

## JMIETI, Radaur

### Lesson Planning of Civil Engg.Deptt. 5<sup>th</sup> Semester

Name of Teacher : Karan Vadhera  
 Designation : Assistant Professor  
 Subject with code : Concrete Technology (CE-309A)

Total no. of Lectures available for the course: 30 Session

S.No.	Description	MONTH
1	Introduction of Concrete grades of concrete	
2	preparation of concrete	
3	Advantages of concrete, concept of quality control.	
4	Cement: Introduction of Cement	
5	Ingredient in cement. basic chemistry, types of cement,	
6	ordinary Portland cement, rapid hardening cement, low heat cement, sulphate resistant cement,	
7	Portland-pozzolona cement, high strength Portland cement, high alumina cement, waterproof cement,	
8	White Portland cement, hydrophobic cement, colored Portland cement, Field and laboratory tests on cement.	
9	Pozzolanic materials, Fly ash, metakaoline, GGBS, iron slag, rise husk ash - its types, properties, applications & limitations.	
10	Aggregates: Aggregates, classification of aggregates based on petrography, size, shape and textures, deleterious substances in aggregates,	
11	bulking of fine aggregates, sieve analysis, grading of aggregates as per IS-383-1970, fineness modulus, Maximum size of aggregate, Quality of mixing water, curing water.	
12	Introduction, Design of mix by IS & ACI methods including batching of materials,	
13	mixing of concrete materials, transportation of concrete, compaction of concrete,	
14	Ready mixed concrete, vibrators, Internal vibrators, external vibrators, concrete curing and formwork removal.	
15	Properties of Concrete: Introduction, workability, factors influencing workability, measurement of workability, requirements of workability,	
16	, properties of hardened concrete, stress and strain characteristics of concrete Young's modulus of concrete, creep and shrinkage of concrete,	

17	permeability of concrete, durability of concrete sulphate attack, fire-resistance, thermal properties of concrete, construction joints, expansion and contraction joints	
18	Significance of Non-Destructive Testing, Rebound Hammer, Ultrasonic pulse velocity techniques,	
19	Penetration techniques, pullout tests, vibration methods, radioactive techniques, Cover meter, core-tests.	
20	Deterioration of Concrete & its Prevention: Causes of concrete deterioration, deterioration by water, surface wear	
21	frost action, deterioration by chemical reactions, sulphate attack,	
22	alkali-aggregate reaction, corrosion of embedded steel in concrete, Prevention of deterioration of concrete.	
23	Symptoms and diagnosis of distress, evaluation of cracks, repair of cracks, common types of repairs,	
24	distress in fire damaged structures, underwater repairs. Special Concrete: Light weight concrete,	
25	definition and its properties, applications, high strength concrete, definitions,	
26	Its properties and applications,	
27	Mass Concrete, waste material based concrete, shotcrete	
28	fiber reinforced concrete: Materials Fibres types and properties, ferrocement,	
29	polymer concrete composites, heavy weight concrete for radiation shielding.	
30	Prestressed Concrete: Introduction, basic concepts,	
31	classifications and types of prestressing, prestressing systems, and	
32	Properties of materials, pre tensioned and post tensioned concrete elements.	
33	Prestressed Concrete: Introduction, basic concepts	
34	classifications and types of prestressing	
35	Properties of materials, pre tensioned and post tensioned concrete elements.	
36	Deterioration of Concrete & its Prevention	
37	Causes of concrete deterioration, deterioration by water, surface wear	
38	prestressing systems,	
39	REVISION	
40	TEST	

**JMIETI, Radaur**

Lesson Planning of Civil Engg. Deptt. 5<sup>th</sup> Semester

Name of Teacher : RITU KAUSHIK  
Designation : Assistant Professor  
Subject with code : Design of concrete structure -I

(CE-303A)

S.No.	Topic / chapter	MONTH
1	Physical requirements of cement and aggregate	AUGUST
2	Admixture and reinforcement	AUGUST
3	Strength and durability	AUGUST
4	Shrinkage and creep	AUGUST
5	Design of concrete mixes, I.S. Specifications	AUGUST
6	Working stress method	AUGUST
7	Limit state method	AUGUST
8	Building code, Normal distribution curve	AUGUST
9	Characteristics loads, design values, Partial safety factors	AUGUST
10	stress-strain relationship	SEPTEMBER
11	Basic assumptions of (WSM), permissible stresses in concrete and steel	SEPTEMBER
12	Types of beam section	SEPTEMBER
13	Find moment of resistance (Num.)	SEPTEMBER
14	Design of singly reinforced beam (WSM)	SEPTEMBER

15	Design of doubly reinforced beam by (WSM)	SEPTEMBER
16	Design of flanged beams in flexure	SEPTEMBER
17	Basic assumptions and ,Analysis of beam by (LSM)	SEPTEMBER
18	Design of singly reinforced beam by (LSM)	SEPTEMBER
19	Design of doubly reinforced beam by (LSM)	SEPTEMBER
20	Flanged beams by (LSM)	SEPTEMBER
21	Minimum and Maximum reinforcement requirement	SEPTEMBER
22	Diagonal tension and shear reinforcement	SEPTEMBER
23	Design of Shear reinforcement	SEPTEMBER
24	Design of torsion reinforcement	SEPTEMBER
25	Development length (Num.)	SEPTEMBER
26	Effective length and types of column	OCTOBER
27	Minimum eccentricity, short columns under axial compression	OCTOBER
28	Axial bending	OCTOBER
29	Biaxial bending	OCTOBER
30	Wall footings	OCTOBER
31	Serviceability Limit State	OCTOBER
32	Control of deflection,cracking	OCTOBER
33	Deflection and moment relationship	OCTOBER

34	Limit state of crack width	OCTOBER
35	Limit state of crack width(Num.)	OCTOBER
36	Requirements of good detailing cover to reinforcement	OCTOBER
37	Spacing of reinforcement	OCTOBER
38	Reinforcement splicing	OCTOBER
39	Anchoring reinforcing bars in flexure	OCTOBER
40	Anchoring reinforcing bars in shear	NOVEMBER
41	Analysis of one way slab (Num.)	NOVEMBER
42	Design of one way slab (Num.)	NOVEMBER
43	Two ways slab analysis	NOVEMBER
44	Design of two way slab (Num.)	NOVEMBER
45	Openings in slabs	NOVEMBER
46	Classification, Forces on retaining wall	NOVEMBER
47	Design criteria, stability requirement	NOVEMBER
48	Design of counterforts retaining wall	NOVEMBER

## JMIETI, Radaur

### Lesson Planning of Civil Engg.Deptt. 5<sup>th</sup> Semester

Name of Teacher : Dr. Ankit Sharma  
 Designation : Assistant Professor  
 Subject with code : Geotechnical Engineering (CE-307A)

Total no. of Lectures available for the course: 38 Session

S.No	Description	Month
1	Introduction to sub-surface exploration – Purpose, need, scope	August
2	Stages in soil exploration, depth & lateral extent of exploration	August
3	Guidelines for exploration for different structures (buildings, dams, highways)	August
4	Ground water observations, excavation & boring methods	August
5	Soil sampling, sample disturbance, types of samplers	August
6	Sounding methods – SCPT, DCPT, SPT (field procedures & interpretation)	August
7	Geophysical methods, Pressure-meter test, exploration logs	August
8	Drainage & dewatering methods – ditches, sumps, well point system	August
9	Advanced dewatering – vacuum, electro-osmosis, sand piles, eductor method	September
10	Tutorial/Problem-solving + Short Quiz (Unit I Revision)	September
11	Design criteria for foundation safety – location, shear, settlement	September
12	Ultimate bearing capacity, modes of shear failure	September
13	Rankine's analysis, Terzaghi's theory, Skempton's formula	September
14	Effects of GWT fluctuations, eccentric loading, IS Code recommendations	September
15	Factors affecting bearing capacity, methods of improvement	September
16	Settlement of foundations – causes, allowable pressure, calculations	September
17	Elastic & consolidation settlement, IS Code criteria,	September

	Plate load test	
18	Bearing capacity from penetration tests, design bearing capacity	September
19	Shallow foundation types, proportioning, combined & raft foundations	September
20	Tutorial + Problem-solving + Quiz (Unit II Revision)	September
21	Introduction, necessity & classification of piles	October
22	Load capacity – static analysis in sands & clays	October
23	Dynamic analysis, pile load tests, negative skin friction	October
24	Batter piles, lateral load, uplift of single pile, under-reamed piles	October
25	Pile groups – group action, spacing, group capacity	October
26	Stress on lower strata, settlement of pile groups	October
27	Design of pile caps, negative skin friction of groups	November
28	Uplift resistance, lateral resistance, batter pile groups	November
29	Numerical problems on piles (capacity, settlement, group action)	November
30	Tutorial + Problem-solving + Quiz (Unit III Revision)	November
31	Drilled piers – types, uses, construction procedure	November
32	Bearing capacity & settlement of drilled piers	November
33	Caisson foundations – types, construction procedure	November
34	Bearing capacity & settlement of caissons	November
35	Well foundations – shapes, depth, components	November
36	Factors affecting design, lateral stability of wells	November
37	Construction procedure, sinking of wells, rectification of tilts & shifts	November
38	Recommended values of tilts & shifts (IS:3955), case studies	November

## JMIETI, Radaur

### Lesson Plan Civil Engg. Deptt. (5<sup>th</sup> Semester)

Name of Teacher : Dr. Komal  
 Designation : Assistant Professor  
 Subject with code : Hydrology (CE-305A)

Serial No.	Topic / Description	Month
1	Hydrologic cycle – components, scope and applications of hydrology to engineering problems	August
2	Drainage basins – characteristics, stream geometry	August
3	Hypsometric curves – definition, plotting, significance	August
4	Recap & short problems on basin characteristics	August
5	Forms & types of precipitation; characteristics of precipitation in India	August
6	Measurement of precipitation – non-recording gauges (Symons, standard rain gauge)	August
7	Measurement of precipitation – recording gauges (tipping bucket, weighing type)	August
8	Rain gauge station selection & network density (IS codes)	August
9	Estimation of missing rainfall data – Arithmetic Mean, Normal Ratio methods	August
10	Presentation of rainfall data – mass curves, hyetographs	August
11	Mean precipitation over an area – arithmetic and Thiessen polygon methods	August
12	Isohyetal method of mean precipitation	August
13	Depth–Area–Duration relationships	September
14	Frequency of point rainfall and IDF curves	September
15	Probable Maximum Precipitation (PMP) – definition and estimation	September
16	Tutorial and numerical practice on precipitation	September
17	Process of evaporation; factors affecting evaporation	September
18	Evaporimeters (and empirical relationships)	September
19	Analytical methods; reservoir evaporation and control methods	September
20	Transpiration and evapotranspiration – concepts and importance	September
21	Measurement of evapotranspiration; Penman's equation, potential ET	September
22	Tutorial and problems on evaporation & ET	September
23	Infiltration process; initial loss and infiltration capacity	September
24	Measurement of infiltration (infiltrometers); infiltration indices ( $\Phi$ -index, W-index)	September

25	Factors affecting infiltration; infiltration equations and curves	September
26	Tutorial and numerical problems on infiltration	September
27	Factors affecting runoff; estimation of runoff	September
28	Rainfall–runoff relationships; stage measurement (staff gauge, wire gauge, automatic stage recorders)	October
29	Stage hydrograph – preparation and interpretation	October
30	Measurement of velocity – current meters, floats, area-velocity method	October
31	Moving boat, slope area, electromagnetic, ultrasonic & dilution methods of streamflow measurement	October
32	Stage–discharge relationships	October
33	Flood frequency studies; recurrence interval and Gumbel’s method	October
34	Reservoir flood routing; channel flood routing	October
35	Flood plain mapping and applications	October
36	Discharge hydrograph – components and factors affecting shape	October
37	Effective rainfall and Unit Hydrograph – derivation, applications	October
38	Triangular UH, Snyder’s synthetic UH, rational methods and empirical formulae	October
39	Unit hydrograph of different durations; use and limitations of UH	October
40	Tutorial and problem solving on hydrographs	October
41	Occurrence of groundwater; types of aquifers; wells and springs	November
42	Water table fluctuations; compressibility of aquifers	November
43	Movement of groundwater; Darcy’s law	November
44	Permeability – laboratory and field determination; porosity, specific yield and retention	November
45	Storage coefficient and transmissibility	November
46	Groundwater quality – Indian and International standards	November
47	Pollution of groundwater – sources, remedial and preventive measures	November
48	Tutorial and problem solving on groundwater	November

# **JMIETI RADAUR**

## **Lesson Planning of Civil Engg.Deptt. 5<sup>th</sup> Semester**

**Name of Teacher : Er. Pankaj Goyal**  
**Designation : Assistant Professor**  
**Subject with code : Professional Practice Law & Ethics (HM-255A)**

<b>S.No.</b>	<b>Description</b>	<b>Month</b>
1	Sub –Professional Practice–Respective roles of various stakeholders	AUGUST
2	Government (constituting regulatory bodies and standardization organizations, prescribing norms to ensure safety of the citizens)	AUGUST
3	Standardization Bodies (ex. BIS,IRC) (formulating standards of practice)	AUGUST
4	professional bodies(ex. Institution of Engineers(India)	AUGUST
5	Indian Roads Congress, IIA/COA,ECI ,Local Bodies/PlanningAuthorities) (certifying professionals and offering platforms for Interaction	AUGUST
6	Clients/owners (role governed by contracts); Developers(rolegoverned by regulations such as RERA);	AUGUST
7	Consultants(role governed by bodies such as CEA.	AUGUST
8	Contractors (role governed by contracts and regulatory Acts and Standards);	AUGUST
9	Manufacturers/Vendors/Service agencies (role governed by contracts and regulatory Acts and Standards)	SEPTEMBER
10	Assignment work	SEPTEMBER
11	Professional Ethics – Definition of Ethics, Professional Ethics	SEPTEMBER
12	Business Ethics, Corporate Ethics	SEPTEMBER
13	Revision	SEPTEMBER
14	Engineering Ethics, Personal Ethics; Code of Ethics as defined inthe website of Institution of Engineers(India)	SEPTEMBER
15	Profession, Professionalism, Professional Responsibility	SEPTEMBER

16	,Professional Ethics; Conflict of Interest ,	SEPTEMBER
17	Gift Vs Bribery, Environmental breaches, Negligence, Deficiencies in state-of - the-art;	SEPTEMBER
18	Vigil Mechanism, Whistleblowing, protected disclosures.	SEPTEMBER
19	General Principles of Contracts Management, Indian Contract Act ,1972 and Amendments covering Generalprinciples of contracting; Contract Formation & Law; Privacy of contract.	SEPTEMBER
20	Various types of contract and their features; Valid & Voidable Contracts; Prime and sub-contracts	OCTOBER
21	Contract Formation & Law; Privacy of contract.	OCTOBER
22	Joint Ventures& Consortium; Complex contract terminology	OCTOBER
23	Tenders, Request For Proposals ,Bids & Proposals; Bid Evaluation; Contract Conditions & Specifications	OCTOBER
24	Class Test	OCTOBER
25	Critical “RedFlag” conditions; Contract award & Notice To Proceed; Variations & Changes in Contracts;	OCTOBER
26	Differing it conditions; Cost escalation; Delays, Suspensions & Terminations; Time extensions & Force Majeure;	OCTOBER
27	Revison	OCTOBER
28	DelayAnalysis; Liquidated damages &Penalties;	OCTOBER
29	Insurance &Taxation; Performance and Excusable Non- performance;	OCTOBER
30	Contract documentation; Contract Notices; Wrong practices in contracting (Bids hopping, Bid fixing, Cartels);	OCTOBER
31	Assignment work	OCTOBER
32	Reverse auction; Case Studies; Build - Own-Operate &variations;	OCTOBER
33	Public-Private Partnerships	NOVEMBER
34	International Commercial Terms	NOVEMBER
35	Engagement of Labour and Labour & other construction-related Laws:	NOVEMBER
36	Role of Labour in Civil Engineering; Methods ofengaging labour - on rolls, labour sub-contract ,	NOVEMBER
37	Piece rate work; Industrial Disputes Act ,1947	NOVEMBER

38	Collective bargaining; Industrial Employment (Standing Orders)Act ,1946	NOVEMBER
39	Workmen's Compensation Act ,1923;	NOVEMBER
40	Building & Other Construction Workers(regulation of employmentand conditions of service) Act(1996) and Rules(1998);	NOVEMBER
41	Revision	NOVEMBER
42	RERA Act 2017	NOVEMBER
43	NBC Act 2017	NOVEMBER

## JMIETI, Radaur

### Lesson Planning of Civil Engg.Deptt. 5<sup>th</sup> Semester

Name of Teacher : Gaurav Vats  
 Designation : Assistant Professor  
 Subject with code : Structure Analysis 2 (CE-301A)

Total no.of Lectures available for the course: 40 Session

S.no.	Description	MONTH
1	Introduction,	August
2	influence lines for three hinged and two hinged arches,	August
3	influence lines for three hinged and two hinged arches,	August
4	load position for Max. S.F. and B.M. at a section in the span.	August
5	load position for Max. S.F. and B.M. at a section in the span.	August
6	Influence Line for statically indeterminate Beams:	August
7	Muller-Breslau Principle,	August
8	Muller-Breslau Principle,	August
9	I.L. for B.M. & S.F. for continuous Beams.	August
10	I.L. for B.M. & S.F. for continuous Beams.	August
11	Introduction	August
12	Single concentrated load	September
13	uniformly distributed load longer than span	September
14	shorter than span, two point loads	September
15	several point loads	September
16	Max. B.M. and S.F. Absolute	September

17	Fixed Arches	September
18	Expression for Horizontal Thrust and Bending Moment at a section	September
19	Elastic centre	September
20	Revision	September
21	Analysis of continuous beams and	October
22	Analysis of continuous beams	October
23	Analysis of continuous beams	October
24	Numericals	October
25	simple frames	October
26	simple frames	October
27	analysis of frames with different column lengths and	October
28	analysis of frames with different column lengths and	October
29	end conditions of the bottom story.	October
30	(i) For vertical loads,	November
31	(ii) for lateral loads by Portal method	November
32	Cantilever method.	November
33	Matrix Methods	November
34	Introduction, Stiffness Coefficients, Flexibility Coefficients,	November
35	development of flexibility & stiffness matrices for plane frame	November
36	Numericals	November
37	Global axis and local axis	November
38	analysis of plane frame	November
39	pin jointed and rigid jointed	November
40	Revision	November