



**DELHI COLLEGE OF
TECHNOLOGY &
MANAGEMENT(DCTM),
PALWAL**

INSTRUCTIONAL PLAN

**RECORD NO.: QF/ACD/009
Revision No.: 00**

Name of Faculty: SANA SHADAB

Department: CIVIL

Course Title: IRRIGATION ENGINEERING-I

Course Number: CE-304-F

Semester/Section: 6th

Session: JAN-MAY 2018

Instruction Plan Details:

Lecture No.	Topics to be covered	References	Remarks
Section-A			
1.	Unit-I: Canal falls-necessity and location, development of falls,	B C PUNMIA	
2.	Design of cistern element,	B C PUNMIA	
3.	Roughening devices	B C PUNMIA	
4.	Principal of design of Sarda type fall	B C PUNMIA	
5.	Design Of straight Glacis fall	B C PUNMIA	
6.	Off-take alignment, cross-regulator and distributor	B C PUNMIA	
7.	Head regulators	B C PUNMIA	
8.	Devices to control silt entry into the off-taking channel and silt ejector	B C PUNMIA	
9.	Canal escapes	B C PUNMIA	
10.	Types Of escapes	B C PUNMIA	
Section-B			
11.	Unit-II: Cross drainage works: Classification	B C PUNMIA	
12.	Cross drainage works: their selection	B C PUNMIA	
13.	Fundamentals of Hydraulic design aspects of aqueducts	B C PUNMIA	
14.	siphon aqueducts	B C PUNMIA	
15.	canal siphon	B C PUNMIA	
16.	Level crossing	B C PUNMIA	
17.	Design of transitions	B C PUNMIA	
18.	Numerical	B C PUNMIA	
19.	Unit-III: Diversion canal headwork: Varies components	B C PUNMIA	
20.	functions	B C PUNMIA	
21.	layout plan	B C PUNMIA	
22.	Selection Of site for diversion headwork	B C PUNMIA	
23.	Bligh's creep theory	B C PUNMIA	
24.	Khosla's method of independent Variables	B C PUNMIA	

25.	Use Of Khosla's curves	B C PUNMIA	
26.	various corrections	B C PUNMIA	
27.	silt excluders	B C PUNMIA	
Section-C			
28.	Unit-IV: Storage Headwork: Types of dams	S K GARG	
29.	selection of a site	S K GARG	
30.	Gravity dam-two Dimensional design	S K GARG	
31.	Forces acting	S K GARG	
32.	Stability criterion, elementary profile of a dam	S K GARG	
33.	Cutoffs And drainage galleries	S K GARG	
34.	Arch dams-constant angle and constant radius arch dam	S K GARG	
35.	Simple design And sketches, most economical angle	S K GARG	
36.	Earth dam, design principles, seepage through earth Dams	S K GARG	
37.	Seepage line, control of seepage	S K GARG	
38.	Design of filters	S K GARG	
Section-D			
39.	Unit-V: Spillways and Energy Dissipations: Essential requirements of spillway	S K GARG	
40.	Spillway's capacity	S K GARG	
41.	types of spillways and their suitability	S K GARG	
42.	Ogee spillways, chute, side Channel	S K GARG	
43.	shaft and siphon spillways	S K GARG	
44.	energy dissipation below spillways	S K GARG	
45.	stilling basins, USBR	S K GARG	
46.	I.S. Stilling Basins	S K GARG	

Signature of Faculty Member

HOD/Principal/Academic Coordinator

Date



DELHI COLLEGE OF TECHNOLOGY &
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INSTRUCTIONAL
PLAN

RECORD NO.:
QF/ACD/05
Revision No.: 00

Name of Faculty: DIVAKR SHARMA
Course Title: ENGINEERING GEOLOGY
Semester/Section: 6th SEM

Department: CIVIL
Course Number: CE-312-F
Session: JAN-MAY 2018

Instruction Plan Details:

Lecture No.	Topics to be covered	References	Remarks
<u>SECTION-A</u>			
1	Introduction of the subject, Definitions	PRABIN SINGH And SK GARG	
2	Scope and subdivision of geology		
3	Geology around us		
4	The interior of earth		
5	Importance of geology in civil engineering projects.		
6	UNIT II Physical Geology:- The external and internal geological forces causing changes		
7	Weathering and erosion of the surface of the earth.		
8	Geological work of ice, water and winds		
9	Soil profile and its importance		
10	Earthquakes and volcanoes		
<u>SECTION-B</u>			
11	Unit-III: Mineralogy and Petrology:- Definition and mineral and rocks	PRABIN SINGH And SK GARG	
12	Classification of important rock forming Minerals		
13	Simple description based on physical properties of minerals. Rocks of earth surface.		
14	Classification of rocks.		
15	Mineral composition, texture, structure and origin of igneous, sedimentary and metamorphic rocks.		
16	Aims and principles of stratigraphy		
17	Standard geological time scale with its sub division and a short description based on engineering. Uses of formation of India		
18	Unit-IV: Structural Geology:- Forms		

	and structures of rocks	PRABIN SINGH And SK GARG	
19	Bedding plane and outcrops, dip and strike		
20	Elementary ideas about fold, fault joint and unconformity and recognition on outcrops		
21	Importance of geological structure in civil engineering projects		
<u>SECTION-C</u>			
22	Unit-V: Ground Water Geology:- Hydrogeology, aquifer water table	PRABIN SINGH And SK GARG	
23	Spring and artesian well Artificial recharge of ground water		
24	Aquifer, ground water in engineering projects.		
25	Elementary ideas of geological investigation		
26	Remote sensing techniques for geological survey and investigation.		
27	Remote sensing techniques for hydrological survey and investigation		
28	Uses of geological maps and interpretation of data.		
29	Geological reports		
<u>SECTION-D</u>			
30	Unit-VI: Applied Geology:- Physiographic division in India.		
31	Suitability and stability of foundation sites and abutments	PRABIN SINGH And SK GARG	
32	Geological conditions and their influence on the selection, location & types		
33	Design of dams		
34	Design of reservoirs		
35	Design of tunnels		
36	Design of highways		
37	Design of bridges etc.		
38	Unit-VII: Landslides and Hill slope stability:- Improvement of foundation rocks, precaution.		
39	Improvement of treatment against faults		
40	Improvement of treatment against joints and ground water retaining walls and other precautions		
41	Geology and environment of earth		
42	Course Related Activity	MDU Papers	
43	Course Related Activity	MDU Papers	



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INSTRUCTIONAL PLAN

**RECORD NO.: QF/ACD/01
Revision No.: 00**

Name of Faculty: DIVAKAR SHARMA
Course Title: DCS-II
Semester/Section: 6th SEM

Department: CIVIL
Course Number: CE-302-F
Session: JAN-MAY 2018

Instruction Plan Details:

Lecture No.	Topics to be covered	References	Remarks
Section-A			
1.	Unit-I: Continuous Beams-Basic assumptions, Moment of inertia, settlements	Ramamurtha m. S, A.K. Jain And IS456 2000	
2.	Modification of moments, maximum moments and shear		
3.	beams curved in plan-analysis for torsion		
4.	redistribution of moments for single and multi-span beams		
5.	design examples		
6.	Unit-II: Flat slabs and staircases-Advantages of flat slabs, general design considerations		
7.	approximate direct design method		
8.	design of flat slabs, openings in flat slab		
9.	design of various types of staircases		
10.	design examples		
Section-B			
11.	Unit-III: Foundations-Combined footings	Ramamurtha m. S, A.K. Jain And IS456 2000	
12.	raft foundation		
13.	design of pile cap and piles		
14.	design of under-reamed piles		
15.	design examples		
16.	Unit-IV: Water Tanks, Silos and Bunkers- Estimation of Wind and earthquake forces		
17.	design requirements, rectangular and cylindrical underground tanks		
18.	rectangular and cylindrical overhead tanks		
19.	Intze tanks, design considerations		
20.	design examples		

21.	Silos and Bunkers-Various theories			
22.	Bunkers with sloping bottoms and with high sidewalls			
23.	battery of bunkers, design examples			
Section-C				
24.	Unit-V: Prestressed Concrete-Basic principles, classification of pre-stressed members			
25.	various pre- stressing systems			
26.	losses in pre-stress, initial and final stress conditions			
27.	analysis and design of sections for flexure and shear.			
28.	load balancing concept, IS Specifications.			
29.	End blocks-Analysis of stresses, Magnel's method	Ramamurtha m. S, A.K. Jain And IS456 2000		
30.	Guyon's method, Bursting and spalling stresses			
31.	design examples			
32.	Unit-VI: Building Frames-Introduction, Member stiffnesses, Loads,			
33.	Analysis for vertical and lateral loads, Torsion in buildings, Ductility of beams,			
34.	design and detailing for ductility, design examples			
Section-D				
35.	Unit-VII: Yield Line Theory-Basic assumptions, Methods of analysis			
36.	yield line patterns and failure mechanisms		Ramamurtha m. S, A.K. Jain And IS456 2000	
37.	analysis of one way rectangular and non-rectangular slabs			
38.	analysis of two way rectangular and non-rectangular slabs, effect of top corner steel in square slabs			
39.	design examples			
40.	Course related activity	MDU papers		
41.	Course related activity	MDU papers		



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**RECORD NO.: QF/ACD/01
Revision No.: 00**

Name of Faculty: DIVAKAR SHARMA
Course Title: SEWAGE AND TREATMENT
Semester/Section: 6th SEM

Department: CIVIL
Course Number: CE-308-F
Session: JAN-MAY 2018

Instruction Plan Details:

Lecture no.	Topics to be covered	References	Remarks
Section A			
1	Unit-I: collection of sewage: Importation of sanitation, systems of sewerage separate, combined and partially separate	B.C. PUNMIA and S.K. GARG	
2	Quantity of sanitary sewage and variations, Shapes of sewer- circular and egg shaped	B.C. PUNMIA and S.K. GARG	
3	Design of sewers, self cleansing velocity and slopes,	B.C. PUNMIA and S.K. GARG	
4	Construction and testing of sewer lines,.	B.C. PUNMIA and S.K. GARG	
5	Sewer materials, joints and appurtenances	B.C. PUNMIA and S.K. GARG	
6	Unit II: Sewage collection from houses and buildings	B.C. PUNMIA and S.K. GARG	
7	General principal for design of a sanitary plumbing system	B.C. PUNMIA and S.K. GARG	
8	Traps function and types, System of plumbing	B.C. PUNMIA and S.K. GARG	
9	Testing of house sewer, sanitary fittings and other accessories	B.C. PUNMIA and S.K. GARG	
10	ventilation of house drainage, waste water recycling in building	B.C. PUNMIA and S.K. GARG	
Section B			
11	Unit III: Quality parameters- BOD, COD, Solids, D.O., Oil & Grease,	B.C. PUNMIA and S.K. GARG	
12	Tests on quality parameters,	B.C. PUNMIA and S.K. GARG	
13	Sewage disposal, type relative advantage and disadvantage of various sewage disposal system,	B.C. PUNMIA and S.K. GARG	
14	Indian Standards for disposal effluents into inland surface sources and on land.	B.C. PUNMIA and S.K. GARG	
15	Bangalore method and Indore method of disposal.	B.C. PUNMIA and S.K. GARG	

16	Disposal of sewage by dilution- self- purification of streams. Sewage disposal by irrigation (Sewage Treatment).	B.C. PUNMIA and S.K. GARG	
17	Unit IV: Digestion and disposal of primary and secondary sludge- Moisture content.	B.C. PUNMIA and S.K. GARG	
18	sludge digestion process, Factors affecting,	B.C. PUNMIA and S.K. GARG	
19	sludge digestion tanks, disposal of digested sludge	B.C. PUNMIA and S.K. GARG	
Section C			
20	Unit V: Sewage Treatment Objectives of Sewage Treatment, Classification of treatment process,	B.C. PUNMIA and S.K. GARG	
21	Preliminary treatment- screening and grit removal units.	B.C. PUNMIA and S.K. GARG	
22	Skimming tank Theory and design aspects of sedimentation	B.C. PUNMIA and S.K. GARG	
23	coagulation, merits and demerits of coagulation.	B.C. PUNMIA and S.K. GARG	
24	Secondary treatment- Biological Filtration- Trickling Filter,	B.C. PUNMIA and S.K. GARG	
25	High rate Trickling Filter advantage and disadvantages,	B.C. PUNMIA and S.K. GARG	
26	miscellaneous type of filter,	B.C. PUNMIA and S.K. GARG	
27	Humus tank, activated sludge process & its modifications.	B.C. PUNMIA and S.K. GARG	
28	Aeration tanks, secondary sedimentation tanks.	B.C. PUNMIA and S.K. GARG	
29	Unit VI: Stabilization pond, oxidation pond, oxidation ditches , aeration lagoons ,	B.C. PUNMIA and S.K. GARG	
30	anaerobic stabilization units- Septic tank and Imhoff tank.	B.C. PUNMIA and S.K. GARG	
31	Sludge Digestion UASB process sequence and efficiencies of conventional treatment units,	B.C. PUNMIA and S.K. GARG	
32	Process Design of a complete sewage treatment plant,	B.C. PUNMIA and S.K. GARG	
33	Examples	B.C. PUNMIA and S.K. GARG	
Section D			
34	Unit VII Noise pollution-definition and introduction	B.C. PUNMIA and S.K. GARG	
35	Effect of noise, characteristics of sound and its measurement, level of noise	B.C. PUNMIA and S.K. GARG	
36	Noise rating system and standards	B.C. PUNMIA and S.K. GARG	

		S.K. GARG	
37	Source of noise their levels and controls	B.C. PUNMIA and S.K. GARG	
38	Unit VIII Air pollution-definition of air pollution	B.C. PUNMIA and S.K. GARG	
39	Effects of air pollution	B.C. PUNMIA and S.K. GARG	
40	Dispersion models and equations , dispersion of air pollution in atmosphere	B.C. PUNMIA and S.K. GARG	
41	Air pollution controls.	B.C. PUNMIA and S.K. GARG	
42	Course related activity	MDU PAPERS	
43	Course related activity	MDU PAPERS	



Name of Faculty: DUSHYANT KUMAR
Course Title: TRANSPORTION ENGG-II
Semester/Section: 6th SEM

Department: CIVIL
Course Number: CE-310-F
Session: JAN-MAY 2018

Instruction Plan Details:

Lecture No.	Topics to be covered	References	Remarks
<u>SECTION-A</u>			
1	<u>UNIT I: Design of Flexible Pavements</u> Types of pavements. Flexible and rigid pavements.	<u>HIGHWAY ENGINEERING BY S.K KHANNA AND C.E.G JUSTO</u>	
2	Components of a pavement and their functions. Factors affecting design of pavements.		
3	Design of thickness of a flexible pavement by Group Index method.		
4	CBR method (including latest IRC guidelines)		
5	Triaxial method and Burmister's method.		
6	<u>UNIT II: Design of Flexible Pavements</u> Westergaard's theory, critical locations of loading, load and temperature stresses.		
7	Critical combination of stresses, IRC guidelines for determination of thickness of a rigid pavement		
8	Joints: requirements, types, patterns		
9	Spacing of expansion and contraction joints		
10	Functions of dowel and tie bars.		
<u>SECTION-B</u>			
11	<u>Unit III: Highway Construction: Non-Bituminous Pavements</u> Brief introduction to earthwork machinery: shovel, hoe, clamshell, dragline, bulldozers. Granular roads.	<u>HIGHWAY ENGINEERING BY S.K KHANNA AND C.E.G JUSTO</u>	
12	Principals of field compaction of sub grade. Compacting equipments.		
13	Construction steps of WBM, WMM. Construction of cement concrete	<u>HIGHWAY</u>	

	pavements, Slip-form pavers	<u>ENGINEERING</u> <u>BY S.K</u> <u>KHANNA AND</u> <u>C.E.G JUSTO</u>	
14	Basic concepts of the following: soil stabilized roads, use of geo-synthetics, reinforced cement concrete pavements, pre stress concrete pavements, roller compacted concrete pavements.		
15	<u>Unit IV: Construction of Bituminous Pavements</u> Various types of bituminous constructions. Prime coat, tack coat, seal coat and surface dressing.		
16	Construction of BUSG, Premix carpet, BM, DBM and AC.		
17	Brief coverage of machinery for construction of bituminous roads: bitumen boiler, sprayer, pressure distributor, hot-mix plant.		
18	Cold-mix plant, tipper trucks, mechanical paver or finisher, rollers .Mastic asphalt.		
19	Introduction to various IRC and MOST specifications.		
<u>SECTION-C</u>			
20	<u>Unit V: Highway Maintenance</u> Pavement failures.	<u>HIGHWAY</u> <u>ENGINEERING</u> <u>BY S.K</u> <u>KHANNA AND</u> <u>C.E.G JUSTO</u>	
21	Maintenance operations		
22	Maintenance of WBM, bituminous surfaces and cement concrete pavements		
23	Pavement evaluation. Benkleman beam.		
24	Introduction to various types of overlays.		
25	<u>Unit VI: Highway Drainage and Hill Roads</u> Surface drainage: types, brief design.		
26	Types of sub-surface drainage.		
27	Special characteristics of hill roads: geometrics, hair pin bends.		
28	Construction of hill roads.		
29	Maintenance problems of hill roads		
<u>SECTION-D</u>			
30	<u>Unit VII: Highway Economics and Finance</u> :-Needs of economic evaluation comparison.		
31	Highway user benefits and costs	<u>HIGHWAY</u> <u>ENGINEERING</u> <u>BY S.K</u> <u>KHANNA AND</u>	
32	Methods of economic evaluation: benefit cost ratio method.		
33	Net present value method, internal rate of return method.		

34	Highway Finance.	<u>C.E.G JUSTO</u>	
35	Unit VIII: Tunnels Sections of tunnels: advantages, limitations and suitability of each section.		
36	Shaft. Pilot tunnel		
37	Driving tunnel in rocks: sequence in construction operations, full-face method.		
38	Heading and bench method, drift method.		
39	Driving tunnels in soft ground: sequence of construction operations, needle beam method.		
40	Shield tunneling, compressed air tunneling.		
41	Course Related Activity		MDU Papers
42	Course Related Activity	MDU Papers	



Name of Faculty: DUSHYANT KUMAR
Course Title: GEOTECHNOLOGY
Semester/Section: 6th SEM

Department: CIVIL
Course Number: CE-306-F
Session: JAN-MAY 2018

Instruction Plan Details:

Lecture No.	Topics to be covered	References	Remarks
<u>SECTION-A</u>			
1	<u>Unit-I: Stability of Slopes</u> Causes of Failure, Factors of Safety.	<u>SOIL MECHANICS AND FOUNDATION ENGINEERING BY K.R ARORA</u>	
2	Stability analysis of slopes-total stress analysis.		
3	Effective stress analysis.		
4	Stability of infinite slopes types of failures of finite slopes		
5	Importance of geology in civil engineering projects.		
6	Analysis of finite slopes-mass procedure.		
7	Method of slices, effect of pore pressure.		
8	Fellinius method to locate centre of most critical slip circle.		
9	Friction circle method, Taylor's stability number.		
10	Slope stability of earth dam during steady seepage.		
11	During sudden draw down and during and at the end of construction.		
<u>SECTION-B</u>			
12	<u>Unit-II Braced Cuts</u> Depth of unsupported vertical cut.	<u>SOIL MECHANICS AND FOUNDATION ENGINEERING BY K.R ARORA</u>	
13	Sheeting and bracing for deep excavation.		
14	Movements associated with sheeting and bracing.		
15	Modes of failure of braced cuts		
16	Pressure distribution behind sheeting		
17	<u>Unit-III : Cofferdams</u> Introduction, Types of cofferdams		
18	Design and lateral stability of braced cofferdam.		

19	Design data for Cellular cofferdams		
20	Stability analysis of cellular cofferdams on soil and rock.		
21	Inter-lock stresses		
22	NUMERICALS		
<u>SECTION-C</u>			
23	<u>Unit-IV: Cantilever Sheet Piles</u> Purpose of sheet piles, cantilever sheet piles.	<u>SOIL MECHANICS AND FOUNDATION ENGINEERING BY K.R ARORA</u>	
24	Depth of embedment in granular soils-rigorous method		
25	Simplified procedure, cantilever sheet pile		
26	Penetrating clay		
27	Limiting height of wall		
28	<u>Unit-V- Anchored Bulkheads</u> Methods of design		
29	Free earth support method in cohesion less and cohesive soils		
30	Fixed earth support method in cohesion less		
31	Soils-Slum's equivalent beam method.		
32	NUMERICALS		
<u>SECTION-D</u>			
33	<u>Unit-VI: Soil Stabilization</u> Soil improvement, shallow compaction	<u>SOIL MECHANICS AND FOUNDATION ENGINEERING BY K.R ARORA</u>	
34	Mechanical treatment, use of admixtures		
35	Lime stabilization, Cement stabilization		
36	Lime fly ash stabilization, dynamic compaction and consolidation.		
37	Bituminous stabilization, chemical stabilization, pre-compression		
38	Lime pile and column, stone column, grouting, reinforced earth.		
39	<u>Unit-VII: Basics of Machine Foundations</u> Terminology, characteristics elements of a vibratory systems		
40	Analysis of vibratory motions of a single degree freedom system un-damped free vibrations		
41	Un-damped forced vibrations, criteria for satisfactory action of a machine foundation.		
42	Degrees of a freedom of a block foundation		
43	Barken's soil spring constant.		

44	Barken's method of a determining natural frequency of a block foundation subjected to vertical oscillations.		
42	Course Related Activity	MDU Papers	
43	Course Related Activity	MDU Papers	