Lesson Plan

Name Of Faculty **: Ajay**
Discipline **:Civil Engg.**
Semester **:4 th**
Subject **:Cloud Computing**
Lesson Plan Duration: 16 Weeks
Work Load (Lecture) per week (In hours): Lecture-2)

WEEK NO.	DAY	THEORY TOPIC COVERED	WEEK NO.
1	1	Evolution of Cloud Computing	1
	2	Evolution of Cloud Computing	
	3	Cloud Computing Overview	
2	1	Characteristics	2
	2	Applications	
	3	Benefits and Challenges.	
3	1	Revision	3
	2	Cloud Computing Service Models	
	3	Infrastructure as a Service	
4	1	Platform as a Service, Software as a Service;	4
	2	Cloud Computing Deployment Models	
	3	Private Cloud and Public Cloud	
5	1	Community Cloud and Hybrid Cloud	5
	2	Major Cloud Service providers	
	3	Seminar and Assignment	
6	1	Test	6
	2	Overview of SLA	
	3	Types of SLA	
7	1	SLA Life Cycle	7
	2	SLA Management Process	
	3	Revision and Seminar	
8	1	Test	8
	2	Overview of Virtualization	
	3	Types of Virtualization	
9	1	Types of Virtualization	9
	2	Benefits of Virtualization	
	3	Hypervisors	
10	1	Revision and seminar	10
	2	Assignment	
	3	Test	
11	1	Infrastructure Security	11
	2	Data Security & Privacy Issues	
	3	Legal Issues in Cloud Computing	
12	1	Legal Issues in Cloud Computing	12
	2	Storage as a Service	
	3	Benefits and Challenges	
13	1	Storage Area Networks (SANs).	13

	2	Scheduling problem	
	3	Different types of scheduling	
14	1	Different types of scheduling	14
	2	Scheduling for independent tasks	
	3	Scheduling for dependent tasks	

15	1	Scheduling for independent and dependent tasks
	2	Scheduling for independent and dependent tasks
	3	Static vs. Dynamic scheduling
16	1	Static vs. Dynamic scheduling
	2	Assignment And Revision
	3	3rd Sessional

Name of Faculty	**: Mr. Prateek Malik**
Discipline	**: Civil Engineering Department**
Semester	**: 4th**
Subject	**: Irrigation Engineering**
Lesson Plan Duration	**: 15 Weeks (January, 2026 to June, 2026)**

*****Work Load (Lectuer / Practical) Per week (in hours) : Lectuer-02, Practical- 00**

Week	Theory	
	Lecture day	**Topic (Including assignment/ Test)**
1	**1st**	1. Introduction 1.1 Definition of irrigation 1.2 Necessity of irrigation
	2nd	1.3 History of development of irrigation in India 1.4 Major, medium and minor irrigation projects
	3rd	2. Water Requirement of Crops 2.1 Principal crops in India and their water requirements
	4th	2.2 Crop seasons – Kharif and Rabi
2	**1st**	2.3 Soil water, soil crop and water relationships,
	2nd	2.3 Duty, delta and base period, their relationship
	3rd	2.4 Gross commanded area (GCA), Culturable commanded area (CCA),
	4th	2.4 Intensity of irrigation, irrigable area
3	**1st**	3. Hydrological Cycle Catchment Area and Run-off
	2nd	3.1 Rainfall , definition rain-gauges – automatic and non-automatic
	3rd	3.2 Methods of estimating average rainfall (Arithmatic system)
	4th	3.3 catchment area runoff, factors affecting runoff
4	**1st**	3.4 Hydrograph
	2nd	3.5 Basic concept of unit hydrograph.
	3rd	4. Methods of Irrigation
	4th	4.1 Flow irrigation - its advantages and limitations
5	**1st**	4.2 Lift Irrigation – Tube well their advantages and disadvantages
	2nd	4.2 Lift Irrigation – Open well irrigation, their advantages and disadvantages
	3rd	4.3 Sprinkler irrigation conditions favourable and essential requirements for sprinkler irrigation,sprinkler system – classification and component parts
	4th	Class Test 1& 1st Assignment
6	**1st**	4.4 Drip irrigation, suitability of drip irrigation, layout, component parts, advantages
	2nd	5. Canals
	3rd	5.1 Classification, apurtenancs of a canal and their functions
	4th	5.1sketches of different canal cross-sections (unlined)
7	**1st**	5.2 Various types of canal lining - their related advantages and disadvantages
	2nd	5.2 sketches of different lined canal x-sections
	3rd	5.3 Breaches and their control
	4th	5.4 Maintenance of lined and unlined canals
8	**1st**	6. Tube Well Irrigation
	2nd	6.1 Introduction, occurrence of ground water, location and command, advantages and disadvantages, comparison with canal irrigation
	3rd	6.2 Tube wells, explanation of terms: water table, radius of influence, depression head, cone of depression, confined and unconfined aquifers. Yield of a well and methods of determining yield of well
	4th	6.2 confined and unconfined aquifers. Yield of a well and methods of determining yield of well
9	**1st**	6.3 Types of tube wells, cavity, strainer and slotted type;
	2nd	6.4 Method of boring, installation of well assembly
	3rd	6.4 development of well, pump selection and installation and maintenance
	4th	6.5 Water Harvesting Techniques: Need and requirement of various methods, Run-off from roof top and ground surface
10	**1st**	6.5 construction of recharge pits and recharge wells and their maintenance.
	2nd	7. Dams
	3rd	7.1 Classification of dams; earthen dams - types
	4th	7.1 earthen dams -causes of failure; crosssection of zoned earthen dams

11	**1st**	7.1 method of construction, gravity dams – types
	2nd	7.1 cross-sections of a dam, method of construction
	3rd	7.2 Concept of small and micro dams
	4th	7.3 Concept of spillways and energy dissipators
12	**1st**	Class Test 1 & 2nd Assignment
	2nd	8. Canal Head Works and Regulatory Works,Definition, object
	3rd	general layout
	4th	functions of different parts of head works
13	**1st**	Difference between weir and barrage
	2nd	9. Cross Drainage Works
	3rd	9.1 Functions and necessity of the following types: aqueduct, super passage
	4th	9.1 Functions and necessity of the following types: level crossing, inlet and outlet, pipe crossing
14	**1st**	9.2 Sketches of the above cross drainage works
	2nd	10. Definitions of following Hydraulic Structures with Sketches
	3rd	10.1 Falls 10.2 Cross and head regulators
	4th	10.3 Outlets 10.4 Canal Escapes
15	**1st**	11. River Training Works
	2nd	Methods of river training, guide banks retired (levees) embankments, groynes spurs, pitched island, cut-off
	3rd	12. Water Logging and Drainage and Ground Water Re-charge 12.1 Definition of water logging – its causes and effects, detection, prevention and remedies 12.2 Reclamation of soil
	4th	12.3 Surface and sub-surface drains and their layout 12.4 Concept and various techniques used for ground water re-charge
	5th	Class test 3 & 3rd Assigement

Name of Faculty : Mr Manish
Discipline : Civil Engineering Department
Semester : 4th
Subject : SMFE
Lesson Plan Duration : 15 Weeks (Jan 2026 - June 2026)

Week	Theory		Practical
	Lecture Day	Topic	Topic
1st	1st	Importance ofsoilstudies in civil engineering, geological origin of soils with special reference to soil profile in India Residual and transported soil, alluvial deposits, lake deposits,local soil found in j&k, dunes and loses. Glacial deposit, black cotton soil and condition in which these deposit are formed and engineeringcharacteristic	To determine the moisture content of a given sample of soil
	2nd		
	3rd		
2nd	4th	Name of organization dealing with soil engineering work in India , soil map of India Physical properties of soils; constituent ofsoil and representation by a phase diagram Void ratio, porosity,water content, degree of saturation, specific gravity, unit weight, bulk density Dry unit weight, saturated unit weight and submerged unit weight of soil grains and correlation between them	Auger Boring and Standard Penetration Test
	5th		
	6th		
3rd	7th	Simple numerical with the help of phase diagram Classification and identification of soilparticle size shape and their effect on engineering properties of soil, gradation and influence on engineering properties . Relative density and its uses, Behaviour of cohesive soil with change in water content Atterberg's limits, definitions uses and practical significance, field identification test of soils	Extraction of Disturbed and Undistrubed Samples
	8th		
	9th		
4th	10th		Field Density Measurement (Sand Replacement and Core Cutter Method)

	11th	Soil classification system as per BIS 1498, plasticity chart :procedure for classification of given soil sample	
	12th		
5th	13th	Flow of water through soil, concept of permeability and its importance, Darcy's law	Liquid Limit and Plastic Limit Determination:
	14th	Coefficient of permeability, seepage velocity and factors affecting of permeability	
	15th	Comparison of permeability of different soil as per BIS, measurement of permeability in laboratory Effective stress (concept only), stresses in su	
6th	16th	Definition and meaning of total stress effective stress and neutralstress	Mechanical Analysis
	17th	Principle of effective stress. Importance of effective stress	
	18th	Deformation of soils, meaning and conditions of occurence with emphasis on practical significanceconsolidation and settlement, creep, plastic flow	
7th	19th	Heaving, lateral movement, freeze and thaw ofsoil, compression index, coefficient of consolidation	Laboratory Compaction Tests (Standard Proctor test)
	20th	Degree of consolidation, total settlement, uniform and differential settlement.Rate of settlement and their effects	
	21st	Settlement due to construction operations a Tolerable settlement for different structure Shear strength characteristics of soilconcept and significance of shear strength	
8th	22nd	Factors contributing to shear strength of cohesive and cohesion less soils	Direct Shear Test
	23rd	Coulomb's law	
	24th	Definition and necessity of compaction.laboratory Compaction test (standard and modify proctor test as per BIS)	
9th	25th	Optimum moisture content, maximum dry	Permeability Test
	26th		

	27th	density, moisture dry density and relationship for typical soils Compaction controldensity control measurement of field density by core cutter method and send replacement method.	
10th	28th		
	29th		Demonstration of Unconfined Compression Test
	30th	Moisture control proctor's needle and its uses, thickness control	
11th	31st	Job of an embankment supervisor in relation to compaction	
	32nd	Purpose and necessity of soil exploration Reconnaissance, method ofsoil exploration,trial	
	33rd	Boring (auger, wash, rotary, percussion to b	
12th	34th	Sampling: disturbed and undisturbed and representative sample: selection of type of sample	Demonstration of Vane shear Test
	35th	Thin wall and piston sample , area ratio, recovery ratio ofsoil sample and their significance	
	36th		REVISION
13th	37th	Number and quantity of sample, resetting sealing and preservation of sample. Presentation of soil investigation results.	
	38th	Concept of bearing capacity, definition and significance of ultimate bearing capacity,net safe bearing and allowable bearing capacity. Guidelines of BIS (IS 6403) for estimation of bearing capacity of soil, factors affecting bearing capacity	REVISION
	39th		
14th	40th		VIVA

	41st	Applications of SPT, unconfined compression test and direct shear test in estimation of bearing capacity.	
	42nd	Improvement of bearing capacity by sand drain method, use of Geosynthetics Plate load test (no procedure details) and its limitations.	
15th	43rd	Foundation engineeringconcept of shallow and deep foundation, type of shallow foundations,	VIVA
	44th	Factors affecting the depth of shallow foundations, deep foundation. Type of piles and their suitability.	
	45th		

LESSON PLAN

Name of the Faculty	**AJAY**
Discipline	**Civil Engineering**
Semester	**4th**
Subject	**Surveying-II**
Lesson Plan Duration	**15Week (from Jan 2026 to May 2026)**

WEEK	THEORY		PRACTICAL	
	LECTURE DAY	TOPIC	PRACTICAL	TOPIC
1	1	Electronic Digital Theodolite and Tachometric surveying 1.1 Concept/Difference of Transit Theodolite and Electronic Digital Theodolite	1	I. Digital Theodolite: i) Study of a transit vernier theodolite; temporary adjustments of theodolite
	2	Temporary adjustments of an Electronic Digital Theodolite, Concept of transiting, swinging, face left, face right and changing face.	2	Revision
2	3	Prolonging a line (forward and backward)	3	ii) Reading the Vernier and working out the least count, measurement of horizontal angles by repetition and reiteration methods
	4	Traversing by included angles and deflection angle method	4	Revision
3	5	Plotting a traverse; concept of coordinate and solution of omitted measurements (one side affected)	5	iii) Measurement of vertical angles and use of tachometric tables iv) Measurement of magnetic bearing of a line
	6	Errors in theodolite survey and precautions taken to minimize them : Height of objects with and without accessible bases	6	vi) Running a closed traverse with a theodolite (at least five sides) and its plotting
4	7	Concept, general principles of stadia tachometry and methods of tachometry and (with numerical problems) 1.9 Instruments to be used in tachometry	7	v) Height of objects with and without accessible bases
	8	Revision	8	Revision
5	9	Curves: (Horizontal, Vertical and Transition Curve) Definition and types of horizontal curve Elements of simple circular curve - Degree of the curve, radius of the curve, tangent length, point of intersection	9	Revision
	10	(Apex point) tangent point, length of curve, long chord deflection angle, Apex distance and Mid-ordinate. (With numerical problems)	10	Revision
6	11	Transition Curve: 2.2.1 Definition of transition curve 2.2.2 Requirements of transition curve	11	Revision
	12	Length of transition curve for roads; by cubic parabola 2.2.4 Need (centrifugal force and super elevation). 2.2.5 Calculation of offsets for a transition curve	12	Curves i) Setting out of a simple circular curve with given data by the following methods
7	13	Definition and types of vertical curve;Types of vertical curves Setting out of a vertical curve	13	b) One theodolite method
	14	Revision	14	Setting out of simple circular curve by tangential angles using a Digital Theodolite.

8	15	Introduction of Advanced Surveying Equipment and Techniques.3.1 Principle of EDM, its component parts and their functions 3.2 Uses of EDM3.3 Distomat	15	Setting out of a transition curve by tangential offsets using a Digital Theodolite.
	16	3.4 Remote sensing system 3.5 Application of remote sensing system in civil engineering, land uses/land cover,mapping, and disaster management	16	Revision
9	17	3.6GPS, DGPS and GIS applications and software used (introduction only) 3.7 Planimeter (Digital)	17	Revision Revision
	18	Introduction of Drones Survey	18	Revision
10	19	Revision	19	Revision
	20	Revision	20	Revision
11	21	Total Station (TS) 4.1 Concept and uses of TS 4.2 Uses of function keys, various parts of TS	21	Total Station i) Temporary adjustments of a TS
	22	4.3 Accessories used in TS survey 4.4 Applications of TS in various engineering area.	22	ii) Measurement of distance, horizontal angle and vertical angle.
12	23	4.5 Temporary adjustments of TS 4.6 Measurement of horizontal angle, vertical angle distance and coordinates using Total station, Traversing, profile survey and contouring with TS	23	iii) To plot an area with the help of Total Station
	24	Errors in TS 4.8 Layout of any building, school, college, factory etc. with total station showing topographic map also	24	iv) Layout of any building, school, college, factory etc. with total station showing topographic map also
13	25	Revision	25	DGPS (Differential Global Positioning System) i) Computation of earth work and reservoir capacity with DGPS ii) Layout of drain, canal, road with DGPS.
	26	Revision	26	iii) Demarcation of roads, plots, commercial spaces and agricultural land etc.with DGPS
14	27	DGPS (Differential Global Positioning System) 5.1 Concept of DGPS, various parts, applications and software used for DGPS 5.2 Comparison between DGPS and TS	27	iv) Periodic field visits to Survey of India and other government agencies.
	28	5.3 Temporary adjustments of a DGPS 5.4 How does DGPS work	28	Revision
15	29	5.5 Errors in DGPS 5.6 Periodic field visits to Survey of India and other government agencies. 5.7 Layout of drain, canal, road with DGPS.	29	Revision
	30	5.8 Demarcation of roads, plots, commercial spaces and agricultural land etc.with DGPS	30	Revision
16	31	Revision	31	Revision
	32	Revision	32	Revision

Name of Faculty : YOGENDER
Discipline : Civil Engineering Department
Semester : 4th
Subject : WATER SUPPLY AND WASTE WATER ENGINEERING
Lesson Plan Duration : 15 Weeks (from Jan, 2026 - June, 2026)

*****Work Load (Lectuer / Practical) Per week (in hours) : Lectuer-02, Practical- 08**

Week	Theory		Practical	
	Lecture day	**Topic (Including assignment/ Test)**	**Practical Day**	**Topic**
1	**1st**	Introduction Necessity and brief description of water supply system, Quantity of Water,Water requirement		To determine turbidity of water sample
	2nd	2.2 Rate of demand and variation in rate of demand2.3 Per capita consumption for domestic, industrial, public and fire fighting uses as per BIS standards (no numerical problems)2.4 Population Forecasting		
2	**1st**	3. Quality of Water 3.1 Meaning of pure water and methods of analysis of water3.2 Physical, Chemical and bacteriological tests and their significance		To determine dissolved oxygen of given sample
	2nd	3.3 Standard of potable water as per Indian Standard 3.4 Maintenance of purity of water (small scale and large scale quantity)		
3	**1st**	**4.3 Filtration - significance, types of filters, their suitability4.5 Flow diagram of different treatment units, functions of		To determine pH value of water
	2nd	4.4 Necessity of disinfection of water, forms of chlorination, break point chlorine, residual chlorine, application of chlorine.		
4	**1st**	5. Conveyance of Water **5.1 Different types of pipes - cast iron, PVC, steel, asbestos cement, concrete and lead pipes. Their suitability and uses, types of joints in different types of pipes.		To perform jar test for coagulation
	2nd	5.2 Appurtenances: Sluice, air, reflux valves, relief valves, scour valves, bib cocks, stop cocks, fire hydrants, water meters their working and uses5.3 Distribution site: Requirement of distribution, minimum head and rate, methods of layout of distribution pipes		
5	**1st**	5.3.3 Maintenance of distribution system6. Laying out Pipes 6.1 Setting out alignment of pipes		To determine BOD of given sample

	2nd	5.3.4 Leakage detection		
	1st	6.4 Testing of pipe lines		
6	**2nd**	6.5 Back filling 6.6 Use of boring rods,Building Water Supply 7.1 Connections to water main (practical aspect only) **7.2 Water supply fixtures and installations and terminology related to plumbing		To determine residual chlorine in water
7	**1st**	8.2 Necessity of systematic collection and disposal of waste 8.3 Definition of terms in sanitary engineering		To determine conductivity of water and total dissolved solids
	2nd	8.4 Collection and conveyance of sewage 8.5 Conservancy and water carriage systems, their advantages and Disadvantages		
8	**1st**	9.2 Appurtenance: Location, function and construction features. catch basin, inverted siphon, flushing tanks grease and oil traps		To study the installation of following: a) Water meter
	2nd	9.2 Appurtenance: Location, function and construction features. storm regulators, ventilating shafts,Laying and Construction of Sewers:		
9	**1st**	10.2 handling and jointing testing and back filling of sewers/pipes.		To study the installation of Connection of water supply of building with main
	2nd	10.3 Construction of surface mains and different sections required		
10	**1st**	11.2 Physical, chemical and bacteriological parameters, Disposal by dilution		To study and demonstrate the joining/ threading of GI Pipes, CI Pipes,
	2nd	12. Natural Methods of Sewerage Disposal, Self purification of stream		
11	**1st**	12.4 Disposal by land treatment		To study the installation of
	2nd	12.5 Nuisance due to disposal, Sewage Treatment		
12	**1st**	13.1 Meaning and principle of activated sludge process their flow diagrams		To study the installation of Water supply and sanitary fittings
	2nd	13.2 Introduction and uses of screens, grit chambers, detritus tanks		
13	**1st**	grit chambers, detritus tanks, skimmingtanks, plainsedimentation tanks,		To study and demonstrate the joining/ threading of GI Pipes, CI
	2nd	primary clarifers, secondary clarifers,filters		
14	**1st**	Meaning and principle of secondary treatment process their flow diagrams		To demonstrate the laying of SW pipes for sewers
	2nd	control beds, intermittent sand filters, trickling filters,		
15	**1st**	14. Building Drainage14.1 Aims of building drainage 14.2 Different sanitary fittings		Study of water purifying process by visiting a field lab.
	2nd	treatment and disposal, oxidation ponds		