

GANDHI INSTITUTE OF EXCELLENT TECHNOCRATS**DEPARTMENT OF CIVIL ENGINEERING****LESSON PLAN****SUBJECT- LAND SURVEY II****BRANCH-CIVIL****NAME OF THE FACULTY-****SEMESTER-6TH**

Module	Unit Number	Date	Lecture No.	Topic to be covered	
1	UNIT-1			TACHEOMETRY:	
			1	Principles, stadia constants determination	
			2	Stadia tacheometry with staff held vertical and with line of collimation horizontal	
			3	Numerical related to Stadia tacheometry with staff held vertical and with line of collimation horizontal	
			4	Stadia tacheometry with staff held vertical and with line of collimation inclined	
			5	Stadia tacheometry with staff held vertical and with line of collimation inclined	
			6	Numerical related to Stadia tacheometry with staff held vertical and with line of collimation horizontal or inclined	
			7	Elevations and distances of staff stations – numerical problems	
		8	Elevations and distances of staff stations – numerical problem		
		UNIT-2			CURVES:
			9	compound, reverse and transition curve, Purpose & use of different types of curves in field	
			10	Elements of circular curves	
			11	numerical problems related to simple circular curve	
			12	Preparation of curve table for setting out	
			13	Setting out of circular curve by chain and tape and by instrument angular methods (i) offsets from long chord, (ii) successive bisection of arc	
	14		offsets from tangents, (iv) offsets from chord produced, (v) Rankine's method of tangent angles		
	15	Obstacles in curve ranging – point of intersection inaccessible			
2	UNIT-3			BASICS ON SCALE AND BASICS OF MAP:	
			16	Fractional or Ratio Scale, Linear Scale, Graphical Scale, What is Map, Map Scale and Map Projections	

		17	How Maps Convey Location and Extent 3.4 How Maps Convey characteristics of features	
		18	How Maps Convey Spatial Relationship	
		19	Classification of Maps: Physical Map, Topographic Map, Road Map	
		20	Political Map, Economic & Resources Map, Thematic Map, Climate Map	
	UNIT-4			SURVEY OF INDIA MAP SERIES:
		21	Open Series map	
		22	Defense Series Map	
		23	Map Nomenclature: Quadrangle Name, Latitude, Longitude, UTM's	
		24	Map Nomenclature: Contour Lines, Magnetic Declination	
		25	Public Land Survey System, Field Notes	
3	UNIT-5		BASICS OF AERIAL PHOTOGRAPHY, PHOTOGRAMMETRY, DEM AND ORTHO IMAGE GENERATION:	
		26	Aerial Photography: Film, Focal Length, Scale	
		27	Aerial Photography: Types of Aerial Photographs (Oblique, Straight)	
		28	Photogrammetry: Classification of Photogrammetry	
		29	Aerial Photogrammetry, Terrestrial Photogrammetry	
		30	Photogrammetry Process: Acquisition of Imagery using aerial and satellite platform	
		31	Control Survey	
		32	Geometric Distortion in Imagery: Application of Imagery and its support data Orientation and Triangulation	
		33	Stereoscopic Measurement X-parallax, Y-parallax	
		34	DTM/DEM Generation	
		35	Ortho Image Generation	
		36	Class Test 1	
	UNIT-6			MODERN SURVEYING METHODS :
		37	Principles, features and use of Micro-optic theodolite	
		38	Demonstration of Micro-optic theodolite	
		39	Principles, features and use of digital theodolite	
		40	Demonstration of Digital theodolite	
		41	Working principles of a Total Station	
		42	Demonstration of Total Station	
43		Set up and use of total station to measure angles		
44	Set up and use of total station to measure distances of points under survey from total station and the co-ordinates (X,Y & Z or northing, easting, and elevation) of surveyed points relative to Total Station			

			position using trigonometry and triangulation.	
		45	Demonstration of Total Station	
		46	Class test question discussion & distribution of evaluated answer sheet to the student for the student for their references	
4	UNIT-7		BASICS ON GPS & DGPS AND ETS:	
		47	GPS: - Global Positioning 7.1.1 Working Principle of GPS,GPS Signals	
		48	Errors of GPS, Positioning Methods	
		49	DGPS: - Differential Global Positioning System: Base Station Setup, Rover GPS Set up	
		50	Download, Post-Process and Export GPS data	
		51	Sequence to download GPS data from flashcards	
		52	Sequence to Post-Process GPS data	
		53	Sequence to export post process GPS data, Sequence to export GPS Time tags to file	
			ETS: - Electronic Total Station	
		54	Distance Measurement, Angle Measurement	
		55	Leveling, Determining position	
		56	Reference networks, Errors and Accuracy	
			UNIT-8	
	57	Components of GIS		
	58	Integration of Spatial and Attribute Information		
	59	Three Views of Information System: Database or Table View, Map View and Model View		
	60	Spatial Data Model		
	61	Attribute Data Management and Metadata Concept		
	62	Prepare data and adding to Arc Map		
	63	Organizing data as layers		
	64	Editing the layers, Switching to Layout View		
65	Change page orientation. 8.10 Removing Borders.			
66	Adding and editing map information			
67	Finalize the map			
68	Demonstration of GIS Software			
69	Demonstration of GIS Software			
70	Class Test			
71	Discussion of Assignment Questions			

		72	Previous semester Question Discussion
		73	Previous semester Question Discussion
	Signature of faculty Member:		
	Counter signature of H.O.D:		

GANDHI INSTITUTE OF EXCELLENT TECHNOCRATS**DEPARTMENT OF CIVIL ENGINEERING****LESSON PLAN****SUBJECT-STRUCTURAL MECHANICS****BRANCH – CIVIL Engg.****NAME OF THE FACULTY –****SEMESTER-3RDsem**

UNITS	DATES	LECTURE NO.	TOPIC TO BE COVERED
UNIT-1			REVIEW OF BASIC CONCEPTS
		1	Definitions of Force, Moment, support conditions, Conditions of equilibrium.
		2	centroid of geometrical figures,centroid of composite figures.
		3	Moment of Inertia – Definition, Parallel axis & Perpendicular axis Theorems.
		4	M.I. of plane lamina & different engineering section.
UNIT-2			SIMPLE AND COMPLEX STRESS, STRAIN
		5	Introduction to stresses and strains,Mechanical properties of materials
		6	Types of stresses,Types of strains , Complimentary shear.
		7	Hooke's law ,Elastic Constants, Derivation of relationship between the elastic constants.
		8	Concept of Stress- Strain curve of a ductile material.
		9	Significance of percentage elongation and reduction in area of cross section.
		10	Deformation of prismatic bars due to uniaxial load.
		11	Deformation of prismatic bars due to its self weight.
		12	Elongation and Contraction, Poisson's Ratio, volumetric strain.
		13	Introduction to Principal stresses and strains, Occurrence of normal and tangential stresses.
		14	Concept of Principal stress and Principal Planes, major and minor principal stresses .
		15	Stresses in an oblique section of a body subjected to a direct stress in one plane and in two mutually perpendicular direction.
		16	Stresses in an oblique section of a body subjected to a simple shear stress only

			and a direct shear stress accompanied by a simple shear stress.
		17	Stresses in an oblique section of a body subjected to direct stress in two mutually perpendicular directions accompanied by a simple shear stress.
		18	Mohr's Circle and its basic concepts.
		19	Application of Mohr's circle to solve problems of complex stresses.
UNIT-3			STRESSES IN BEAMS AND SHAFTS
		20	Bending stress in beams – Theory of simple bending & its Assumptions.
		21	Equation for Flexure, Position of N.A. and Centroidal Axis.
		22	Flexural rigidity & Significance of Section modulus.
		23	Shear stress distribution in beams and standard sections symmetrical about vertical axis.
		24	Stresses in shafts due to torsion-Concept of torsion, basic assumptions of pure torsion.
		25	torsion of solid and hollow circular sections, polar moment of inertia.
			Concept torsional rigidity, equation of torsion.
		27	Concept of combined bending and direct stresses.
		8	Conditions for no tension.
		9	Middle third/fourth rule, Core or Kern for different sections, chimneys, dams and retaining walls.
UNIT-4			COLUMNS AND STRUTS
		30	Definitions of Short and Long columns, End conditions & Effective length.
		31	Slenderness ratio, Euler's theory of long column.
		32	Critical load for Columns with different end conditions.
		33	CLASS TEST
UNIT-5			SHEAR FORCE AND BENDING MOMENT
		34	Types of Load, Types of Support, Types of Beams based on support conditions.
		35	Calculation of support reactions using equations of static equilibrium.

	36	Concept of Shear Force and Bending Moment, Signs Convention for S.F. and B.M.
	37	Relation between intensity of load, S.F and B.M.
	38	S.F and B.M diagrams for Cantilever beams.
	39	S.F and B.M diagrams for Simply supported beams.
	40	Discussion of different problems regarding to above concepts.
	41	S.F and B.M diagrams for Over hanging beams.
	42	Concept and calculation of maximum BM, Point of contra flexure.
	43	Discussion of various problems regarding to above concept.
	44	CLASS TEST QUESTIONS DISCUSSION & DISTRIBUTION OF EVALUATED ANSWER SHEET TO THE STUDENTS FOR THEIR REFERENCES.
	45	DISCUSSION OF ASSIGNMENT-1 QUESTIONS.
UNIT-6		SLOPE AND DEFLECTION
	46	Basic concept of slope and deflection for various beam with boundary conditions.
	47	Determination of slope and deflection of Cantilever beam-by double integration method.
	48	Determination of slope and deflection of Cantilever beam-by Macaulay's method.
	49	Determination of slope and deflection of simply supported beam-by double integration method.
	50	Determination of slope and deflection of simply supported beam-by Macaulay's method.
	51	calculation of maximum slope and deflection at free end of a cantilever under various loading condition.
	52	calculation of maximum slope and deflection of a simply supported beam under various loading condition.
	53	Discussion of various problems regarding to the above concept.

	54	Relationship between slope, deflection and curvature .
	55	DISCUSSION OF ASSIGNMENT-2 QUESTIONS.
UNIT-7		INDETERMINATE BEAMS
	56	Concept of determinant and indeterminate structure.
	57	calculation of indeterminacy of different beam.
	58	Principle of consistent deformation/compatibility.
	59	Analysis of propped cantilever beam.
	60	SF and BM diagrams (point load and udl covering full span)of propped cantilever.
	61	Analysis of fixed beam.
	62	SF and BM diagrams of fixed beam .
	63	Analysis of two span continuous beams by principle of superposition.
	64	SF and BM diagrams of continuous beam.
	65	Discussion of various problems regarding to the above concept.
UNIT-8		TRUSSES
	66	Types of trusses, statically determinate and indeterminate trusses
	67	Determination of degree of indeterminacy and stability of trusses.
	68	Analysis of Truss by Method of joints.
	69	Analysis of Truss by Method of section.
	71	CLASS TEST
	72	PREVIOUS SEMESTER QUESTIONS DISCUSSION

SIGNATURE OF THE FACULTY MEMBER

COUNTER SIGNATURE OF H.O.D

GANDHI INSTITUTE OF EXCELLENT TECHNOCRATS

DEPARTMENT OF CIVIL ENGINEERING

LESSON PLAN

SUBJECT- GEOTECHNICAL ENGINEERING

BRANCH-CIVIL

NAME OF THE FACULTY-

SEMESTER-3rd

Module	Unit Number	Date	Lecture No.	Topic to be covered	
1	UNIT-1			Introduction	
			1	Soil and Soil Engineering, Scope of Soil Mechanics	
			2	Origin and formation of soil	
	UNIT-2				Preliminary Definitions and Relationship
			3	Soil as a three Phase system, Water Content, Density	
			4	Specific gravity, Voids ratio, Porosity, Percentage of air voids, air content	
			5	Degree of saturation, density Index, Bulk/Saturated/dry/submerged density	
			6	Interrelationship of various soil parameters	
	UNIT-3				Index Properties of Soil
			7	Water Content 3.2 Specific Gravity	
			8	Particle size distribution: Sieve analysis,	
			9	wet mechanical analysis, particle size distribution curve and its uses	
			10	Consistency of Soils, Atterberg's Limits, Plasticity Index, Consistency Index, Liquidity Index	
UNIT-4				Classification of Soil	
		11	General classification of soil		
		12	I.S. Classification of soil		
		13	Plasticity chart		
2	UNIT-5			Permeability and Seepage	
			14	Concept of Permeability, Darcy's Law, Co-efficient of Permeability	
			15	Factors affecting Permeability	
			16	Constant head permeability	
			17	falling head permeability Test	
			18	Seepage pressure	
			19	effective stress	
			20	phenomenon of quick sand	

	UNIT-6			Compaction and Consolidation	
			21	Compaction, Light and heavy compaction Test	
			22	Factors affecting Compaction	
			23	Field compaction methods and their suitability	
			24	Consolidation, distinction between compaction and consolidation.	
			25	Terzaghi's model analogy of compression/ springs showing the process of consolidation – field implications	
			26	Terzaghi's model analogy of compression/ springs showing the process of consolidation – field implications	
			27	Class Test	
3	UNIT-7			Shear Strength	
			28	Concept of shear strength, Mohr- Coulomb failure theory	
			29	Cohesion, Angle of internal friction	
			30	strength envelope for different type of soil	
			31	Measurement of shear strength;- Direct shear test	
			32	Triaxial shear test	
			33	Unconfined compression test	
			34	Vane-shear test	
			35	Class test question discussion & distribution of evaluated answer sheet to the student of their references	
		UNIT-8			Earth Pressure on Retaining Structures
			36	Active earth pressure	
			37	Passive earth pressure	
			38	Earth pressure at rest	
			39	Use of Rankine's formula for (cohesion-less soil only) (i) Backfill with no surcharge	
			40	Numerical related to Use of Rankine's formula for (cohesion-less soil only) (i) Backfill with no surcharge	
	41	Use of Rankine's formula for (cohesion-less soil only) (i) Backfill with uniform surcharge			
	42	Numerical related to Use of Rankine's formula for (cohesion-less soil only) (i) Backfill with uniform surcharge			
4	UNIT-9			Foundation Engineering	
			43	Functions of foundations, shallow and deep foundation	
			44	Different type of shallow and deep foundations with sketches	
			45	Types of failure (General shear, Local shear & punching shear)	
			46	Bearing capacity of soil	
			47	Bearing capacity of soils using Terzaghi's formulae	
			48	IS Code formulae for strip, Circular and square footings	

		49	Effect water table on bearing capacity of soil
		50	Discussion of Assignment Questions

	<p>Signature of faculty Member: _____ Counter signature of H.O.D: _____</p>		
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GANDHI INSTITUTE OF EXCELLENT TECHNOCRATS

DEPARTMENT OF CIVIL ENGINEERING

LESSON PLAN

Semester:3RD

Subject: Environmental studies

Branch: Civil Engineering

Name of the Faculty Member:

Period	DATES	Module/ Number	Topic to be covered
		UNIT-1	The Multidisciplinary nature of environmental studies
1			Definition Of Environmental Studies; introduction to environmental studies
2			Scope Of Environmental Studies
3			Importance Of Environmental Studies
4			Need for public awareness
		UNIT-2	Natural Resources :Renewable and non renewable resources:
5			Forest resources: Use and over-exploitation, deforestation, case studies
6			Timber extraction mining, dams and their effects on forests and tribal people
7			Water resources: Use and over-utilization of surface and ground water, floods , Drought, conflicts over water, dam's benefits and problems
8			Mineral Resources: Use and exploitation, environmental effects of extracting and using mineral resources
9			Food Resources: World food problems, changes caused by agriculture and over grazing, effects of modern agriculture
10			Fertilizers- pesticides problems, water logging, salinity
11			Energy Resources: Growing energy need, renewable and non-renewable energy sources
12			use of alternate energy sources, case studies.
13			Land Resources: Land as a resource, land degradation
14			Man induces land slides, soil erosion, and desertification ,Role of individual in conservation of natural resources, Equitable use of resources for sustainable life styles
		UNIT-3	Systems:
15			Concept of an eco system, Structure and function of an eco system
16			Producers, consumers, decomposers : definitions and their role in an ecosystem
17			Energy flow in the eco systems, Ecological succession, Food chains, food webs

18			Ecological pyramids, Introduction, types, characteristic features Of Forest Ecosystem
19			Structure and Function Forest ecosystem:
20			Introduction and types of Aquatic eco systems
21			Characteristics of Aquatic eco systems
22			Structure and Function of Aquatic eco systems
		UNIT-4	Biodiversity and its conservation
23			Introduction-Definition Genetics, Species and Ecosystem diversity
24			Bio-geographical classification of India
25			Value of biodiversity: consumptive use, productive use
26			Social ethical, aesthetic values
27			Biodiversity at global, national and local level.
28			Threats to biodiversity: Habitats loss
29			Poaching of wild life man wildlife conflicts
30			DISCUSSIONS ON CHAPTERS COVERED
		UNIT-5	Environmental Pollution.
31			Definition, Causes& effects of Air Pollution
32			Control measures of Air Pollution
33			Definition, Causes& effects of Water Pollution, Control measures of Water Pollution
34			Definition, Causes&effects of Soil Pollution, Control measures of Soil Pollution
35			CLASS TEST
36			Definition ,Causes & effects of Marine Pollution ,Control measures of Marine Pollution
37			Definition ,Causes& effects of Noise Pollution, Control measures of Noise Pollution
38			Definition, Causes& effects of Thermal Pollution, Control measures of Thermal Pollution
39			Definition, Causes,&effects of Nuclear Hazard, Control measures of Nuclear Hazard
40			Solid waste Management: Causes, effects and control measures of urban and industrial wastes, Role of an individual in prevention of pollution.
41			Disaster management: Floods, earth quake : precautionary measures to be taken during natural calamities
42			Cyclone and Landslides : precautionary measures to be taken during natural calamities
		UNIT-6	Social issues and the Environment
43			Discussions on internal questions and distribution of evaluated answer sheets
44			Form unsustainable to sustainable development , Urban problems related to energy, Importance of Water

			conservation ,rain water harvesting, water shed management
Signature of faculty Member		Counter signature of H.O.D	

GANDHI INSTITUTE OF EXCELLENT TECHNOCRATS**DEPARTMENT OF CIVIL ENGINEERING****LESSON PLAN****SUBJECT- ESTIMATION AND COST EVALUATION-I****BRANCH-CIVIL ENGINEERING****NAME OF THE FACULTY-****SEMESTER-3RD**

DATES	UNIT	LECTURE NO.	TOPIC TO BE COVERED
	1	1	TYPES OF ESTIMATES – PLINTH AREA, FLOOR AREA / CARPET AREA
		2	UNITS AND MODES OF MEASUREMENTS AS PER IS 1200
		3	ACCURACY OF MEASUREMENT FOR DIFFERENT ITEM OF WORK
	2	4	SHORT WALL LONG WALL METHOD
		5	PROBLEMS
		6	PROBLEMS
		7	CENTRE LINE METHOD
		8	PROBLEMS
		9	PROBLEMS
		10	DEDUCTIONS IN MASONRY & PLASTERING
		11	PROBLEMS
		12	WHITE WASHING,
		13	PROBLEMS
		14	PAINTING ETC., MULTIPLYING FACTOR
		15	PROBLEMS
		16	FOR PAINTING OF DOORS AND WINDOWS (PANELED/GLAZED), GRILLS ETC
		17	PROBLEMS
		18	DETAILED ESTIMATE OF SINGLE STORIED FLAT ROOF BUILDING WITH SHALLOW FOUNDATION

		19	PROBLEMS
		20	PROBLEMS
		21	RCC ROOF SLAB WITH LEAK PROOF TREATMENT OVER IT INCLUDING
		22	PROBLEMS
		23	CLASS TEST
	3	24	ANALYSIS OF RATES FOR CEMENT CONCRETE
		25	PROBLEMS
		26	PROBLEMS
		27	CLASS TEST QUESTION DISCUSSION & DISTRIBUTION OF EVALUATED ANSWER SHEET TO THE STUDENT FOR THEIR REFERENCES
		28	BRICK MASONRY IN CEMENT MORTAR
		29	PROBLEMS
		30	PROBLEMS
		31	LATERITE STONE MASONRY IN CEMENT MORTAR,
		32	PROBLEMS
		33	CEMENT PLASTER & WHITE WASHING
		34	PROBLEMS
		35	ARTIFICIAL STONE FLOORING
		36	PROBLEMS
		37	TILE FLOORING
		38	PROBLEMS
		39	CONCRETE FLOORING
		40	PROBLEMS
		41	R.C.C. WITH CENTERING AND SHUTTERING, REINFORCING STEEL
		42	PROBLEMS
		43	PAINTING OF DOORS AND WINDOWS ETC

		44	PROBLEM
		45	CALCULATION OF LEAD, LIFT, CONVEYANCE CHARGES, ROYALTY OF MATERIALS, ETC. AS PER ORISSA P.W.D. SYSTEM
		46	PROBLEMS
		47	ABSTRACT OF COST OF ESTIMATE
		48	VALUATION- VALUE AND COST, SCRAP VALUE
		49	SALVAGE VALUE, ASSESSED VALUE, SINKING FUND
		50	DEPRECIATION AND OBSOLESCE , METHODS OF VALUATION.
		51	PROBLEMS
	4	52	ADMINISTRATIVE SET-UP AND HIERARCHY OF ENGINEERING DEPARTMENT IN STATE GOVT./CENTRAL GOVT./PSUS/PRIVATE SECTORS ETC.
		53	DUTIES AND RESPONSIBILITIES OF ENGINEERS AT DIFFERENT POSITIONS /LEVELS
		54	CLASS TEST
		55	CLASS TEST QUESTION DISCUSSION & DISTRIBUTION OF EVALUATED ANSWER SHEET TO THE STUDENT FOR THEIR REFERENCES
		56	PREVIOUS SEMESTER QUESTION PAPER DISCUSSION

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COUNTER SIGNATURE OF H.O.D.

GANDHI INSTITUTE OF EXCELLENT TECHNOCRATS**Semester:3rd****LESSON PLAN****Subject:** BUILDING MATERIALS AND CONSTRUCTIONS TECHNOLOGY**Branch:** Civil Engineering**Name of the Faculty Member:**

Period	DATES	Module Number	Topic to be covered
		UNIT-1	Stone
1			Classification of rock
2			uses of stone, natural bed of stone
3			Qualities of good building stone
4			Dressing of stone
5			Characteristics of different types of stone and their uses
		UNIT-2	Bricks
6			Brick earth – its composition
7			Brick making – Preparation of brick earth
8			Brick making – Moulding, Drying
9			Burning in kilns (continuous Process) Hoffmann kiln
10			Burning in kilns (continuous Process) Bull's trench kiln
11			Classification of bricks
12			Size of traditional and modular bricks and terminologies related to bricks
13			Qualities of good building bricks
		UNIT-3	Cement, Mortar and Concrete
14			Cement: Types of cements, Properties of cements, Manufacturing of cement
15			Cement: Properties of cements
16			Cement: Manufacturing of cement
17			Importance and application of blended cement with fly ash and blast furnace slag.
18			Mortar: Definition and types of mortar
19			Sources and classification of sand, Bulking of sand
20			Use of gravel, morrum and fly ash as different building material
21			Concrete: Definition and composition- Water cement ratio- Workability
22			Concrete: mechanical properties and grading of aggregates
23			mixing, placing, compacting and curing of concrete
24			DISCUSSION ON TOPICS COVERED
		UNIT-4	Other Construction Materials
25			Timber: Classification of timber
26			Structure of timber
27			Seasoning of timber – Importance
28			Characteristics of good timber
29			Clay products and refractory materials – Definition and Classification
30			Properties and uses of refractory materials- tiles, terracotta, porcelain glazing
31			Iron and Steel: Uses of cast iron, wrought iron
32			Uses of mild steel and tor steel

		UNIT-5	Surface Protective Materials
33			Composition of Paints, enamels, varnishes.
34			Types and uses of surface protective materials like Paints, Enamels
35			CLASS TEST
36			Types and uses of surface protective materials like Varnishes, Distempers, Emulsion
37			Types and uses of surface protective materials like French polish and Wax Polish
		UNIT-6	Introduction To Construction Technology
38			Buildings and classification of buildings based on occupancy
39			Different components of a building
40			Site investigation – objectives, site reconnaissance and explorations
		UNIT-7	Foundations
41			Concept of foundation and its purpose
42			Types of foundations – shallow and deep
43			DISCUSSION OF CLASS TEST QUESTION AND DISTRIBUTION OF ANSWER SHEETS
44			Shallow foundation-constructural details of : Spread foundations for walls
45			thumb rules for depth and width of foundation and thickness of concrete block
46			Deep foundations: Pile foundations-their suitability
47			classification of piles based on materials
48			function and method of installation of pile foundation
		UNIT-8	Walls & Masonry Works
49			Purpose of walls Classification of walls – load bearing, non-load bearing walls, retaining walls.
50			Classification of walls as per materials of construction: brick, stone, reinforced brick, reinforced concrete, precast, hollow and solid concrete block and composite masonry walls (Concept Only).
51			Partition Walls : Suitability and uses of brick and wooden partition walls
52			Brick masonry : Definition of different terms
53			Bond – meaning and necessity: English bond for 1 and 1-1/2 Brick thick walls. T, X and right angled corner junctions. Thickness for 1 and 1-1/2 brick square pillars in English bond
54			Glossary of terms –String course, corbel, cornice, block-in-course, grouting, mouldings
55			templates, throating, through stones, parapet, coping, pilaster and buttress
		UNIT-9	Doors, Windows and Lintels:
56			Glossary of terms used in doors and windows
57			Doors – different types of doors
58			Windows – different types of windows
59			Purpose of use of arches and lintels
		UNIT-10	Floors, Roofs and Stairs

60			Floors: Glossary of terms ,Types of floor finishes – cast-in-situ, concrete flooring(monolithic, bonded)
61			terrazzo tile flooring, cast in situ Terrazzo flooring, timber flooring (Concept only)
62			Roofs: Glossary of terms, Types of roofs, concept and function of flat, pitched, hipped and Sloped roofs
63			Stairs: Glossary of terms; Stair case, winder, landing, stringer, newel, baluster, rise, tread, width of stair case, hand rail, nosing, head room, mumty room
64			Various types of stair case – straight flight, dog legged, open well, quarter turn, half turn (newel and geometrical stairs)
65			bifurcated stair, spiral stair, cantilever stair, tread riser stair.
		UNIT-11	Protective, Decorative Finishes and Termite Proofing
66			Plastering – purpose – Types of plastering, Types of plaster finishes – Grit finish, rough cast, smooth cast, sand faced, pebble dash, acoustic plastering and plain plaster etc. Proportion of mortars used for different plasters, preparation of mortars, techniques of plastering and curing
67			Pointing – purpose –Types of pointing, Painting – objectives – method of painting new and old wall surfaces, wood surface and metal surfaces – powder coating and spray painting on metal surfaces
68			White washing – Colour washing – Distemping – internal and external walls. Damp and Termite proofing – Materials and Methods
		UNIT-12	Green Buildings, Energy Management and Energy Audit of Buildings & Project
69			Concept of green building Introduction to Energy Management and Energy Audit of Buildings. Aims of energy management of buildings. Types of energy audit, Response energy audit questionnaire , Energy surveying and audit report
70			Class test
71			Discussion of Assignment Questions
72			Previous semester Question Discussion
74			Class Test Question Discussion & Distribution of Evaluated Answer Sheet to the student for their references
Signature of faculty Member:			Counter signature of H.O.D

GANDHI INSTITUTE OF EXCELLENT TECHNOCRATS**DEPARTMENT OF CIVIL ENGINEERING****LESSON PLAN****SUBJECT- WATER SUPPLY & WASTE WATER ENGINEERING****BRANCH-CIVIL ENGINEERING****NAME OF THE FACULTY-****SEMESTER-5TH**

MODULE	UNIT	LECTURE NO.	TOPIC TO BE COVERED
	1	1	NECESSITY OF TREATED WATER SUPPLY & PER CAPITA DEMAND
		2	VARIATION IN DEMAND AND FACTORS AFFECTING DEMAND
		3	METHODS OF FORECASTING POPULATION
		4	NUMERICAL PROBLEMS USING DIFFERENT METHODS
		5	IMPURITIES IN WATER – ORGANIC AND INORGANIC
		6	HARMFUL EFFECTS OF IMPURITIES, ANALYSIS OF WATER –PHYSICAL PROPERTY
		7	ANALYSIS OF WATER – CHEMICAL & BACTERIOLOGICAL PROPERTY
		8	WATER QUALITY STANDARDS FOR DIFFERENT USES
	2	9	SURFACE SOURCES – LAKE, STREAM, RIVER AND IMPOUNDED RESERVOIR
		10	UNDERGROUND SOURCES – AQUIFER TYPE & OCCURRENCE – INFILTRATION GALLERY, INFILTRATION WELL, SPRINGS, WELL
		11	YIELD FROM WELL- METHOD S OF DETERMINATION
		12	NUMERICAL PROBLEMS USING YIELD FORMULAE (DEDUCTION EXCLUDED)
		13	INTAKES – TYPES, DESCRIPTION OF RIVER INTAKE
		14	RESERVOIR INTAKE, CANAL INTAKE
		15	PUMPS FOR CONVEYANCE & DISTRIBUTION – TYPES, SELECTION, INSTALLATION.
		16	PIPE MATERIALS – NECESSITY, SUITABILITY
		17	MERITS & DEMERITS OF EACH TYPE
		18	PIPE JOINTS – NECESSITY, TYPES OF JOINTS, SUITABILITY
		19	METHODS OF JOINTING
		20	LAYING OF PIPES – METHOD

	3	21	FLOW DIAGRAM OF CONVENTIONAL WATER TREATMENT SYSTEM
		22	TREATMENT PROCESS / UNITS : AERATION
		23	NECESSITY PLAIN SEDIMENTATION : NECESSITY, WORKING PRINCIPLES
		24	SEDIMENTATION TANKS – TYPES, ESSENTIAL FEATURES, OPERATION & MAINTENANCE
		25	SEDIMENTATION WITH COAGULATION ,NECESSITY, PRINCIPLES OF COAGULATION,
		26	TYPES OF COAGULANTS, FLASH MIXER, FLOCCULATOR, CLARIFIER (DEFINITION AND CONCEPT ONLY)
		27	FILTRATION : NECESSITY, PRINCIPLES, TYPES OF FILTERS
		28	SLOW SAND FILTER- ESSENTIAL FEATURES
		29	RAPID SAND FILTER AND PRESSURE FILTER – ESSENTIAL FEATURES
		30	DISINFECTION : NECESSITY, METHODS OF DISINFECTION
		31	CHLORINATION ,FREE AND COMBINED CHLORINE DEMAND, AVAILABLE CHLORINE, RESIDUAL CHLORINE
		32	PRE-CHLORINATION, BREAK POINT CHLORINATION, SUPERCHLORINATION
		33	SOFTENING OF WATER – NECESSITY, METHODS OF SOFTENING- LIME SODA PROCESS AND ION EXCHANGE METHOD (CONCEPT ONLY)
	4	34	GENERAL REQUIREMENTS, TYPES OF DISTRIBUTION SYSTEM-GRAVITY, DIRECT AND COMBINED
		35	METHODS OF SUPPLY – INTERMITTENT AND CONTINUOUS
		36	DISTRIBUTION SYSTEM LAYOUT – TYPES, COMPARISON, SUITABILITY
		37	VALVES-TYPES, FEATURES, USES, PURPOSE-SLUICE VALVES, CHECK VALVES, AIR VALVES, SCOUR VALVES, FIRE HYDRANTS, WATER METERS
	5	38	METHOD OF CONNECTION FROM WATER MAINS TO BUILDING SUPPLY
		39	GENERAL LAYOUT OF PLUMBING ARRANGEMENT FOR WATER SUPPLY IN SINGLE STORIED AS PER I.S. CODE.
		40	GENERAL LAYOUT OF PLUMBING ARRANGEMENT FOR WATER SUPPLY IN MULTI-STORIED BUILDING AS PER I.S. CODE.
	6	41	AIMS AND OBJECTIVES OF SANITARY ENGINEERING
		42	DEFINITION OF TERMS RELATED TO SANITARY ENGINEERING
		43	SYSTEMS OF COLLECTION OF WASTES– CONSERVANCY & WATER CARRIAGE SYSTEM – FEATURES, COMPARISON, SUITABILITY

	7	44	QUANTITY OF SANITARY SEWAGE – DOMESTIC & INDUSTRIAL SEWAGE, VARIATION IN SEWAGE FLOW.
		45	NUMERICAL PROBLEM ON COMPUTATION QUANTITY OF SANITARY SEWAGE
		46	COMPUTATION OF SIZE OF SEWER, APPLICATION OF CHAZY’S FORMULA, LIMITING VELOCITIES OF FLOW : SELF-CLEANING AND SCOURING
		47	GENERAL IMPORTANCE, STRENGTH OF SEWAGE, CHARACTERISTICS OF SEWAGE-PHYSICAL, CHEMICAL & BIOLOGICAL
		48	CONCEPT OF SEWAGE-SAMPLING, TESTS FOR – SOLIDS, PH, DISSOLVED OXYGEN, BOD, COD
	8	49	TYPES OF SYSTEM-SEPARATE, COMBINED, PARTIALLY SEPARATE , FEATURES, COMPARISON BETWEEN THE TYPE OF SUITABILITY
		50	SHAPES OF SEWER – RECTANGULAR, CIRCULAR, AVOID-FEATURES, SUITABILITY
		51	LAYING OF SEWER-SETTING OUT SEWER ALIGNMENT
		52	CLASS TEST
		53	CLASS TEST QUESTION DISCUSSION & DISTRIBUTION OF EVALUATED ANSWER SHEET TO THE STUDENT FOR THEIR REFERENCES
	9	54	MANHOLES AND LAMP HOLES – TYPES, FEATURES, LOCATION, FUNCTION
		55	INLETS, GREASE & OIL TRAP – FEATURES, LOCATION, FUNCTION
		56	STORM REGULATOR, INVERTED SIPHON – FEATURES, LOCATION, FUNCTION
		57	DISPOSAL ON LAND – SEWAGE FARMING, SEWAGE APPLICATION AND DOSING
		58	SEWAGE SICKNESS -CAUSES AND REMEDIES
		59	DISPOSAL BY DILUTION – STANDARDS FOR DISPOSAL IN DIFFERENT TYPES OF WATER BODIES.
		60	SELF PURIFICATION OF STREAM.
	10	61	PRINCIPLES OF TREATMENT
		62	FLOW DIAGRAM OF CONVENTIONAL TREATMENT
		63	PRIMARY TREATMENT – NECESSITY, PRINCIPLES, ESSENTIAL FEATURES, FUNCTIONS
		64	SECONDARY TREATMENT – NECESSITY, PRINCIPLES, ESSENTIAL FEATURES, FUNCTIONS
	11	65	REQUIREMENTS OF BUILDING DRAINAGE, LAYOUT OF LAVATORY BLOCKS IN RESIDENTIAL BUILDINGS,
		66	LAYOUT OF BUILDING DRAINAGE
		67	PLUMBING ARRANGEMENT OF SINGLE STORIED & MULTI STORIED BUILDING AS PER I.S. CODE PRACTICE

		68	SANITARY FIXTURES – FEATURES, FUNCTION, AND MAINTENANCE AND FIXING OF THE FIXTURES- WATER CLOSETS, FLUSHING CISTERNS, URINALS,
		69	SANITARY FIXTURES – FEATURES, FUNCTION, AND MAINTENANCE AND FIXING OF THE FIXTURES – INSPECTION CHAMBERS , TRAPS, ANTISYP PIPE.
		70	CLASS TEST
		71	CLASS TEST QUESTION DISCUSSION & DISTRIBUTION OF EVALUATED ANSWER SHEET TO THE STUDENT FOR THEIR REFERENCES
		72	DOUBT CLEARING
		73	PREVIOUS SEMESTER QUESTION PAPER DISCUSSION

SIGNATURE OF FACULTY MEMBER

COUNTER SIGNATURE OF H.O.D.

GANDHI INSTITUTE OF EXCELLENT TECHNOCRATS**DEPARTMENT OF CIVIL ENGINEERING****LESSON PLAN****SUBJECT- STRUCTURAL DESIGN II
OF THE FACULTY-****BRANCH-CIVIL NAME
SEMESTER-5TH**

MOD ULE	UNIT	DATE	LEC TU RE NO.	TOPIC TO BE COVERED
1	1		1	Common steel structures, Advantages & disadvantages of steel structures
			2	Types of steel, properties of structural steel
			3	Rolled steel sections
			4	special considerations in steel design, Loads and load combinations
			5	Structural analysis and design philosophy, Brief review of Principles of Limit State design.
	2		6	Bolted Connections, Classification of bolts, advantages and disadvantages of bolted connections
			7	Different terminology, spacing and edge distance of bolt holes, Types of bolted connections
			8	Types of action of fasteners, assumptions and principles of design, Strength of plates in a joint
			9	strength of bearing type bolts (shear capacity),reduction factors,
			10	strength of bearing type bolts(bearing capacity), efficiency of joint
			11	efficiency of joint
			12	Numerical related to analysis of bearing bolted joint.
			13	Numerical related to analysis of bearing bolted joint.
			14	Design steps and design problem related to bearing bolted joint
			15	shear capacity of HSFG bolts, Numerical related to analysis of friction grip bolted joint.

		16	Design problem related to friction grip bolted joint
		17	Welded Connections, Advantages and Disadvantages of welded connection
		18	Types of welded joints and specifications for welding
		19	Design stresses in welds, Strength of welded joints.
		20	Numerical related to analysis of butt welded and fillet welded joint
		21	Numerical related to design of fillet welded joint
2	3	22	Common shapes of tension members, Maximum values of effective slenderness ratio
		23	Analysis of Tension member(yielding of gross section, Rupture of critical section)
		24	Analysis of tension member(Block shear failure),
		25	Numerical related to analysis of tension member.
		26	Numerical related to analysis of tension member
		27	Numerical related to design of tension member.
	4	28	Common shapes of compression members, slenderness ratio
		29	Buckling class of cross sections
		30	Design compressive stress and strength of compression members.
		31	Numerical related to analysis of compression member
		32	Numerical related to analysis of compression member
		33	Numerical related to design of tension member
		34	Numerical related to design of tension member
		35	CLASS TEST
3	5	36	Common cross sections and their classification
		37	Deflection limits, web buckling and web crippling
		38	Analysis of laterally supported beams against bending and shear
		39	Numericals related to analysis of laterally supported beam
		40	Numericals related to analysis of laterally supported beam

		41	Design steps and numerical related to design of laterally supported beam
		42	Numerical related to design of laterally supported beam
		43	Class test question discussion & distribution of evaluated answer sheet to the student for the student for their references
4	6	44	Round Tubular Sections, Advantages of tubular section
		45	Permissible stresses
		46	Analysis of tubular section as a compression member, Joints in Tubular trusses
		47	Numerical related to analysis of tubular section as a compression member
		48	Numerical related to design of tubular section as a compression member
		49	Numerical related to Design of tubular section as a compression member and tension member
		50	Numerical related to Design of tubular section as a compression member and tension member
	7	51	Design considerations for Masonry walls & Columns
		52	Load Bearing wall, Non-Load Bearing walls
		53	Permissible stresses,
		54	Permissible stresses, Slenderness Ratio, Effective Length, Height & Thickness
		55	Class test
		56	Discussion of Assignment Questions
	SIGNATURE OF FACULTY MEMBER		COUNTER SIGNATURE OF H.O.D

GANDHI INSTITUTE OF EXCELLENT TECHNOCRATS

DEPARTMENT OF CIVIL ENGINEERING

LESSON PLAN

SUBJECT- RAILWAY & BRIDGE ENGINEERING

BRANCH-CIVIL

NAME OF THE FACULTY-

SEMESTER-5TH

Module	Unit Number	DATE	Lecture No.	Topic to be covered	
SECTION – A: RAILWAYS					
1	UNIT-1			Introduction	
			1	Railway terminology	
			2	Advantages of railways, Classification of Indian Railways	
	UNIT-2				Permanent way:
			3	Definition and components of a permanent way (with neat sketch of permanent way)	
			4	Concept of gauge, Different type of gauges prevalent in India	
			5	suitability of these gauges under different conditions	
	UNIT-3				Track materials:
			6	Rails: Functions and requirement of rails	
			7	Types of rail sections, length of rails	
			8	Rail joints – types of rail joints,	
			9	Definition of ideal joint & requirement of an ideal joint	
			10	Purpose of welding of rails & its advantages	
			11	Definition of creep occurring in rail, causes of creep & prevention measures of creep in rail	
			12	Sleepers: Definition, function & requirements of sleepers	
			13	Classification of sleepers,	
			14	Advantages & disadvantages of different type of sleepers	
			15	Ballast: Functions & requirements of ballast	
			16	Materials used for ballast	
			17	Fixtures for Broad gauge:	
			18	Connection of rails to rail-(fishplate, fish bolt)	
		19	Connection of rails to sleepers(chair, keys, spikes)		
UNIT-4				Geometric for Broad gauge	
		20	Typical cross - sections of single & double broad gauge, railway track in cutting (with neat sketch)		
		21	Railway track in embankment (with neat sketch) ,Permanent &		

				temporary landwidth	
			22	Gradients provided for drainage in railway track	
			23	Super elevation – necessity of super elevation & its limiting value	
SECTION – B:BRIDGE					
2	UNIT-1			Introduction Section	
			24	Definitions, Terminology used in bridge engineering	
			25	Components of a bridge	
			26	Classification of bridges	
			27	Requirements of an ideal bridge	
	UNIT-2				Bridge Site investigation, hydrology & planning
			28	Selection of bridge site, Bridge alignments	
			29	Determination of flood discharge	
			30	Determination of flood discharge	
			31	Waterway & economic span,	
			32	Afflux, clearance & free board	
			33	Class Test	
	SECTION-A : RAILWAY				
3	UNIT-5			Points and crossings	
			34	Terminology used in points & crossing, necessity of Points and crossings	
			35	necessity of Points and crossings	
			36	Types of points & crossings with tie diagrams	
			37	Types of points & crossings with tie diagrams	
	UNIT-6				Laying & maintenance of track
			38	Methods of Laying of railway track	
			39	Methods of maintenance of track	
			40	Duties of a permanent way inspector	
			41	Class test question discussion & distribution of evaluated answer sheet to the student of their references.	
SECTION – B:BRIDGE					
4	UNIT-3			Bridge foundation	
			42	Scour depth, minimum depth of foundation	
			43	Types of bridge foundations – spread foundation	
			44	pile foundation- pile driving	
			45	well foundation – sinking of wells,	
			46	caisson foundation, Cofferdams	

	UNIT-4		Bridge substructure and approaches
		47	Components of bridge sub-structure with diagram
		48	Types of piers (open pier, masonry pier, mass concrete pier)
		49	Types of piers(fixed pier, cantilever pier, free pier)
		50	Types of abutments (typical gravity abutment, U-abutment)
		51	Types of abutments (spill through abutment, pile bent abutment))
		52	Types of wing walls(straight wing wall, splayed wing wall, return wing wall), Bridge Approaches
	UNIT-5		Culvert & cause ways
		53	Definition of culvert and causeway, difference between bridge and culvert
		54	Types of culverts (brief description)
		55	Types of causeways (brief description)
		56	Class Test
		57	Discussion of Assignment Questions
		58	Previous semester Question Discussion

Signature of faculty Member:

Counter signature of H.O.D:

GANDHI INSTITUTE OF EXCELLENT TECHNOCRATS**DEPARTMENT OF CIVIL ENGINEERING****LESSON PLAN****Semester: 5th**
Branch: Civil Engineering**Subject: ESTIMATION & COST EVALUATION – II**
Name of the Faculty Member:

Period	DATES	Module/ Number	Topic to be covered
		UNIT-1	Detailed estimate of culverts and bridges
1			Introduction to culvert, types of culvert, parts of a culvert & difference between culvert & bridge
2			Detailed study of plan and sectional elevation of RCC deck slab culvert with right angled wing wall
3			Calculation of E/W in excavation , cement concrete work in foundation & Brick work in cement mortar of RCC deck slab culvert
4			Bar bending schedule
5			Calculation of quantity of RCC work & reinforcement
6			Calculation of quantity of cement concrete wearing coat & cement pointing of RCC slab culvert
7			Detailed study of plan & sectional elevation of hume pipe culvert with right angled wing wall
8			Calculation of quantity of E/W in excavation and cement concrete work in foundation of hume pipe culvert
9			Calculation of quantity of brickwork in cement mortar of hume pipe culvert
10			Calculation of quantity of cement pointing of hume pipe culvert
11			Detailed study of plan & sectional elevation of a slab culvert with splayed wing wall
12			UNIT DISCUSSION
		UNIT-2	Estimate of irrigation structures
13			Concept of fall, its types and necessity
14			Study of plan & sectional elevation of a vertical fall
15			Calculation of quantity of earthwork in excavation of vertical fall.
16			Calculation of quantity of earth work in excavation & cement concrete work in foundation of vertical fall
17			Calculation of quantity of brickwork in 1:4 cement mortar of vertical fall
18			Calculation of quantity of brick on edge flooring & brick pitching Of fall
19			Calculation of quantity of cement pointing in 1:3 cement mortar of fall
20			Concept of cross drainage work, its types and introduction to drainage syphon ,Study of plan and sectional elevation of a drainage syphon
21			Study of plan and sectional elevation of a drainage syphon
22			Calculation of quantity of earthwork in excavation and cement concrete work in foundation of drainage syphon

23			Calculation of quantity of brickwork in 1:4 cement mortar of drainage siphon
24			Calculation of quantity of RCC work in slab, 10 cm thick brick flooring in 1:3 cement mortar & 10 cm dry brick pitching of drainage syphon
25			Calculation of quantity of cement pointing in 1:2 cement mortar of drainage siphon
26			UNIT DISCUSSION
		UNIT-3	Detailed estimate of roads
27			Concept of lead and lift, derivation of formula for calculation of earthwork using different methods
28			Problem discussion on calculation of earthwork using Mid-sectional Area method, Mean sectional Area Method and Prismoidal Formula
29			Calculation of earthwork of a road in banking
30			Calculation of earthwork of a road in banking
31			Calculation of earthwork of a road in banking and cutting
32			Calculation of earthwork of a road in banking and cutting
33			Detailed estimate of a water bound macadam road
34			Detailed estimate of a water bound macadam road, Detailed estimate of a national highway in cutting and banking
35			CLASS TEST
36			Detailed estimate of septic tank and soak pit for 50 users
37			Detailed estimate of septic tank and soak pit for 50 users
38			Detailed estimate of septic tank and soak pit for 50 users
		UNIT-4	Miscellaneous estimates
39			Detailed estimate of Tube well(Prepare an estimate of a 40 mm dia. Tube well 40 meter deep from the given drawing)
40			Detailed estimate of Tube well(Prepare an estimate of a 40 mm dia. Tube well 40 meter deep from the given drawing)
41			Detailed estimate of Tube well(Prepare an estimate of a 40 mm dia. Tube well 40 meter deep from the given drawing)
42			Detailed estimate of Tube well(Prepare an estimate of a 40 mm dia. Tube well 40 meter deep from the given drawing)
43			Detailed estimate of Tube well(ESTIMATE OF 50 MM Dia. TUBE WELL WITH DEEP HAND PUMP)
44			DISCUSSION OF CLASS TEST QUESTION AND ANSWER SHEET DISTRIBUTION
45			Detailed estimate of Tube well(ESTIMATE OF 50 MM Dia. TUBE WELL WITH DEEP HAND PUMP)
46			Detailed estimate of Tube well(ESTIMATE OF 50 MM Dia. TUBE WELL WITH DEEP HAND PUMP)
47			Detailed estimate of Tube well(ESTIMATE OF 50 MM Dia. TUBE WELL WITH DEEP HAND PUMP)
48			Detailed estimate of Piles and Pile cap
49			Detailed estimate of Isolated and combined footings.
50			UNIT DISCUSSION
		UNIT-5	PWD Accounts works
51			Works

			Classification of work-original, major, petty, repair work, annual repair, special repair, quadrantal repair. Concept of Method of execution of works through the contractors and department, contract and agreement, work order, types of contract, piece work agreement.
52			Explanation of various terms Administrative approval, technical sanction, tender, preparation of notice inviting tender, quotations, earnest money, E-tendering ,security deposit, advance payment, intermediate payment, final payment, running bill, final bill, regular and temporary establishment, cash, major & subhead of account, temporary advance (imprest money),supervision charges, suspense account, debit, credit, book transfer, voucher and related accounts .
53			Measurement book use & maintenance, procedure of marking entries of measurement of work and supply of materials, labour employed, standard measurement books and common irregularity, Muster roll : Its preparation & use for making payment of pay & wages, Acquittance Roll : Its preparation & use for making payment of pay & wages, Labour & labour report, method of labour payment, use of forms and necessity of Submission
54			Classification of stores, receipt / issue statement on standard form, method of preparation of stock account, preparation and submission of returns, verification of stocks, shortage and excess, Building BYLAWS and REGULATORY Bodies, Development authorities, types and their levels, RERA etc.
55			Class test
56			Discussion of Assignment Questions
57			Previous semester Question Discussion
Signature of faculty Member:			signature of H.O.D

GANDHI INSTITUTE OF EXCELLENT TECHNOCRATS

DEPARTMENT OF CIVIL ENGINEERING

LESSON PLAN

Subject: Hydraulics & Irrigation Engineering

Branch: Civil Engineering

Name of the Faculty Member:

Period	Module/Number	Date	Topic to be covered
	UNIT-1		HYDROSTATICS:
1			Properties of fluid: Density, Specific weight, Specific gravity, Compressibility & Units of these properties
2			Capillarity(capillary height, effect of capillarity on meniscus of water and mercury)
3			Surface Tension(definition, unit)
4			Viscosity(definition, mathematical expression, unit) and uses of viscosity
5			Pressure and its measurements: Definition of intensity of pressure, its variation with height
6			Atmospheric pressure, gauge pressure
7			Absolute pressure and vacuum pressure
8			Relationship between atmospheric pressure, absolute pressure and gauge pressure
9			pressure head and pressure gauges
10			Pressure exerted on an immersed surface: Total pressure and Resultant pressure
11			Expression for total pressure & Pressure Exerted on horizontal & vertical surface
12			OMR Test
	UNIT-2		KINEMATICS OF FLUID FLOW:
13			Basic equation of fluid flow and their application: Rate of discharge
14			Equation of continuity of liquid flow
15			Total energy of a liquid
16			Potential, kinetic & pressure Energy
17			Bernoulli's theorem and its limitations
18			Practical applications of Bernoulli's equation
19			Flow over Notches and Weirs: Notches, Weirs
20			Types of notches and weirs
21			Discharge through different types of notches & weirs and application of notches & weirs
22			OMR Test
23			Types of flow through the pipes: Uniform and non uniform flow & examples of uniform & non uniform flow
24			Laminar and Turbulent flow, rotational & irrigational flow, examples
25			Steady and unsteady flow; Reynolds's number and its application

26			Losses of head of a liquid flowing through pipes: Different types of major losses.
27			Simple numerical problems on losses due to friction using Darcy's equation
28			Different types of minor losses ,Total energy lines & hydraulic gradient lines (Concept Only)
29			Flow through the Open Channels: Definition of open channel flow, difference between ocf & pipe flow,
30			Types of channel sections-Rectangular sections, Trapezoidal and Circular sections
31			Reynolds number, velocity distribution for open channel flow, Discharge formulae- Chezy's Formula, Manning's equation
32			Best economical section. & expressions for economical section
33			OMR Test
	UNIT-3		PUMPS: TYPES OF PUMPS:
34			Centrifugal Pump: Basic principles, operation, discharge, Horse power & efficiency of Centrifugal Pump
35			Reciprocating pumps: types, operation, discharge, Horse power & efficiency of Reciprocating pumps,
36			Discussion for internal exam
37			Internal Exam
	UNIT-4		HYDROLOGY:
38			Hydrology Cycle
39			Rainfall: Types and intensity of Rainfall, Hyetograph
40			Estimation of rainfall data
41			Rain gauges, Its types(concept only)
42			Concept of catchment area, Types, run-off, Estimation of flood discharge by Dickens's and Reeve's formula
43			Discussion on internal exam questions & distribution of evaluated answer sheet
44			OMR Test
	UNIT-5		WATER REQUIREMENT OF CROPS:
45			Definition of irrigation, necessity of irrigation, benefits of irrigation
46			Crop seasons, Duty, types of irrigation of irrigation
47			Delta and base period their relationships
48			Overlap allowance, Kharif and Rabi crops
49			Gross command area, culturable command area
50			Intensity of Irrigation, Irrigable area, Time factor, Crop ratio
51			Discussion on units learned
	UNIT-6		FLOW IRRIGATION:
52			Canal irrigation, Types of canals
53			Loss of water in canals, Perennial irrigation

54			Different components of irrigation canals and their functions
55			OMR Test
56			Sketches of different canal cross-sections, Classification of canals according to their alignment
57			Various types of canal lining
58			Advantages and disadvantages of canal lining
	UNIT-7		WATER LOGGING AND DRAINAGE :
59			Causes and effects of water logging
60			Detection, prevention and remedies of water logging
	UNIT-8		DIVERSION HEAD WORKS AND REGULATORY STRUCTURES:
61			Necessity and objectives of diversion head works
62			Weirs and Barrages
63			Functions of different parts of barrage
64			Silting and scouring
65			Functions of regulatory structures
	UNIT-9		CROSS DRAINAGE WORKS :
66			Functions and necessity of Cross drainage works
67			Aqueduct, Siphon
68			Superpassage, level crossing,
69			Concept of each with help of neat sketch
	UNIT-10		DAMS:
70			Necessity of storage reservoirs, types of dams
71			Earthen dams: Types and description
72			Causes of failure and protection measures
73			Gravity dam- types and description
74			Causes of failure and protection measures, Spillways- Types (With Sketch) and necessity
75			Revision
			SIGNATURE OF FACULTY MEMBER SIGNATURE OF H.O.D