LESSON PLAN

Name of the Faculty :

Discipline : CIVIL

Semester : 8^{TH}

Subject : B.E (CE-402E)

Lesson Plan Duration : 15 weeks (from January, 2018 to April, 2018)

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

WEEK	THEORY	
	LECTURE DAY	TOPIC (including assignment / test)
1st	1st	**Introduction:** Definition
	2nd	components of bridge, , , ,
	3rd	classification of bridges
2nd	1st	selection of site
	2nd	economical span, aesthetics consideration
	3rd	Necessary investigations and essential design data.
3rd	1st	**Standard Specifications for Roads and Railways Bridges:** General
	2nd	Indian Road Congress Bridge Code
	3rd	width of carriage way, clearance
4th	1st	various loads to be considered for the design of roads and railway bridges

	2nd	detailed explanation of IRC standard live loads
	3rd	Assignment of unit-I
5th	**1st**	**Design Consideration for R. C. C. Bridges: Introduction**
	2nd	Various types of R.C.C. bridges(brief description of each type)
	3rd	Various types of R.C.C. bridges(brief description of each type)
6th	**1st**	Various types of R.C.C. bridges(brief description of each type)
	2nd	design of R.C.C. culvert
	3rd	**Numerical of culvert**
7th	**1st**	**Numerical of culvert**
	2nd	**Numerical of culvert**
	3rd	Design of T-beam bridges.
8th	**1st**	**Numerical of T-beam**
	2nd	**Numerical of T-beam**
	3rd	**Numerical of T-beam**
9th	**1st**	**Numerical of L-beam**
	2nd	**Design Consideration for Steel Bridges:** Various types of steel bridges (brief description of each),
	3rd	design of truss and
10th	**1st**	plate girder bridges.
	2nd	**NUMERICAL**
	3rd	**NUMERICAL**
11th	**1st**	**NUMERICAL**
	2nd	**Hydraulic & Structural Design:** Piers,

		Abutments,.
	3rd	NUMEICAL BASED on piers and abutments.
12th	**1st**	NUMEICAL BASED on piers and abutments.
	2nd	wing-wall and approaches
	3rd	**NUMERICAL based on wing wall**
13th	**1st**	Numerical
	2nd	**Brief Description:** Bearings, joints, articulation and other details.
	3rd	**Numerical based on bearings**
14th	**1st**	**Roller bearing**
	2nd	Steel rock bearing
	3rd	**Bridge Foundation:** Various types, necessary investigations and
15th	**1st**	Design criteria of well foundation.
	2nd	**Numerical on bridge foundation**
	3rd	Design of pile foundation

LESSON PLAN

Name of the Faculty : Er. SUKHDEV SINGH

Discipline : CIVIL

Semester : 8TH

Subject : I.WWT-I (CE-404N)

Lesson Plan Duration : 15 weeks (from January, 2018 to April, 2018)

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

WEEK	THEORY	
	LECTURE DAY	TOPIC (including assignment / test)
1st	1st	Effects of industrial wastes on streams,
	2nd	sewerage systems
	3rd	Wastewater treatment plants.
2nd	1st	equalization
	2nd	proportioning.
	3rd	neutralization,
3rd	1st	strength reduction,
	2nd	volume reduction,

	3rd	reuse of waste water,
4th **4th**	**1st**	, process change,
	2nd	conservation of water
	3rd	Minimizing the effects of industrial effluents on receiving streams
5th	**1st**	Industrial effluent standards for disposal into on land for irrigation.
	2nd	Population equivalent
	3rd	Numerical based population equivalent
6th	**1st**	**Numerical of dairy waste**
	2nd	Numerical of tannery waste
	3rd	Radioactive wastes.
7th	**1st**	thermal power plants
	2nd	nitrogenous fertilizers
	3rd	oil refinery
8th	**1st**	metal plating,
	2nd	pulp & paper
	3rd	dairy
9th	**1st**	tannery,
	2nd	sugar mill,
	3rd	distillery
10th	**1st**	Flow diagram of sugar mill
	2nd	**Flow diagram of dairy waste**
	3rd	**Flow diagram of textile waste**

11th	**1st**	**Numerical**
	2nd	Numerical
	3rd	Numerical
12th	**1st**	**Numerical**
	2nd	**Numerical**
	3rd	Industrial effluent standards for disposal into inland surface water sources .
13th	**1st**	Study of the following Industries from waste generation, quality and its treatment including brief overview of manufacturing process: Textile.
	2nd	Minimizing the effects of industrial effluents on waste water treatment plants .
	3rd	**Numerical**
14th	**1st**	Numerical
	2nd	Numerical
	3rd	**Numerical**
15th	**1st**	**Numerical**
	2nd	**Numerical**
	3rd	Numerical

LESSON PLAN

Name of the Faculty : **ER. DEEPAK KUMAR**

Discipline : CIVIL

Semester : **8TH**

Subject : RAILWAY AND AIRPORT (CE-406N)

Lesson Plan Duration : 15 weeks (from January, 2018 to April, 2018)

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

WEEK	THEORY	
	LECTURE DAY	TOPIC (including assignment / test)
1st	1st	**Introduction, Permanent Way And Rails** Rail transportation and its importance in India..
	2nd	Permanent way: requirements and components. Gauges in India and abroad.
	3rd	Selection of gauge. Coning of wheels. Adzing of sleepers.
2nd	1st	Rails: functions, composition of rail steel, types of rail sections,
	2nd	requirements of an ideal rail section, length of rails. Defects in rails
	3rd	Creep of rails. Long welded rails and continuously welded rails.
3rd	1st	**Sleepers, Fastenings And Ballast** Sleepers: functions, requirements of an ideal sleeper.
	2nd	Types of sleepers: wooden, cast iron, steel and concrete sleepers, advantages, disadvantages and suitability of each type

	3rd	. Sleeper density. Fastenings for various types of sleepers: fish plates, spikes, bolts, bearing plates, keys, chairs, jaws, tie bars
4th	**1st**	. Elastic fastenings. Ballast: functions, requirements, types of ballast and their suitability.
	2nd	**Points And Crossings** Necessity. Turnout: various components, working principle. Switch: components, types
	3rd	Crossing: components and types. Design elements of a turnout, design of a simple turnout.
5th	**1st**	Layout plan of track junctions: crossovers,
	2nd	Diamond crossing, single-ouble slips, throw switch, turn table, triangle. **Signaling, Interlocking And Train Control** Signals: objects, types and classification.
	3rd	Semaphore signal: components, working principle
6th	**1st**	Requirements / principles of a good interlocking system. Brief introduction to devices used in interlocking
	2nd	Methods of control of train movements: absolute block system, automatic block system,
	3rd	centralized train control and automatic train control systems.
7th	**1st**	**Geometric Design Of The Track** Gradients, grade compensation. Super elevation, cant deficiency
	2nd	, negative super elevation. Maximum permissible speed on curves
	3rd	Tractive resistances, types. Hauling capacity of a locomotive. **Stations, Yards And Track Maintenance**
8th	**1st**	Stations: functions and classification. Junction, non-junction and terminal stations.
	2nd	Yards: functions, types. Marshalling yard: functions, types
	3rd	. Maintenance of railway track: necessity, types of maintenance.
	1st	Brief introduction to mechanized maintenance, M.S.P and D.T.M.

9th		
	2nd	**Introduction And Airport Planning** Air transportation
	3rd	its importance and characteristics, status in India. Layout plan of an airport
10th	**1st**	its basic elements: terminal area, apron, taxiway, runway, hanger
	2nd	Aircraft characteristics, their effect on elements of an airport
	3rd	Site selection of an airport. lassification of airports.
11th	**1st**	**Runway Layout And Pavement Design** Runway orientation, Wind Rose diagram
	2nd	. Basic runway length. Corrections to basic runway length. Runway patterns.
	3rd	Difference between highway and runway pavement.
12th	**1st**	Types of runway pavements.
	2nd	Design factors for runway pavement
	3rd	Brief introduction to design of thickness of a runway pavement
13th	**1st**	NUMERICAL
	2nd	NUMERICAL
	3rd	NUMERICAL
14th	**1st**	NUMERICAL
	2nd	
	3rd	
15th	**1st**	NUMERICAL
	2nd	NUMERICAL
	3rd	NUMERICAL

LESSON PLAN

Name of the Faculty : **ER. DEEPAK KUMAR**

Discipline : CIVIL

Semester : 8^{TH}

Subject : **E&A** (CE-408E)

Lesson Plan Duration : 15 weeks (from January, 2018 to April, 2018)

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

WEEK	**THEORY**	
	LECTURE DAY	**TOPIC (including assignment / test)**
1st	**1st**	Estimate: Principles of estimation, units, items of work
	2nd	different kinds of estimates, different methods of estimation,
	3rd	Estimation of materials in single room building
2nd	**1st**	Two roomed building with different sections of walls
	2nd	Foundation, floors and roofs
	3rd	R.B. and R.C.C. works
3rd	**1st**	Plastering, White-washing,
	2nd	Distempering and painting
	3rd	Doors and windows, lump sum items
4th	**1st**	Estimates of canals, roads etc
	2nd	Specification of Works

		Necessity of specifications, types of specifications, general specifications
	3rd	Specification for bricks, cement,
5th	**1st**	sand, water, lime, reinforcement
	2nd	Detailed specifications for Earthwork, Cement.
	3rd	Detailed specifications for concrete, brick work.
6th	**1st**	Detailed specifications for floorings, D.P.C., R.C.C
	2nd	Cement plastering
	3rd	White and color washing.
7th	**1st**	Distempering, painting.
	2nd	**Numerical**
	3rd	**numerical**
8th	**1st**	numerical
	2nd	Rate Analysis :Purpose, importance and requirements of rate analysis,
	3rd	Units of measurement,
9th	**1st**	. preparation of rate analysis
	2nd	Procedure of rate analysis for items:- Earthwork, concrete works
	3rd	Procedure of rate analysis for items:- R.C.C. works, reinforced brick work.
10th	**1st**	Procedure of rate analysis for items:- plastering.
	2nd	Procedure of rate analysis for items:- painting, finishing(white-washing, distempering).
	3rd	**Numerical**

11th	**1st**	**Numerical**
	2nd	Numerical
	3rd	**Numerical**
12th	**1st**	Public Works Account: Introduction,
	2nd	function of P.W. department
	3rd	contract, guidelines
13th	**1st**	Types of contracts
	2nd	Their advantages and disadvantages
	3rd	Tender and acceptance of tender
14th	**1st**	Earnest money, security money, retention money
	2nd	Measurement book, cash book.
	3rd	Preparation, examination and payment of bills
15th	**1st**	First and final bills
	2nd	Administrative sanction, technical sanction.
	3rd	**numerical**

LESSON PLAN

Name of the Faculty : **DR.DK MAHARAJ**

Discipline : CIVIL

Semester : 8^{TH}

Subject : **INTRODUCTION TO FEM** (CE-410E)

Lesson Plan Duration : 15 weeks (from January, 2018 to April, 2018)

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

WEEK	**THEORY**	
	LECTURE DAY	**TOPIC (including assignment / test)**
1st	**1st**	**INTRODUCTIO:- field condition**
	2nd	Boundary conditions
	3rd	**Functional approximation**
2nd	**1st**	**Finite differences methods**
	2nd	**Development of finite method, element properties:- displacement models**
	3rd	**Relationship between the nodel degrees of freedom and generalized co-ordinates**
3rd	**1st**	**Convergence requirements:-natural co-ordinates system**
	2nd	Shape functions
	3rd	Elements strains and stress, development of element stiffness matrix, and equivalent nodel loads

4th	**1st**	Static condensation
4th	**2nd**	**Numerical**
	3rd	**Numerical**
5th	**1st**	**Isoperimetric elements:- isoperimetric, super parametric, and sub parametric elements, computation of stiffness matrix.**
	2nd	Convergence criteria
	3rd	Numerical integration technique using gauss quardture
6th	**1st**	**One dimensional element:- truss element , analysis of plane truss problems, Hermition beam element .Beam elastic foundation**
	2nd	**Solution of beam problem**
	3rd	Numerical
7th	**1st**	Numerical
	2nd	**Numerical**
	3rd	**Numerical**
8th	**1st**	Plane stress and plane strain analysis
	2nd	**Introduction:- triangular elements rectangular elements**
	3rd	Isoperimetric elements
9th	**1st**	**Patch test**
	2nd	**Axis symmetric solid elements**
	3rd	**Plane bending analysis**
10th	**1st**	**Displacement function**
	2nd	**Plate bending elements**
	3rd	**Reduced integration**

11th	**1st**	**Stress smoothing technique**
	2nd	Conduction heat transfer
	3rd	**Formulation of finite element method for heat conduction**
12th	**1st**	**Various weighted residual techniques**
	2nd	**One dimensional heat condition**
	3rd	**Two dimensional heat transfer**
13th	**1st**	**Direct stiffness method of analysis and solution techniques:- assemblage of elements, direct stiffness method, boundary layer reactions, gauss elimination and matrix decomposition.**
	2nd	Finite element software
	3rd	**Pre and post processor finite element analysis software**
14th	**1st**	**Error estimate**
	2nd	Adaptive mashing
	3rd	Heat transfer
15th	**1st**	**numerical**
	2nd	**numerical**
	3rd	**numerical**

LESSON PLAN

Name of the Faculty :

Discipline : CIVIL

Semester : 8^{TH}

Subject : **EIA** (CE-422E)

Lesson Plan Duration : 15 weeks (from January, 2018 to April, 2018)

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

WEEK	**THEORY**	
	LECTURE DAY	**TOPIC (including assignment / test)**
1st	**1st**	**ENVIRONMENT AND HUMAN ACTIVITY**
	2nd	RESOURCES
	3rd	**Pollution**
2nd	**1st**	**Reuse**
	2nd	**Environment management**
	3rd	**Management of aquatic environment**
3rd	**1st**	**Water quality control**
	2nd	Drainage basin activity
	3rd	Impact of human activity on aquatic resources.
4th	**1st**	The control measure
4th	**2nd**	**Regional planning**

	3rd	**Air quality management**
5th	**1st**	**Atmosphere**
	2nd	Effect of human activity on air quality
	3rd	Waste management
6th	**1st**	**Disposal alternative**
	2nd	**Optimization**
	3rd	Planning of waste disposal
7th	**1st**	Waste management
	2nd	**Waste disposal methods**
	3rd	**Impact of waste disposal of human activity**
8th	**1st**	Land use management
	2nd	**Impact of land use on human life**
	3rd	Control of hazardous in land use
9th	**1st**	**Management of land use**
	2nd	**Environment assessment:- national environment policy**
	3rd	**Implication of environment**
10th	**1st**	**Assessment in design process.prepration of assessment**
	2nd	**General requirement of environmental standards.**
	3rd	**Technique of setting standards**
11th	**1st**	**Case studies of EIA**
	2nd	River valley projects
	3rd	**Thermal power projects**
12th	**1st**	**Matrix methods**

	2nd	**Numerical**
	3rd	**Pollution control**
13th	**1st**	**Water pollutions control**
	2nd	Assignments based on matrix methods
	3rd	**Assignment checked**
14th	**1st**	**Air quality management**
	2nd	**Atmosphere**
	3rd	Effect of human activity on air quality
15th	**1st**	Waste management
	2nd	**Disposal alternative**
	3rd	**Optimization**

LESSON PLAN

Name of the Faculty :

Discipline : CIVIL

Semester : 8TH

Subject : TRANSPORTATION ENGINEERING – II (P) (CE-426E)

Lesson Plan Duration : 15 weeks (from January, 2018 to April, 2018)

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

	PRACTICAL	
WEEK	**PRACTICAL DAY**	**TOPIC**
1st	**1st and2nd**	Flakiness and Elongation Index of aggregates.
2nd	**1st and2nd**	Specific gravity and water absorption test on aggregates.
3rd	**1st and2nd**	Specific gravity of bitumen.
4th	**1st and2nd**	**COPY CHECK AND VIVA VOCE**
5th	**1st and2nd**	Proportioning of aggregates.
6th	**1st and2nd**	Marshall's stability test.
7th	**1st and2nd**	Stripping test on aggregates.
8th	**1st and2nd**	**COPY CHECK AND VIVA VOCE**
9th	**1st and2nd**	Determination of bitumen content
10th	**1st and2nd**	CBR lab test on soil.
11th	**1st and2nd**	**COPY CHECK AND VIVA VOCE**
12th	**1st and2nd**	Traffic volume study using videography technique. .

13th	**1st and2nd**	Traffic speed study using videography technique.
14th	**1st and2nd**	**Final copies check**
15th	**1st and2nd**	**Internal viva**

LESSON PLAN

Name of the Faculty :

Discipline : CIVIL

Semester : **8TH**

Subject : ENVIRONMENTAL ENGINEERING-II (P) (CE-428E)

Lesson Plan Duration : 15 weeks (from January, 2018 to April, 2018)

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

	PRACTICAL	
WEEK	**PRACTICAL DAY**	**TOPIC**
1st	**1st and2nd**	To determine the acidity of a sewage sample.
2nd	**1st and2nd**	To determine the alkanity of a sewage sample.
3rd	**1st and2nd**	To determine total, suspended, dissolved and settable solids in a sewage sample.
4th	**1st and2nd**	**COPY CHECK AND VIVA VOCE**
5th	**1st and2nd**	To determine volatile and fixed solids in a sewage sample.
6th	**1st and2nd**	To determine oil and grease in a sewage sample
7th	**1st and2nd**	To determine the chloride concentration in a sewage sample
8th	**1st and2nd**	**COPY CHECK AND VIVA VOCE**
9th	**1st and2nd**	To determine the sulphate concentration in a sewage sample.

10th	**1st and2nd**	To determine the B.O.D. of a given sewage sample
11th	**1st and2nd**	**COPY CHECK AND VIVA VOCE**
12th	**1st and2nd**	To determine the C.O.D. of a given sewage sample
13th	**1st and2nd**	To determine the T.O.C. of a given sewage sample
14th	**1st and2nd**	To determine the fecal count of a given sewage sample
15th	**1st and2nd**	Microscopic studies of a sewage