GATEWAY INSTITUTE OF ENGINEERING AND TECHNOLOGY, SONIPAT

LESSON PLAN

Name of Faculty: Mr Sudhir Malik
Discipline:- Civil Engineering
Semester: 6th
Subjects: ENVIRONMENTAL ENGINEERING - II (CE- 312B)
Lession Plan Duration: 13 Weeks (from January 2018 to April 2018)
Workload(Lecture/Practical) per week (in hours) : Lecture-03 , Practicals -02 hours

Week	Theory (CE- 312B)		Practical (CE- 318B)	
	Lecture Day	Topic (including assignment/test)	Practical Day	Topic
1st	1st	Sewerage system: Generation and Estimation of Community Sewage	1st	Flow measurement in open channels using V and rectangular notches
	2nd	Flow variations; Storm Water flow		
	3rd	Alternate systems for sewage collection and conveyance		
2nd	4th	Design of sewers	2nd	Determination of DO.
	5th	Characterization of sewage: Parameters for characterization		
	6th	Sampling, testing and analysis of sewage		
3rd	7th	Relative stability and population equivalent	3rd	Test
	8th	BOD and BOD kinetics.		
	9th	Revision & Test		
4th	10th	Treatment of sewage: Effluents standards	4th	Determination of BOD.
	11th	Basic principles of sewage treatment		
	12th	Introduction to unit operations and processes - primary treatment units such as screening		
5th	13th	grit chamber, and Sedimentation tanks	5th	Determination of COD.
	14th	Secondary treatment units such as different types of aerobic suspended		
	15th	Attached growth systems		
6th	16th	Tertiary treatment Sludge Handling and disposal – thickening	6th	Test
	17th	Stabilization, dewatering		
	18th	Drying and disposal		
7th	19th	Revision & Test	7th	Determination of Sulphates.
	20th	Sewage treatment units design		
	21st	ASP		
8th	22nd	TF, stabilization ponds	8th	Determination of Nitrite and Nitrate nitrogen.
	23rd	Treated effluent disposal		
	24th	Disposal into surface water bodies		
9th	25th	Reuse for irrigation and aqua-culturing	9th	Test
	26th	Land disposal		
	27th	Disposal through injection into groundwater		
10th	28th	Indian standards for disposal of effluent	10th	Determination of Ammonical and Total Kjeldhal Nitrogen.
	29th	Revision & Test		
	30th	Low cost sanitation systems		
11th	31st	Imhoff tanks, septic tank	11th	Determination of phosphorus (total and available).
	32nd	Stabilization ponds		
	33rd	Oxidation ponds		
12th	34th	Constructed wetland systems	12th	Test
	35th	Plumbing: Sewage pumping and pumping stations		
	36th	Sewer connections for houses and buildings,		
13th	37th	Sewer appurtenances	13th	Settling column test for primary settling tank design.
	38th	Construction and Maintenance of sewers;		
	39th	Revision & Test		
			14th	Settling column test for secondary setting tank design
			15th	TEST

GATEWAY INSTITUTE OF ENGINEERING AND TECHNOLOGY, SONIPAT

LESSON PLAN

Name of Faculty: Mr VIJAY ROHILLA
Discipline:- Civil Engineering
Semester: 6th
Subjects: FOUNDATION ENGINNERING (CE-306 B)
Lession Plan Duration: 15 Weeks (from January 2018 to April 2018)
Workload(Lecture/Practical) per week (in hours) : Lecture-03 , Practicals -02 hours

Week	Theory (CE – 306 B)		Practical (CE – 316 B)	
	Lecture Day	**Topic (including assignment/test)**	**Practical Day**	**Topic**
1st	1st	Introduction to soil exploration,sampling techniques	1st	Determination of Relative density of coarse grained soils in dry and saturated conditions
	2nd	types of samples		
	3rd	SCP and STP		
2nd	4th	Sample disturbances .	2nd	Determination of shear strength at different densities by Direct shear test
	5th	Geophysical methods		
	6th	earth pressure,earth pressure at rest condition		
3rd	7th	states of plastic equilibrium	3rd	Test
	8th	rankine theory		
	9th	coulombs theory for active pressure		
4th	10th	passive pressure ,	4th	Determination of MDD and OMC at different compactive effort by compaction test
	11th	Graphical methods		
	12th	Open cuts and reatining wall.		
5th	13th	Pile Foundations: Types, function,	5th	Determination of Unconfined compressive strength at different compactive effort
	14th	Selection of piles, pile driving formulae		
	15th	Equipment, point bearing and friction piles.		
6th	16th	Load carrying capacity of single pile	6th	Test
	17th	Group action of piles.		
	18th	Spacing of piles,Negative skin friction		
7th	19th	Piles subjected to lateral loads	7th	Determination of compressibility characteristics of fine grained soils by Consolidation test.
	20th	Settlement of pile groups		
	21st	Under reamed piles.		
8th	22nd	Introduction, components, shapes,	8th	Determination of bearing capacity by Standard Penetration test
	23rd	stability of well foundation		
	24th	Terzaghi's method of analysis		
9th	25th	sinking of well, tilts and shifts.	9th	Test
	26th	Stability of Slopes: Infinite slope, types of failure,		
	27th	total and effective stress analysis		
10th	28th	Taylor'sstability numbers, concept of factors of safety	10th	Determination of shear strength of dry sands by Tri-axial shear test.
	29th	method of slices, Swedish's circle method		
	30th	friction circle method		
11th	31st	effect of sudden draw down and submergence.	11th	Determination of shear strength of saturated sands by Tri-axial test.
	32nd	Design of Shallow Foundation: Bearing Capacity, Definitions		
	33rd	Terzhagi'sgeneral bearing capacity equation,		
12th	34th	IS code equation, factors affecting bearing capacity.	12th	Test
	35th	Settlements for clays and sands, permissible settlements,		
	36th	bearing capacity by penetration tests, plate load test.		
13th	37th	Types of Shallow Foundations, Design Criteria	13th	Determination of bearing capacity by Plate load test.
	38th	Stability, Shear, and Settlement Failures,		
	39th	Influence of eccentric and inclined loads		
14th	40th	Foundation in Difficult Grounds: Ground Improvement techniques	14th	Determination of bearing capacity by Cone Penetration test.
	41st	drainage and dewatering, Foundation in Swelling Soils		
	42th	use of Soil reinforcement. Machine Foundation: Definition		
15th	43th	types,problem of machine foundation	15th	Test
	44th	spring mass analogy,coefficient of elastic uniform compression, free and damped vibration,		
	45th	block foundation test, Cyclic plate load test, mathematical models, design criteria		

Name of Faculty: Mr Ravi Chopra
Discipline:- Civil Engineering
Semester: 6th
Subjects: REINFORCED CONCRETE DESIGN-II(CE-302 B)
Lession Plan Duration: 13 Weeks (from January 2018 to April 2018)
Workload(Lecture/Practical) per week (in hours) : Lecture-03 , Practicals -02 hours

Week	Theory (CE-302 B)		Practical (CE- 314B)	
	Lecture Day	**Topic (including assignment/test)**	**Practical Day**	**Topic**
1st	1st	Continuous Beams and slabs: Basic assumptions	1st	Isolated footings
	2nd	Moment of inertia, settlements		
	3rd	Modification of moments, maximum moments		
2nd	4th	Shear, redistribution of moments for single beams	2nd	Combined footings
	5th	Shear, redistribution of moments for multi-span beams		
	6th	Design examples		
3rd	7th	Flat slabs: Advantages of flat slabs	3rd	Test
	8th	General design considerations		
	9th	Approximate direct design method		
4th	10th	Design of flat slabs	4th	Beams Curved in Plan
	11th	Design examples		
	12th	Revision & Test		
5th	13th	Foundations: Isolated footings	5th	Cantilever Retaining Walls
	14th	Combined footings		
	15th	Rectangular, trapezoida		
6th	16th	Strip, strap	6th	Test
	17th	Raft footings		
	18th	Revision & Test		
7th	19th	Design of curved beams in plan: Analysis	7th	Counterfort Retaining walls
	20th	Design of curved beams fixed at both ends		
	21st	Ring beams		
8th	22nd	Design of Domes	8th	Conical and Spherical Domes
	23rd	Meridional stress in spherical and conical domes		
	24th	Hoop stress in spherical and conical domes,		
9th	25th	Design	9th	Test
	26th	Revision & Test		
	27th	Retaining walls		
10th	28th	Design of cantilever retaining walls	10th	Underground and Surface Water Tanks
	29th	Design of counter fort type retaining walls		
	30th	Water Tanks		
11th	31st	Estimation of Wind and earthquake forces	11th	Over Head Service Reserviors
	32nd	Design requirements		
	33rd	Rectangular underground		
12th	34th	Cylindrical underground	12th	Test
	35th	Intze tanks		
	36th	Design considerations,		
13th	37th	Design examples		
	38th	Numericals		
	39th	Revision & Test		

Name of Faculty: Mr Vishal Rohilla
Discipline:- Civil Engineering
Semester: 6th
Subjects: TRANSPORTATION ENGINEERING - II (CE – 310 B)
Lession Plan Duration: 15 Weeks (from January 2018 to April 2018)
Workload(Lecture/Practical) per week (in hours) : Lecture-03

Week	Theory (CE – 310 B)	
	Lecture Day	**Topic (including assignment/test)**
1st	1st	Role of railways in transportation, historical development of railways
	2nd	Permanent way and components: gauges in railway tracks
	3rd	railway track cross-section, coning of wheels
2nd	4th	Function of rails, requirement of rails
	5th	types of rail sections – comparison of rail types, length of rail
	6th	rail wear, rail failures
3rd	7th	creep of rails
	8th	rail fixtures and fastenings – Fish plates,
	9th	spikes, bolts, chairs, keys, bearing plates.
4th	10th	Sleepers: Functions and requirements of sleepers
	11th	classification of sleepers, timber, metal and concrete sleeper
	12th	comparison of different types of sleepers, spacing of sleepers and sleeper density
5th	13th	Ballast: Function and requirements of ballast, types, comparison of ballast materials.
	14th	Revision & Test
	15th	Geometric design: Vertical and horizontal alignment, horizontal curves, super elevation
6th	16th	equilibrium, cant and cant deficiency
	17th	length of transition curve, gradients and grade compensation.
	18th	Stations and yards, and their classification
7th	19th	Points and crossings: introduction, necessity of points and crossings, turnouts
	20th	points and crossings, design of a simple turnout.
	21st	Track safety, Signaling and Interlocking: objects of signaling
8th	22nd	engineering principle of signaling, classification, control of train movements
	23rd	absolute, automatic block system, centralized control system, ATS
	24th	Interlocking: definition, necessity and function, methods of interlocking
9th	25th	mechanical devices for interlocking.Traction and tractive resistance, stresses in track
	26th	Equipments, Mechanized Maintenance, Track Recording & track Tolerances
	27th	Mass Rapid Transport Systems, High Speed Trains, Present & Future
10th	28th	modernization of railway tracks, railway systems in modern era.
	29th	Tunnels: sections of tunnels—advantages, limitations and suitability, shafts, pilot tunnels
	30th	methods of driving tunnels in rocks and soft grounds. Stress around the tunnels.
11th	31st	Brief history of air transport: Aircraft characteristics. Airport site selection
	32th	Classifications of obstructions, Imaginary surfaces
	33th	Approach zone and turning zone. Runway orientation
12th	34th	basic runway length, corrections for elevation
	35th	temperature and gradient, airport classification
	36th	revision & Test
13th	37th	Airport Design: runway geometric design, airport capacity
	38th	factors controlling taxiway layout, geometric design standards for taxiway holding aprons.
	39th	Terminal area, building area, parking area, apron
14th	40th	hanger typical airport layouts. LCN/PCN method of rigid pavement design.
	41st	Trend growth of Domestic Air Traffic in India, Air Cargo.
	42th	Air traffic control aids: visual aids, marking
15th	43th	lighting of runway and apron area
	44th	wind and landing direction indicator
	45th	Revision & Test

Name of Faculty: Mr Sumit Kumar
Discipline:- Civil Engineering
Semester: 6th
Subjects: DESIGN OF STEEL STRUCTURES I (CE – 304 B)
Lession Plan Duration: 15 Weeks (from January 2018 to April 2018)
Workload(Lecture/Practical) per week (in hours) : Lecture-03

Week	Theory (CE – 304 B)	
	Lecture Day	**Topic (including assignment/test)**
1st	1st	Introduction: Loads, structural steels and their specifications
	2nd	Structural elements, steel vs. concrete and timber
	3rd	Design approaches—elastic and limit state methods
2nd	4th	Design specifications as per IS: 800
	5th	Structural layout
	6th	Strength and stiffness considerations
3rd	7th	Efficiency of cross-section, safety and serviceability considerations
	8th	Structural Fasteners and Connections
	9th	Riveting and bolting, their types
4th	10th	Failure of riveted joint, efficiency of a joint
	11th	Design of riveted joint
	12th	Concentric riveted joints, advantages and disadvantages of bolted connections
5th	13th	Stresses in bolts, types of welded joints
	14th	Design of welded joint subjected to axial loads
	15th	Welded joints subjected to eccentric loads
6th	16th	Simple, semi-rigid and rigid connections
	17th	Revision & Test
	18th	Tension Members: Types of sections, net area
7th	19th	Net effective area for angles, tees
	20th	Design of tension members
	21st	Tension splice, high strength steel cables
8th	22nd	Compression Members: Axially loaded columns
	23rd	Effective length, slenderness ratio, allowable stresses
	24th	General specifications, design of axially loaded members
9th	25th	Laced and battened columns and their design
	26th	Built up compression members, eccentrically loaded columns and their design
	27th	Column splice and its design, encased columns.
10th	28th	Revision & Test
	29th	Flexural Members: Design criteria, permissible stresses
	30th	Laterally supported beams and their design laterally unsupported beams and their design
11th	31st	Web buckling, web crippling, built up beams
	32th	Encased beams, members subjected to bending and compression
	33th	Plate Girders: Introduction, weight and economic depth, design of flanges
12th	34th	Design of web, curtailment of flange plates, intermediate and bearing stiffeners
	35th	Design of a riveted and welded plate girders, web and flange splice
	36th	Column Bases: Introduction, slab base, gusseted base
13th	37th	Column base subjected to moment, grillage foundation
	38th	Revision & Test
	39th	Tubular Structures: Permissible stresses, tube columns and compression members
14th	40th	Tube tension members, tubular roof trusses
	41st	Joints in tubular trusses, tubular beams and purlins
	42th	Aluminium Structures: Permissible stresses, tension members, compression members
15th	43th	Local buckling of compression members
	44th	Design of beams and connections
	45th	Revision & Test

Name of Faculty: Mr Durgesh Nandan
Discipline:- Civil Engineering
Semester: 6th
Subjects: STRUCTURAL ANALYSIS - III (CE – 308 B)
Lession Plan Duration: 15 Weeks (from January 2018 to April 2018)
Workload(Lecture/Practical) per week (in hours) : Lecture-03

Week	Theory (CE – 308 B)	
	Lecture Day	**Topic (including assignment/test)**
1st	1st	Introduction to matrix algebra
	2nd	Systems approach: force and displacement methods
	3rd	Methods and their comparison
2nd	4th	Matrix Force Method
	5th	Introduction to flexibility approach
	6th	Choice of redundant
3rd	7th	static equilibrium matrix
	8th	Deformation compatibility matrix
	9th	Member flexibility matrix
4th	10th	Static equilibrium and deformation compatibility checks
	11th	Application for trusses
	12th	Continuous beams and rigid frames
5th	13th	Revision & Test
	14th	The matrix displacement or Stiffness Method
	15th	Conditions of stress-strain relationships
6th	16th	Equilibrium and compatibility
	17th	Application for trusses
	18th	Continuous beams and Rigid frames
7th	19th	Formulation of various matrices
	20th	Static equilibrium matrix
	21st	Deformation compatibility matrix
8th	22nd	Member stiffness matrix, global stiffness matrix
	23rd	External load matrix
	24th	Static equilibrium and deformation
9th	25th	Compatibility checks and effects of support settlement and lack of fit
	26th	Conversion of member loads into joint loads
	27th	Partitioning of global stiffness matrix
10th	28th	Revision & Test
	29th	Direct Stiffness Method
	30th	Derivation of global matrix from energy considerations
11th	31st	Transformation matrices
	32th	Member stiffness matrix with respect to member coordinate system
	33th	Member stiffnessmatrix for global coordinates
12th	34th	Global stiffness matrix
	35th	Displacement boundary conditions
	36th	Computer generation of global stiffness matrix
13th	37th	Effect of temperature and lack of fit
	38th	Revision & Test
	39th	Finite Element Method
14th	40th	Introduction and basic concepts
	41st	Energy approach
	42th	Variation principles in Finite-Element Method
15th	43th	Various element shapes
	44th	1-D bar element
	45th	Revision & Test

Name of Faculty: Ms REKHA MANN
Discipline:- civil/mech/cse
Semester: 2nd
Subject; REPORT WRUTING AND ORAL PRESENTATION SKILLS
Lession Plan Duration: 15 Weeks (from January,2018 to April,2018
Workload(Lecture/Practical) per week (in hours) : Lecture-03 ,Practicals -02 hours

Week	Theory		Practical	
	Lecture Day	**Topic (including assignment/test)**	**Practical Day**	**Topic**
1st	1st	Introduction to unit-1	1st	Group discussion
	2nd	Meaning of Report		
	3rd	Importance of report		
2nd	4th	test	2nd	Purpose and process of GD
	5th	Types of Report		
	6th	Revision		
3rd	7th	test	3rd	Test
	8th	Informational and Analytical report		
	9th	Routine report		
4th	10th	oral report	4th	What and why of group discussion
	11th	Revision		
	12th	Test		
5th	13th	Written report	5th	Do's and donot of GD
	14th	Diffrence between orao and written report		
	15th	formal report		
6th	16th	Informal report	6th	Test
	17th	Diffrence between formal and informal report		
	18th	Revision		
7th	19th	Test	7th	More about GD
	20th	Other types of report		
	21st	Format of report		
8th	22nd	letter report	8th	Revision
	23rd	Memo format		
	24th	inspection report		
9th	25th	Manuscript format	9th	Test
	26th	Revision		
	27th	ORAL TEST		
10th	28th	Written test	10th	Importance of GD
	29th	Structure of the report		
	30th	Structure of the formal and informal report		
11th	31st	Text of the report	11th	Oral communication skills
	32nd	Supplementary parts		
	33rd	Revision		
12th	34th	Test	12th	Group etiquette
	35th	Introduction to unit-2		
	36th	Procedure of writing report		
13th	37th	Reports on technical topics	13th	Mock interview
	38th	Report on business topics		
	39th	Test		
14th	40th	Revision of section-1	14th	Mock interview activity
	41st	Test		
	42nd	Revision of full syllabus		
15th	43rd	Revision of full syllabus	15th	TEST
	44th	Revision of full syllabus		
	45th	Test		