

LESSON PLAN

LESSON PLAN

Name of the faculty: Reema

Discipline: Civil

Semester: 4th Civil Engineering

Subject: Water Supply And Waste Water Engineering

Lesson Plan Duration: 15 week (from March to July 2022)

****Work Load (Lecture/Practical) per week (in hours):**Theory-04, Practical-02

Week	Theory		Practical	
	Lecture Day	Topic (including assignment/test)	Practical Day	Topic
1 st	1 st	Chapter-1 Introduction Necessity of water supply system.	1 st	To determine turbidity of water sample (G-1)
	2 nd	brief description of water supply system	2 nd	To determine turbidity of water sample (G-2)
	3 rd	Chapter-2 Quantity of Water-Water requirement		
	4 th	Rate of demand and variation in rate of demand		

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2nd	1st	Per capita consumption for domestic industrial, public and	1st	To determine dissolved oxygen of given sample(G-1)
	2nd	fire fighting uses as per BIS standards Population Forecasting	2nd	To determine dissolved oxygen of given sample(G-2)
	3rd	Chapter-3 Quality of Water-Meaning of pure water and methods of analysis of water		
	4th	Physical, Chemical and bacteriological tests and their significance		
3rd	1st	Standard of potable water as per Indian Standard Maintenance of purity of water	1st	To determine pH value of water(G-1)
	2nd	Class test	2nd	To determine pH value of water(G-2)
	3rd	Chapter-4 Water Treatment (brief introduction)Sedimentation - purpose, types of sedimentation tanks		
	4th	Coagulation flocculation - usual coagulation and their feeding		
4th	1st	Filtration - significance, types of filters, their suitability	1st	To perform jar test for coagulation(G-1)
	2nd	Necessity of disinfection of water, forms of chlorination,	2nd	To perform jar test for coagulation(G-2)
	3rd	break point chlorine, residual chlorine, application of chlorine.		

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	4 th	Flow diagram of different treatment units, functions of (i) Aeration, fountain (ii) mixer		
5 th	1 st	(iii) flocculator, (iv) classifier, (v) slow and rapid sand filters (vi) chlorination chamber	1 st	To determine BOD of given sample(G-1)
	2 nd	Sessional week	2 nd	To determine BOD of given sample(G-2)
	3 rd	Sessional week		
	4 th	Chapter-5 Conveyance of Water Different types of pipes - cast iron, PVC, steel, asbestos cement, concrete and lead pipes Their suitability and uses, types of joints in		
6 th	1 st	different types of pipes Appurtenances: Sluice, air, reflux valves,	1 st	To determine residual chlorine in water(G-1)
	2 nd	relief valves, scour valves, bibcocks, stop cocks, fire hydrants, water meters their working and uses	2 nd	To determine residual chlorine in water(G-2)
	3 rd	Distribution site: Requirement of distribution, minimum head and rate,		
	4 th	methods of layout of distribution pipes Systems of water supply - Intermittent and continuous service reservoirs - types, necessity and accessories		

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7th	1st	Wastage of water - preventive measures Maintenance of distribution system Leakage detection	1st	To determine conductivity of water and total dissolved solids(G-1)
	2nd	Chapter-6 Laying out Pipes- Setting out alignment of pipes	2nd	To determine conductivity of water and total dissolved solids (G-2)
	3rd	Excavation for laying of pipes and precautions to be taken in laying pipes in black cotton soil		
	4th	Handling, lowering beginning and jointing of pipes		
8th	1st	Testing of pipe lines,Back filling Use of boring rods	1st	To study the installation ofWater meter(G-1)
	2nd	Chapter-7 Building Water Supply- Connections to water main	2nd	To study the installation ofWater meter(G-2)
	3rd	Water supply fixtures and installations and terminology related to plumbing		
	4th	WASTE WATER ENGINEERING- Chapter-8 IntroductionPurpose of sanitation,Necessity of systematic collection and disposal of waste		
9th	1st	Definition of terms in sanitary engineering, Collection and conveyance of sewage	1st	To study the installation ofConnection of water supply of building with main(G-1)

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	2 nd	Conservancy and water carriage systems, their advantages and Disadvantages	2 nd	To study the installation of Connection of water supply of building with main(G-1)
	3 rd	Surface drains, various types, suitability, Types of sewage: Domestic, industrial, storm water and its seasonal variation		
	4 th	Chapter-9 Sewerage System- Types of sewerage systems materials for sewers,		
10 th	1 st	Appurtenance: Location, function and construction features Manholes, drop manholes, tank hole, catch basin, inverted siphon	1 st	To study the installation of Pipe valves and bends(G-1)
	2 nd	flushing tanks grease and oil traps, storm regulators, ventilating shafts	2 nd	To study the installation of Pipe valves and bends(G-2)
	3 rd	Sessional week		
	4 th	Sessional week		
11 th	1 st	Chapter-10 Laying and Construction of Sewers: Setting out/alignment of sewers		To study the installation of Water supply and sanitary fittings(G-1)
	2 nd	Excavations, checking the gradient with boning rods preparation of bedding		To study the installation of Water supply and sanitary fittings(G-2)
	3 rd	handling and jointing testing and back filling of sewers/pipes		
	4 th	Construction of surface mains and different		

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		sections required		
12th	1st	Chapter-11 Sewage characteristics - Properties of sewage IS standards for analysis of sewage Physical, chemical parameter	1st	To study and demonstrate the joining/threading of GI Pipes, CI Pipes, SW pipes, D.I. pipes and PVC pipes.(G-1)
	2nd	bacteriological parameters	2nd	To study and demonstrate the joining/threading of GI Pipes, CI Pipes, SW pipes, D.I. pipes and PVC pipes.(G-2)
	3rd	Chapter-12 Natural Methods of Sewerage Disposal		
	4th	General composition of sewage and disposal methods Disposal by dilution, Self purification of stream		
13th	1st	Disposal by land treatment, Nuisance due to disposal	1st	To demonstrate the laying of SW pipes for sewers(G-1)
	2nd	Chapter-13 Sewage Treatment-Meaning and principle of primary and secondary treatment and activated sludge process their flow diagrams	2nd	To demonstrate the laying of SW pipes for sewers(G-2)
	3rd	Introduction and uses of screens, grit chambers, detritus tanks,		
	4th	skimming tanks, plain sedimentation tanks,		
14th	1st	primary clarifiers, secondary clarifiers,	1st	Study of water purifying process by visiting a field

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		filterscontrol beds, intermittent sand filters,		lab(G-1)
	2nd	trickling filters and their working sludge treatment and disposal, oxidation ponds	2nd	Study of water purifying process by visiting a field lab(G-2)
	3rd	sBuilding Drainage- Introduction		
	4th	-Aims of building drainage and its Requirements		
15th	1st	Different sanitary fittings Sanitary fittings installationsTraps	1st	Demonstration of plumbing tools(G-1)
	2nd	Sessional week	2nd	Demonstration of plumbing tools(G-2)
	3rd	Sessional week		
	4th	Revision		

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Name of the faculty: Sunita

Discipline: Civil

Semester: 4th Civil Engineering

Subject: concrete Technology

Lesson Plan Duration: 15 week (from March 2022 to July2022)

****Work Load (Lecture/Practical) per week (in hours):**Theory-04, Practical-02.

Week	Theory		Practical	
	Lecture Day	Topic (including assignment/test)	Practical Day	Topic
1st	1 st	Introduction: Definition of concrete	1 st	To determine the physical properties of cement as per IS Codes(G-1)
	2 nd	uses of concrete in comparison to other Building material	2 nd	To determine the physical properties of cement as per IS Codes(G-2)
	3 rd	Ingredients of		

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		Concrete:Cement: physical properties of cement.		
	4th	different types of cement as per IS code		
2nd	1st	Aggregates: Classification of aggregates according to size and shape	1st	To determine flakiness and elongation index of coarse aggregates (G-1)
	2nd	Characteristics of aggregates-Particle size and shape surface texture.	2nd	To determine flakiness and elongation index of coarse aggregates (G-2)
	3rd	Specific gravity of aggregate, bulk density		
	4th	Water absorption, surface moisture		
3rd	1st	bulking of sand, deleterious materials,soundness.	1st	To determine silt in fine aggregate(G-1)
	2nd	Water: Quality requirements as per IS:456-2000	2nd	To determine silt in fine aggregate(G-2)
	3rd	Water Cement RatioHydration of cement, principle of water-cement ratio,		
	4th	Duff Abram's, Water-cement ratio law		
4th	1st	Limitations of water-cement ratio law and its effects on strength of concrete	1st	Determination of specific gravity and water absorption of aggregates (G-1)
	2nd	Workability factors affecting workability,Measurement of workability	2nd	Determination of specific gravity and water absorption of aggregates (G-2)

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	3rd	slump test, compacting factor		
	4th	Vee Bee consistometer;		
5th	1st	Recommended slumps for placement in various conditions as per IS:456-2000/SP-23	1st	Determination of bulk density and voids of aggregates(G-1)
	2nd	Properties of Concrete:Properties in plastic state:WorkabilitySegregation	2nd	Determination of bulk density and voids of aggregates(G-2)
	3rd	Bleeding andHarshnessProperties in hardened state		
	4th	StrengthDurability Impermeability		
6th	1st	Dimensional changes,Proportioning for Normal Concrete:Objectives of mix design	1st	To determine surface moisture in fine aggregate by displacement method(G-1)
	2nd	introduction to various grades as per IS:456-2000; proportioning for nominal mix design as prescribed by IS 456-2000	2nd	To determine surface moisture in fine aggregate by displacement method(G-2)
	3rd	Adjustment on site for: Bulking of fine aggregate,		
	4th	water absorption of aggregate, workability		
7th	1st	Difference between nominal and controlled	1st	Determination of particle size distribution of fine, coarse and all in

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		concrete		aggregate by sieve analysis (grading of aggregate)(G-1)
	2nd	Introduction to IS-10262-2009-Code for controlled mix design	2nd	Determination of particle size distribution of fine, coarse and all in aggregate by sieve analysis (grading of aggregate)(G-2)
	3rd	Discussing previous chapter problems		
	4th	Introduction to Admixtureschemicals and minerals		
8th	1st	Uses of Admixture for improving performanceof concrete	1st	To determine necessary adjustment for bulking of fine aggregate(G-1)
	2nd	Special ConcretesConcreting under special conditions,	2nd	To determine necessary adjustment for bulking of fine aggregate(G-2)
	3rd	difficulties and precautions beforeduring and after concreting		
	4th	Cold weather concreting		
9th	1st	Under water concreting, Hot weather concreting	1st	To determine workability by slump test(G-1)
	2nd	Ready mix concrete	2nd	To determine workability by slump test(G-2)
	3rd	Fibre reinforced concrete, ,		
	4th	Polymer Concrete		
10th	1st	Fly ashconcrete,Silica	1st	To verify the effect of

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		fume concrete		water, fine aggregate/coarse aggregate ratio and aggregate/Cement ratio on slump(G-1)
	2nd	.Concreting Operations, Storing of Cement, Storing of cement in a warehouse	2nd	To verify the effect of water, fine aggregate/coarse aggregate ratio and aggregate/Cement ratio on slump(G-2)
	3rd	Storing of cement at site,		
	4th	Effect of storage on strength of cement		
11th	1st	Determination of warehouse capacity for storage of Cement, Storing of Aggregate: Storing of aggregate at site	1st	Compaction factor test for workability (G-1)
	2nd	Batching: Batching of Cement, Batching of aggregate by: Volume, using gauge box (farma) selection of proper gauge box	2nd	Compaction factor test for workability (G-2)
	3rd	Weight spring balances and batching machines,		
	4th	Measurement of water, Mixing:-Hand mixing		
12th	1st	Machine mixing-types of mixers, capacities of mixer.	1st	Non destructive test on concrete by: Rebound Hammer Test (G-1)
	2nd	Choosing, appropriate size of mixers, operation of	2nd	Non destructive test on

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		mixers, Maintenance and care of machines, Transportation of concrete		concrete by: Rebound Hammer Test (G-2)
	3rd	Transportation of concrete using wheel, barrows, transit mixers,		
	4th	chutes, belt conveyors, pumps, tower crane and hoists etc		
13th	1st	Placement of concrete Checking of form work, shuttering and precautions to be taken during placement	1st	Non destructive test on concrete by: Ultrasonic Pulse Velocity Test (G-1)
	2nd	Compaction:- Hand compaction, Machine compaction-types of vibrators, internal screed vibrators, and form vibrators	2nd	Non destructive test on concrete by: Ultrasonic Pulse Velocity Test (G-2)
	3rd	Selection of suitable vibrators for different situations,		
	4th	Finishing concrete slabs, screeding, floating and trowelling		
14th	1st	Curing-Objectives of curing, methods of curing like ponding, membrane Importance and methods of	1st	Tests for compressive strength of concrete cubes for different grades of concrete (G-1)

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		non-destructive tests		
	2nd	Curing-Objectives of curing, methods of curing like ponding, membrane Importance and methods of non-destructive tests	2nd	Tests for compressive strength of concrete cubes for different grades of concrete(G-2)
	3rd	curing, steam curing, chemical curing,		
	4th	Duration for curing and removal of form work		
15th	1st	Jointing: Location of construction joints, treatment of construction joints	1st	Revision
	2nd	expansion joints in buildings- their importance and location	2nd	Revision
	3rd	Defects in concrete: Identification of and methods of repair		
	4th	Importance and methods of non-destructive tests		

LESSON PLAN		
Name of the Faculty	Chetna	
Discipline	Civil Engineering	
Semester	4th	
Subject	Irrigation Engineering	
Lesson Plan Duration	15 weeks (from March. 2022 to July 2022)	
WorkLoad(Lectures/Practical)perweek(inhours): Lectures-03		
WEEK	THEORY	
	Lecture Day	TOPIC
1st	1	Definition of Irrigation, Necessity of Irrigation
	2	History of Development of Irrigation in India, Major, medium and minor irrigation projects
	3	Principal crops in India and their water requirements , crop seasons - Kharif and Rabi, Assignment
2nd	1	Soil water, soil crop and water relationships, duty, delta and base period, their relationship
	2	Gross commanded area (GCA), culturable commanded area (CCA), intensity of irrigation, irrigable area
	3	Rainfall, definition rain gauges-automatic and non automatic
3rd	1	Methods of estimating average rainfall (Arithmetic system) , catchment area runoff
	2	factors affecting runoff, hydrograph, basic concept of unit hydrograph
	3	Flow irrigation - its advantages and limitations, Lift irrigation - Tube well and open well irrigation, their advantages and disadvantages
4th	1	Sprinkler irrigation conditions favourable and essential requirements for sprinkler irrigation
	2	Sprinkler system - classification and component parts
	3	Drip irrigation, suitability of drip irrigation, layout, component parts, advantages, Classification, appurtenances of a canal and their functions
5th	1	Sessional test-1 and Revision and discussion upto first sessional syllabus.
	2	
	3	
6th	1	sketches of different canal cross sections (unlined)
	2	Various types of canal lining-their related advantages and disadvantages.
	3	sketches of different lined canal x-sections, Breaches and their control

7th	1	Maintenance of lined and unlined canals
	2	Introduction, occurrence of ground water, location and command advantages and disadvantages
	3	Comparison with canal irrigation, Tube wells, explanation of terms: water table, radius of influence, depression head, cone of depression
8th	1	confined and unconfined aquifers, Yield of a well and methods of determining yield of well
	2	Types of tube wells, cavity, strainer and slotted type
	3	Methods of boring, installation of well assembly, development of well, pump selection and installation and maintenance
9th	1	construction of recharge pits and recharge wells and their maintenance.
	2	classification of dams; earthen dams - types, causes of failure;
	3	Water harvesting techniques: Need and requirement of various methods, Run off from roof top and ground surface
10th	1	Sessional test-2 and Revision and discussion upto second sessional syllabus.
	2	
	3	
11th	1	gravity dams - types, cross section of a dam, method of construction
	2	cross section of zoned earthen dams, method of construction, Concept of small and micro dams
	3	concept of spillways and energy dissipators, Canal Head works and regulatory works - Definition, Object, general layout
12th	1	functions of different parts of head works, difference between weir and barrage
	2	Functions and necessity of the following types cross drainage works; aqueduct, super passage
	3	Functions and necessity of the following types cross drainage works; level crossing, inlet and outlet, pipe crossing, Sketches of the above cross drainage works
13th	1	Definitions of following Hydraulic structures with Sketches; Falls, Cross and head regulators
	2	Definitions of following Hydraulic structures with Sketches; Outlets, Canal Escapes
	3	Methods of river training, guidebanks, retired (levees) embankments
14th	1	groynes and spurs, pitched island, cut off
	2	Definition of water logging its causes and effects, detection, prevention and remedies
	3	reclamation of soil, surface and sub surface drains and their layout, Concept and various techniques used for ground water recharge
15th	1	Sessional test-3 and Revision and discussion upto third sessional syllabus.
	2	
	3	

LESSON PLAN

Name of the faculty:Ravinder Kumar

Discipline: Civil

Semester: 4th Civil Engineering

Subject: soil foundation Engineering.

Lesson Plan Duration: 15 week (from March to July 2022)

****Work Load (Lecture/Practical) per week (in hours):**Theory-04

Week	Theory		Practical	
	Lecture Day	Topic (including assignment/test)	Practical Day	Topic
1st	1 st	Importance of soil studies in civil engineering, geological origin of soils with special reference to soil profile in India	1.	To determine the moisture content of a given soil sample.(G1)
	2 nd	Residual and transported soil, alluvial deposits, lake deposits,local soil found in j&k, dunes and loses.	2.	To determine the moisture content of a given soil sample.(G2)

	3rd	Glacial deposit, black cotton soil and condition in which these deposit are formed and engineering characteristics		
	4th	Name of organization dealing with soil engineering work in India , soil map of India		
2nd	1st	Physical properties of soils; constituent of soil and representation by a phase diagram	1.	Auger boring and standard penetration test.(G-1)
	2nd	Void ratio, porosity, water content, degree of saturation, specific gravity, unit weight, bulk density	2.	Auger boring and standard penetration test. (G-2)
	3rd	Dry unit weight, saturated unit weight and submerged unit weight of soil grains and correlation between them		
	4th	Simple numerical with the help of phase diagram		
3rd	1st	Classification and identification of soil-particle size shape and their effect on engineering properties of soil, gradation and influence on engineering properties .	1.	Extraction of disturbed sample for mechanical analysis (G-1)
	2nd	Relative density and its uses, Behaviour of cohesive soil with change in water content	2.	Extraction of disturbed sample for mechanical analysis (G-2)

	3 rd	Atterberg's limits, definitions uses and practical significance, field identification test of soils.		
	4 th	Soil classification system as per BIS 1498, plasticity chart :procedure for classification of given soil sample		
4th	1 st	Test	3.	Extraction of undisturbed sample (G-1)
	2 nd	Flow of water through soil, concept of permeability and its importance, Darcy's law		Extraction of undisturbed sample (G-1)
	3 rd	Coefficient of permeability, seepage velocity and factors affecting of permeability		
	4 th	Comparison of permeability of different soil as per BIS, measurement of permeability in laboratory		
5th	1 st	Effective stress (concept only), stresses in sub soil.	1.	To determine the field density measurement by sand replacement method(G-1)
	2 nd	Definition and meaning of total stress effective stress and neutral stress	2.	To determine the field density measurement by sand replacement method(G-2)
	3 rd	Principle of effective stress. Importance of effective stress in		

		engineering problem.		
	4 th	Deformation of soils, meaning and conditions of occurrence with emphasis on practical significance- consolidation and settlement, creep, plastic flow		
6th	1 st	Heaving, lateral movement, freeze and thaw of soil, compression index, coefficient of consolidation	1	To determine the field density measurement by core cutter method (G-1)
	2 nd	Degree of consolidation, total settlement, uniform and differential settlement. Rate of settlement and their effects	2	To determine the field density measurement by core cutter method (G-2)
	3 rd	Settlement due to construction operations and lowering of water table.		
	4 th	Tolerable settlement for different structure as per BIS.		
7th	1 st	Test	1.	To determine the liquid limit of a given soil sample (G-1)
	2 nd	Assignment-1	2	To determine the liquid limit of a given soil sample (G-2)
	3 rd	Shear strength characteristics of soil- concept and significance of shear strength		

	4 th	Factors contributing to shear strength of cohesive and cohesion less soils		
8th	1 st	Coulomb's law	1.	To determine the plastic limit of a given soil sample (G-1)
	2 nd	Example of shear failure in soils.	2	To determine the plastic limit of a given soil sample (G-2)
	3 rd	Definition and necessity of compaction.laboratory Compaction test (standard and modify proctor test as per BIS)		
	4 th	Optimum moisture content, maximum dry density, moisture dry density and relationship for typical soils		
9th	1 st	Compaction control-density control measurement of field density by core cutter method and sand replacement method.	1.	To determine the particle size distribution by mechanical analysis . (G-1)
	2 nd	Moisture control proctor's needle and its uses, thickness control	2.	To determine the particle size distribution by mechanical analysis . (G-2)
	3 rd	Job of an embankment supervisor in relation to compaction		
	4 th	Purpose and necessity of soil exploration		
10th	1 st	Reconnaissance, method of soil exploration,trial	1.	viva

		pits		
	2 nd	Boring (auger, wash, rotary, percussion to be briefly detail)	2.	viva
	3 rd	Sampling: disturbed and undisturbed and representative sample: selection of type of sample		
	4 th	Thin wall and piston sample , area ratio, recovery ratio of soil sample and their significance		
11th	1 st	Number and quantity of sample, resetting sealing and preservation of sample.	1.	Determination of optimum moisture content and maximum dry density by standard proctor test (G-1)
	2 nd	Presentation of soil investigation results.	2	Determination of optimum moisture content and maximum dry density by standard proctor test (G-2)
	3 rd	Concept of bearing capacity, definition and significance of ultimate bearing capacity, net safe bearing and allowable bearing capacity.		
	4 th	Guidelines of BIS (IS 6403) for estimation of bearing capacity of soil, factors affecting bearing capacity		
12th	1 st	Concept of vertical stress distribution in soils due to foundation loads,	1.	Demonstration of unconfined compression test (G-1)

		pressure bulb		
	2 nd	Applications of SPT, unconfined compression test and direct shear test in estimation of bearing capacity.	2.	Demonstration of unconfined compression test (G-2)
	3 rd	Plate load test (no procedure details) and its limitations.		
	4 th	Improvement of bearing capacity by sand drain method, use of Geo-synthetics		
13th	1 st	Assignment-2	1.	Demonstration of direct shear and vane shear test on sandy soil sample . (G-2)
	2 nd	Test	2	Demonstration of direct shear and vane shear test on sandy soil sample . (G-2)
	3 rd	Foundation engineering- concept of shallow and deep foundation, type of shallow foundations,		
	4 th	Isolated, combined, strip, mat, foundation and their suitability.		
14th	1 st	Factors affecting the depth of shallow foundations, deep foundation. Type of piles and their suitability.	1.	Demonstration of permeability test apparatus. (G-1)
	2 nd	Pile classification on the basis of material	2.	Demonstration of permeability test apparatus. (G-2)

	3 rd	Pile group and pile cap.		
	4 th	Revision		
15th	1 st	Revision	1.	Viva
	2 nd	Test	2	Viva
	3 rd	Revision		
	4 th	Test		

LESSON PLAN

Name of the faculty: Sunita

Discipline: Civil Engineering

Semester: 4th

Subject: Surveying-II

Lesson Plan Duration: 15 week (from March to July 2022)

****Work Load (Lecture/Practical) per week (in hours):**Theory-03, Pratical-06.

Week	Theory		Practical	
	Lecture Day	Topic (including assignment/test)	Practical Day	Topic
1st	1 st	Contouring- Concept of contours, purpose of contouring, contour interval and horizontal equivalent,	1 st	Contouring:- Preparing a contour plan by radial line method by the use of a Tangent Clinometer/Tachometer (G-1)
	2 nd	factors effecting contour interval, characteristics of contours,	2 nd	Contouring:- Preparing a contour plan by radial line method by the use of a Tangent Clinometer/Tachometer (G-2)
	3 rd	methods of contouring: Direct and indirect,		
2nd	1 st	use of stadia measurements in contour survey, interpolation of contours; use of contour map,	1 st	Preparing a contour plan by method of squares (G-1)
	2 nd	Drawing cross section from a contour map;	2 nd	Preparing a contour plan by method of squares (G-2)
	3 rd	marking alignment of a road, railway and a canal on a contour map		
3rd	1 st	computation of earth work and reservoir capacity from a contour map	1 st	Preparing a contour plan of a Road/Railway track/Canal by taking cross sections(G-1)
	2 nd	Theodolite Surveying-	2 nd	Preparing a contour plan of a

		Working of a transit vernier theodolite,		Road/Railway track/Canal by taking cross sections(G-2)
	3rd	axes of a theodolite and their relation		
4th	1st	temporary adjustments of a transit theodolite	1st	Theodolite:-Taking out the Theodilite, mounting on the tripod and placing it back in the box(G-1)
	2nd	concept of transiting, swinging, face left, face right and changing face;	2nd	Theodolite:-Taking out the Theodilite, mounting on the tripod and placing it back in the box(G-2)
	3rd	measurement of horizontal and vertical angles		
5th	1st	Prolonging a line (forward and backward) measurement of bearing of a line	1st	Study of a transit vernier theodolite; temporary adjustments of theodolite (G-1)
	2nd	traversing by included angles and deflection angle method; traversing by stadia measurement,	2nd	Study of a transit vernier theodolite; temporary adjustments of theodolite (G-2)
	3rd	theodolite triangulation, plotting a traverse;		
6th	1st	concept of coordinate and solution of omitted measurements (one side affected),	1st	Reading the vernier and working out the least count, measurement of horizontal angles by repetition and reiteration methods(G-1)
	2nd	errors in theodolite survey and precautions taken to minimize them;	2nd	Reading the vernier and working out the least count, measurement of horizontal angles by repetition and reiteration methods(G-2)
	3rd	limits of precision in theodolite traversing.		
7th	1st	Height of objects – accessible and non-accessible bases	1st	Measurement of vertical angles and use of tachometric tables, Measurement of magnetic bearing of a line(G-1)
	2nd	Tacho-metric surveying	2nd	Measurement of vertical angles and use of tachometric tables, Measurement of magnetic bearing of a line(G-2)
	3rd	Tachometry, Instruments to be used in tachometry		

8th	1st	methods of tachometry,	1st	Running a closed traverse with a theodolite (at least five sides) and its plotting -Height of objects with and without accessible bases(G-1)
	2nd	stadia system of tachometry	2nd	Running a closed traverse with a theodolite (at least five sides) and its plotting -Height of objects with and without accessible bases(G-2)
	3rd	general principles of stadia tachometry,		
9th	1st	examples of stadia tachometry and Numerical problems	1st	Curves-Setting out of a simple circular curve with given data by the following methods -Offsets from the chords produced(G-1)
	2nd	Curves:Simple Circular Curve,Need	2nd	Curves-Setting out of a simple circular curve with given data by the following methods -Offsets from the chords produced(G-2)
	3rd	definition of a simple circular curve; Elements of simple circular curve		
10th	1st	Degree of the curve, radius of the curve, tangent length, point of intersection (Apex point),	1st	Curves-Setting out of a simple circular curve with given data by the following methods -One theodolite method(G-1)
	2nd	tangent point, length of curve, long chord deflection angle, Apex distance and	2nd	Curves-Setting out of a simple circular curve with given data by the following methods -One theodolite method(G-2)
	3rd	Mid-ordinate. Setting out of simple circular curve		
11th	1st	By linear measurements only:Offsets from the tangent, Successive bisection of arcs	1st	Minor instruments: Demonstration and use of minor instruments like Ceylon Ghat Tracer, Tangent (G-1)
	2nd	Offsets from the chord produced,	2nd	Minor instruments: Demonstration and use of

				minor instruments like Ceylon Ghat Tracer, Tangent (G-2)
	3rd	By tangential angles using a theodolite		
12th	1st	Transition Curve-Need (centrifugal force and super elevation) and definition of transition curve	1st	Minor instruments: Demonstration and use of Clinometer, Pantagraph, Abney level etc(G-1)
	2nd	requirements of transition curve;	2nd	Minor instruments: Demonstration and use of Clinometer, Pantagraph, Abney level etc(G-2)
	3rd	length of transition curve for roads;		
13th	1st	by cubic parabola; calculation of offsets for a transition curve;	1st	Use of planimeter for computing area (G-1)
	2nd	setting out of a transition curve by tangential offsets	2nd	Use of planimeter for computing area (G-2)
	3rd	onlySetting out of a vertical curve		
14th	1st	Introduction to the use of Modern Surveying equipment and techniques such as: EDM or Distomat, Planimeter	1st	Demonstration of digital instruments through field visits to Survey of India and other government agencies (G-1)
	2nd	Total station, Introduction to remote sensing, GIS and GPS	2nd	Demonstration of digital instruments through field visits to Survey of India and other government agencies (G-2)
	3rd	Minor Instruments :Introduction and use of minor		
15th	1st	instruments like Ceylon Ghat Tracer, Clinometer, Pantagraph, Abney Level etc	1st	Total Station (only demonstrations)(G-1)
	2nd	Use of planimeter for computing areas	2nd	Total Station (only demonstrations)(G-2)
	3rd	revision		

LESSON PLAN

LESSON PLAN

Name of the faculty: Reema

Discipline: Civil Engineering

Semester: 4th

Subject: WSWWE & IE DRG.

Lesson Plan Duration: 15 week (from March to July 2022)

****Work Load (Lecture/Practical) per week (in hours): Practical-03**

Week	Practical	
	Practical Day	Topic
1st	1 st	WATER SUPPLY AND WASTE WATER ENGINEERING DRAWING -Drains and Sewers Cross section of standard types of open drains (circular, v-shaped and μ -shaped) (Sheet-1) Cross section of earthen ware and RCC sewer pipes.(Sheet-2)
2nd	1 st	Cross sections of masonry sewers (circular and egg shaped) Traps, Detailed section of floor trap and gully trap
3rd	1 st	manholes Detailed section of floor trap and gully trap inspection chamber Detailed section of floor trap and gully trap
4th	1 st	Traps, manholes and inspection chamber Detailed section of floor trap and gully trap Detailed plan and section of an inspection chamber

LESSON PLAN

5th	1st	<p>Detailed plan and section of a manhole</p> <p>Septic Tank and Soak Pit</p> <p>Detailed plan and cross sections of a domestic septic tank with soak pit for 10 user</p>
6th	1st	<p>Detailed plan and cross sections of a domestic septic tank with soak pit for 50 user</p> <p>Bath room and W.C connections:Cross-section through the external wall of lavatories at ground and first floor showing the one and two pipe system and the connections of the lavatory to inspection chamber</p>
7th	1st	<p>Bath room and W.C connections:Cross-section through the external wall of lavatories at ground and first floor showing the one and two pipe system and the connections of the lavatory to inspection chamber</p> <p>Plan of a bathroom showing positions of lavatory, bath tub, wash-basin, taps and showers</p>
8th	1st	<p>Plan of a bathroom showing positions of lavatory, bath tub, wash-basin, taps and showers</p> <hr/> <p>Draw sectional elevation of a two storeyed building showing details of one pipe systems with sanitation system</p>
9th	1st	<p>Draw sectional elevation of a two storeyed building showing details of two pipes systems with sanitation system</p> <p>Practice of reading water supply and sanitary engineering working drawings (PWD/urban Development agencies) including hot water and cold water supply system of a two room set</p>
10th	1st	<p>Detailed Layout Plan of Sewage Treatment Plant for a residential area</p> <p>Detailed Layout Plan of Effluent Treatment Plant for an industrial unit</p>

LESSON PLAN

11th	1st	<p>IRRIGATION ENGINEERING DRAWING:</p> <p>Typical cross-section of a channel</p> <p>-L-section of a channel for given data</p> <p>Typical cross section of an unlined channel in cutting, partly cutting and partly filling and fully in filling with given design data</p>
12th	1st	<p>Typical cross section of an lined channel in cutting, partly cutting and partly filling and fully in filling with given design data</p> <p>Layout plan of a canal head works</p>
13th	1st	<p>Draw the typical L-section of a weir</p> <p>Draw the X-section of an Earthen Dam</p> <p>a)Homogeneous</p>
14th	1st	<p>Draw the X-section of an Earthen Dam</p> <p>b)Zoned type</p>
		<p>Draw the X-section of an Earthen Dam</p> <p>c)Diaphragm type</p>
15th	1st	<p>Cross section of a tube well.Layout and cross section of rain water harvesting system.</p>