Class Test		
5th	1	3. Water Cement Ratio 3.1 Hydration of cement principle of water-cement ratio,		
	2	Duff Abram's Water-cement ratio law: Limitations of water-cement ratio law and its effects on strength of concrete		
6th	1	4. Properties of Concrete 4.1 Properties in the plastic state: Workability, Segregation, Bleeding and Harshness		
	2	4.1.1 Factors affecting workability, Measurement of workability: slump test, compacting factor; Recommended slumps for placement in various conditions as per IS: 456-2000/SP-23		
7th	1	4.2 Properties in the hardened state: Strength, Durability, Impermeability, Dimensional changes		
	2	4.3 Concrete mix design (Introduction only)		
8th	1	4.4 Introduction to Admixtures (chemicals and minerals) for improving performance of concrete		
	2	Revision/ Class Test		
9th	1	5. Concreting Operations 5.1 Storing of Cement: 5.1.1 Storing of cement in a warehouse 5.1.2 Storing of cement at site		
	2	5.1.3 Effect of storage on the strength of cement 5.1.4 Determination of warehouse capacity for storage of Cement		
10th	1	5.2 Storing of Aggregate: Storing of aggregate at site 5.3 Batching (to be shown during site visit 5.3.1 Batching of Cement		
	2	5.3.2 Batching of aggregate by: selection of proper gauge box machines, Bolume, using gauge box, Weight sping balances and batching.		

11th	1	5.3.3 Measurement of water 5.4 Mixing: 5.4.1 Hand mixing 5.4.2 Machine mixing - types of mixers, capacities of mixers, choosing the appropriate size of mixers, operation of mixers. 5.4.3 Maintenance and care of mixers		
	2	6.1 Transportation of concrete: Transportation of concrete using wheelbarrows, transit mixers, chutes, belt conveyors, pumps, tower cranes, hoists, etc. 6.2 Placement of concrete: Checking of formwork, shuttering, and precautions to be taken during placement 6.3.3 Selection of suitable vibrators for different situations		
12th	1	6.4 Finishing concrete slabs - screeding, floating and trowelling 6.5 Curing: 6.5.1 Objective of curing, methods of curing like ponding, membrane curing, steam curing, chemical curing 6.5.2 Duration for curing and removal of formwork		
	2	6.6 Jointing: Location of construction joints, treatment of construction joints, expansion joints in buildings - their importance and location 6.7 Defects in concrete: Identification of defects and methods of removing defects		
13th	1	Revision / Class Test		
	2	7. Special Concretes (only features) 7.1 Concreting under special conditions, difficulties, and precautions before, during and after concreting 7.1.1 Cold weather concreting 7.1.2 Under water concreting 7.1.3 Hot weather concreting		
14th	1	7.2 Ready mix concrete 7.3 Fly ash concrete		
	2	8. Importance and methods of non- destructive tests (introduction only) 8.1. Rebound Hammer Test 8.2. Pulse Velocity method		
15th	1	Revision / Class Test		
	2	Revision / Class Test		

Lesson plan

* Name of the Faculty :	Sh. Kimti lal	
Discipline	Civil Engg.	
Duration	04/08/2025 - 26/11/2025	
Semester	5th	
Subject	REINFORCED CEMENT CONCRETE DRAWING	
Practical per week	06 Hrs	
Week		
	Topic (Including assignment / Test)	**Delivery Date**
1	Drawing No. 1: RC Slabs - One way slab	
2	Two way slab	
3	Cantilever Slab.	
4	Drawing No.2 : Beams - Singly and doubly reinforced rectangular beams	
5	**1st Sessional Test/Viva voce**	
6	Cantilever beam (All beams with vertical stirrups)	
7	Drawing No.3 : Columns and Footings Square	
8	Rectangular	
9	Circular Columns with lateral ties and their isolated sloped column footings.	
10	**2nd Sessional Test/Viva voce**	
11	Drawing No. 4 : Portal Frame	
12	Three bay two storey RC portal frame with blow up of column beam junctions.	
13	Drawing No. 5 : Draw at least two sheet using AutoCAD software	
14	**3rd Sessional Test/Viva voce**	
15	Drawing No. 5 : Draw at least two sheet using AutoCAD software	

Lesson plan

Name of the Faculty		**PAMMI DEVI**
Discipline		**Civil Engineering**
Subject		**Solid waste Management**
Semester		**5th**
Duration		**04 August 2025 - 26 Nov. 2025 (16 weeks)**
Week	**Lecture Day**	**Topic (including assignment / test)**
1st	1st	**Introduction**
	2nd	1.1 Definition of solid waste, different solid waste – domestic Waste, commercial waste, industrial waste, market waste,
2nd	1st	agricultural waste, biomedical waste, E-waste, hazardous waste, institutional waste, etc.
	2nd	1.2 Sourcesof solidwaste,
3rd	1st	Classificationofsolidwaste–hazardous andnon-hazardous waste.
	2nd	1.3 Physicalandchemical characteristicsofmunicipal solidwaste.
4th	1st	**Storage,CollectionandTransportationof MunicipalSolidWaste**
	2nd	2.1 Collection,segregation,storageandtransportation ofsolidwaste.
5th	1st	2.2 ToolsandEquipment-LitterBin,Broom,Shovels,Handcarts,Mechanicalroadsweepers, Community bin - like movable and stationary bin.
	2nd	2.3 Transportation vehicles with their working capacity -Animal carts, Auto vehicles, Tractors or Trailers, Trucks, Dumpers, Compactor vehicles. Transfer station- meaning, necessity, location.
6th	1st	2.4 Role ofragpickersand their utilityforsociety.
	2nd	**1st Sessional Test**
7th	1st	**Composting of Solid Waste**
	2nd	3.1 Conceptofcompostingofwaste,Principlesofcompostingprocess.Factorsaffectingthecomposting process.
8th	1st	3.2 Methodsofcomposting–ManualComposting–Bangaloremethod,IndoreMethod,Mechanical Composting – Dano Process, Vermi composting.
	2nd	**TechniquesforDisposalof Solid Waste**
9th	1st	4.1 Solidwastemanagementtechniques–solidwastemanagementhierarchy,wastepreventionand waste reduction techniques
	2nd	4.2 Land filling technique, Factors to be considered for site selection, Land filling methods- Area method, Trench method and Ramp method,
10th	1st	Leachate and its control, Biogas from landfill, Advantages and disadvantages of landfill method,
	2nd	4.3 Incineration of waste: Introduction of incineration process, Types of incinerators - Flash, Multiple chamber Incinerators, Products of incineration process with their use
11 th	1st	Pyrolysis of waste – Definition, Methods.
	2nd	**BiomedicalandE-waste management**
12th	1st	5.1 DefinitionofBiomedical Waste.
	2nd	5.2 Sourcesand generationofBiomedicalWasteanditsclassification
13th	1st	5.3 BiomedicalwasteManagementtechnologies.
	2nd	5.5 Recyclinganddisposal ofE-waste.
14th	1st	**3rd Sessional Test**
	2nd	Revision
15th	1st	Revision
	2nd	Revision
16th	1st	Revision
	2nd	Revision

Lesson plan

Name of the Faculty		**SAVROOP KAUR**	**Semester**	**5th**
			Lecture per week	**3**
Discipline		**Civil Engineering**		
Subject		**HIGHWAY ENGINEERING**	**Delivery Date of**	**Remarks**
Lesson plan Duration		**20AUG2024 - 29 NOV2024 (15 weeks)**		
Week	**Lecture Day**	**Topic (including assignment / test)**		
1st	1	UNIT-I 1.1 Introduction 1.1.1 Importance of Highway engineering 1.1.2 Functions of IRC, CRRI, MoRT&H, NHAI		
	2	1.1.3 IRC Classification of roads 1.2 Elements of Road Geometrics 1.2.1 Glossary of terms used in road geo-metrics and their importance: Right- of- way, Formation width, road margin, road shoulder, carriage way, side slopes, kerbs, formation levels		
	3	1.2.2 Concept of camber and gradients- their types and functions 1.2.3 Concept of Design speed, average running speed, stopping and overtaking sight distance.		
2nd	1	1.2.4 Curves- Necessity and types (horizontal and vertical curves including transition curves)		
	2	1.2.5 Super elevation-Definition, methods of providing super elevation and concept of widening of roads on curves		
	3	1.2.6 Sketch of typical cross-sections in cutting and filling on straight alignment and at a curve (Note: No design/numerical problem to be taken)		
3rd	1	UNIT-II 2.1 Highway Surveys, Alignment and Plan 2.1.1 Topographic Map-Concept and uses		
	2	2.1.2 Road surveys for highway location-Stages of road surveys (map study, reconnaissance, preliminary surveys, final location and detailed surveys)		
	3	2.1.3 Highway alignment-Definition and requirements		
4th	1	2.1.4 Standards for preparing highway plans- Stages and objectives. 2.1.5 Basic considerations governing alignment for a road in plain and hilly area		
	2	2.1.6 Setting out alignment of road- Highway location, bench marks and control pegs for embankment and cutting.		
	3	2.2 Highway Materials 2.2.1 Different types of road materials – (Soil, Aggregates and Binders) their common types, functions & requirements.		
5th	1	2.2.2 Introduction to California Bearing Ratio, method of finding CBR value and its significance.		
	2	2.3.3 Bitumen and Tar their properties as per BIS specifications, penetration, softening point, ductility and viscosity test of bitumen, procedures and significance.		
	3	2.3.4 Cut back, emulsion and Bitumen modifiers (CRMB, PMB) their functions.		
6th	Sessional 1			
	1	UNIT-III 3.1 Highway Pavements Construction 3.1.1 Highway pavement: Flexible and rigid pavement, their merits and demerits, typicalcross- sections, functions of various components		

7th	2	3.1.2 Sub-grade preparation: - Borrow pits, making profiles of embankment, construction of embankment, compaction, preparation of subgrade, and methods of checking camber, gradient and alignment as per recommendations of IRC, equipment used for subgrade preparation.		
	3	3.1.3 Stabilization of subgrade. Types of stabilization mechanical stabilization, lime stabilization, cement stabilization; fly ash stabilization etc. (introduction only)		
8th	1	3.1.4 Stabilization of sub base & base course: Granular base course: a) Water Bound Macadam (WBM) b) Wet Mix Macadam (WMM) c) Bitumen Courses: (i) Bituminous Macadam (ii) Dense Bituminous Macadam (DBM) *Methods of construction as per MoRT&H		
	2	3.1.5 Surfacing: Definition and types of surfacing a) Prime coat and tack coat b) Surface dressing with seal coat c) Open graded premix carpet d) Seal coat		
	3	e) Bituminous Concrete f) Bituminous penetration macadam. * Methods of constructions as per MORT&H specifications and quality control;equipments used for above.		
9th	1	3.1.6 Rigid Pavements:- Construction of concrete roads as per IRC specifications: Form work laying, mixing and placing the concrete, compacting and finishing, curing, joints inconcrete		
	2			
	3			
10th	Sessional 2			
11 th	1	UNIT-IV 4.1 Hill Roads: 4.1.1 Introduction: Typical cross-sections showing all details of a		
	2			
	3			
12th	1	4.3 Highway Drainage: 4.3.1 Necessity of road drainage work, cross drainage works 4.3.2 Surface and subsurface drains and storm water drains: -		
	2			
	3			
13th	1	UNIT-V 5.1 Highway Maintenance: 5.1.1 Common types of road failures of flexible pavements: Pot		
	2			
	3			
14th	1	5.2 Highway Safety: 5.2.1 Best practices in engineering design for road safety: Geometry of the road, Segregation of local traffic, Pedestrian facility, Bus bays, Illuminations, Development of junction, Signage and road safety audit.		
	2	5.2.3 Essential road construction safety tips: Wear the proper safety equipment, Control traffic, Avoid blind spots, Be Constantly Aware of Surroundings		
	3	5.3 Airport Engineering:- 5.3.1 Concept of Airport engineering.		
15th	1	5.3.2 Factors to be considered while selecting a site for an airport with respect to zoning laws.		
	2			
	3	**Sessional 3**		

Lesson plan

Name of the Faculty		**Vijender Kumar**	**Semester**	**5th**
			Lecture per week	**2**
Discipline		**Civil Engineering**		
Subject		**Estimation & Costing**	**Delivery Date of Lecture**	**Remarks**
Duration		**04August 2025 - 26 Nov. 2025 (16 weeks)**		
Week	**Lecture Day**	**Topic (including assignment / test)**		
1st	1st	1.1 Introduction to quantity surveying and its importance.		
	2nd	1.2 Duties of quantity surveyor, 1.3 Types of estimates		
2nd	1st	1.3.1 Preliminary estimates: - Plinth area estimate and Cubic content estimate		
	2nd	1.3.2 Detailed estimates: - Concept, difference between preliminary and detailed estimate		
3rd	1st	1.3.3 Stages of preparation – details of measurement and calculation of quantities and abstract		
	2nd	2.1 Measurement 2.1.1 Units of measurement for various items of work as per BIS: 1200 2.1.2 Rules for measurements		
4th	1st	2.1.3 Different methods of taking out quantities – centre line method and long wall andshort wall method		
	2nd	2.1.3 Different methods of taking out quantities – centre line method and long wall andshort wall method		
5th	1st	2.2 Analysis of Rates 2.2.1 Steps involved in the analysis of rates. Requirement of material, labour, sundries,contractor's profit and overheads		
	2nd	2.2.2 Analysis of rates for finished items when data regarding labour, rates of materialand labour is given: a) Earthwork in excavation in hard/ordinary soil and filling		
6th	1st	b) Concept of lead and lift, c) RCC in roof slab/beam/lintels/columns,		
	2nd	d) Brick masonry in cement mortar Cement Plaster, White washing, painting		
7th	1st	**1st Sessional Test**		

7th	2nd			
8th	1st	3.1 Contractor ship- Meaning of contract, 3.2 Essentials of a contract, 3.3 Various Conditions of contractors		
	2nd	3.4 Types of contracts, their advantages, dis-advantages and suitability, system of payment.		
	1st	3.5 Single and two cover-bids; tender, tender forms and documents,		
9th	2nd	Tender notice, submission of tender and deposit of earnest money, security deposit, retention money,maintenance period		
10th	1st	3.6 Classification and types of contracting firms/construction companies		
	2nd	4.1 Introduction to CSR, HSR and calculation of cost based on premium on CSR & HSR		
11 th	1st	**2nd Sessional Test**		
	2nd			
12th	1st	4.2 Preparation of Tender Document based on common schedule rates and Haryana schedule rates (CSR & HSR)		
	2nd	4.3 Various Condition of contractors		
13th	1st	4.4 Exercises on writing detailed specifications of different types of building		
	2nd	5.1 Valuation		
14th	1st	5.2 Purpose of valuation, principles of valuation		
	2nd	5.3 Definition of various terms related to valuation like depreciation, sinking fund, salvage and scrap value, market value, fair rent, year's		
15th	1st	5.4 Methods of valuation (i) replacement cost method (ii) rental return method		
	2nd	5.5 Preparation of comparative statement for item rate contract.		
16th	1st	**3rd Sessional Test**		
	2nd			

Lesson Plan

Name of the Faculty :Dinesh Kumar			**Discipline :**	**Civil Engineering**
Subject :	**CONSTRUCTION MANAGEMENT AND ACCOUNTS**		**Semester :**	**5TH**
Lesson Plan	**04/08/205-26/11/2025 (16 Weeks)**			
			L T P	
			2 - -	

	Topic (including assignment / test)	**Delivery Date of Lecture**	Whether the lesson Plan Followed?
	Introduction to the Subject and its necessity		
1st	**CONSTRUCTION MANAGEMENT:** **1. Introduction:** 1.1 Significance of construction management		
	1.3 Functions of construction management, planning, organising, staffing, directing, controlling and coordinating, meaning of each of these with respect to construction job.		
	1.4 Classification of construction into light, heavy and industrial construction		
	1.5 Stages in construction from conception to completion		
2nd	1.6 The construction team: owner, engineer, architect and contractors, their functions and inter-relationship		
	2. Construction Planning: 2.1 Importance of construction planning		
	2.3 Scheduling construction works by bar charts - Definition of activity, identification of activities - Preparation of bar charts for simple construction work		
	- Preparation of schedules for labour, materials, machinery and finances for small works		
	-Limitations of bar charts		
3rd	2.4 Scheduling by network techniques: - Introduction to network techniques; PERT and CPM,		
	2.4 Scheduling by network techniques		
	Revision/Quarries		
	3. Organization: 3.1 Types of organizations: Line,		
	Types of organizations		
4th	line and staff,		
	Functional and their characteristics		
	Practice of preparation of organizational chart of an organization.		
	4. Site Organization: 4.1 Principle of storing and stacking materials at site		
	Principle of storing and stacking materials at site		
5th	4.2 Location of equipment		
	4.3 Preparation of actual job layout for a building		

5th	4.4 Organizing labour at site		
	4.4 Organizing labour at site		
	Revision/Quarries /Assignment-I		
6th	**Sessional Test -I**		
	5. Construction Labour: 5.1 Conditions of construction workers in India,		
	Wages paid to workers		
	5.2 Important provisions of the following Acts:- Labour Welfare Fund Act 1936 (as amended)		
	5.2 Important provisions of the following Acts:- Labour Welfare Fund Act 1936 (as amended		
7th	- Payment of Wages Act 1936 (as amended)		
	- Minimum Wages Act 1948 (as amended)		
	6. Control of Progress: 6.1 Methods of recording progress		
	6.2 Analysis of progress		
	6.3 Taking corrective actions keeping head office informed		
8th	6.4 Cost time optimization for simple jobs - Direct and indirect cost,		
	variation with time, cost optimization		
	7. Inspection and Quality Control: 7.1 Need for inspection and quality control		
	7.2 Principles of inspection		
	cost optimization		
9th	7.3 Stages of inspection and quality control for - Earth work		
	- Masonry		
	- RCC		
	- Sanitary and water supply services		
	Sanitary and water supply services		
10th	**8. Accidents and Safety in Construction:** 8.1 Accidents – causes and remedies		
	8.2 Safety measures for:- Excavation work		
	- Drilling and blasting, - Hot bituminous works		
	- Scaffolding, ladders, form work		
	- Demolitions		
	8.3 Safety campaign and safety devices		

11th	**Revision/Quarries/Assignment-II**		
	Sessional Test -II		
	ACCOUNTS **9. Public Work Accounts:** Introduction, technical sanction,		
	allotment of funds, re-appropriation of funds bill		
12th	Contractor ledger, measurement book,		
	Preparation of bill of quantities (BOQ),		
	Running and final account bills complete,		
	Completion certificate & report		
	Completion certificate & report		
13th	Hand receipt, aquittance roll. Muster Roll labour,		
	Casual labour roll-duties and responsibility of different cadres,		
	Budget-stores, returns, account of stock, misc. P.W. advances,		
	T & P – verification, survey report ,Road metal material charged direct to works,		
	T & P – verification, survey report ,Road metal material charged direct to works		
14th	Account - expenditure & revenue head, remittance and deposit head, Definition of cash, precaution in custody of cash book		
	Imprest account, temporary advance, treasury challan		
	Preparation of accounts register, stock register.		
	Preparation of final bills.		
	Sessional Test -III		
15th	Revision of syllabus, display/Intimation of 3rd Sessional marks, Academic evaluation- analysis of Sessionals.		