

LESSON PLAN

Name of Faculty : Vikas

Discipline : CHEMICAL ENGG

Semester : 3rd

Subject : BEEE Lab

Work Load : 06 Hrs.

Lesson plan duration - 15 weeks (July 2018 to Nov 2018)

Week	PRACTICAL
PRACTICAL DAY	
1	Introduction to the BEEE Lab
2	Theory work related to various experiments performed.
3	Basic discussion on the various equipments used during the practical work in the BEEE Lab.
4	Ohm's Law verification
5	Verification of Law of Resistance in series.
6	Verification of Law of Resistance in parallel
7	connection & reading of electric energy meter with supply & load using ammeter, voltmeter & wattmeter
8	To test a battery for its charged & discharges condition.
9	Study of a distribution faults in a domestic wiring system.
10	Study of a distribution board fee domest installation.
11	Connection of a single phase induction motor with supply and reversing of its direction of rotation.
12	connection of a three phase motor & starter with fuses and levelling of firection of rotation
13	Dlow V-I characteristics of P-N junction diode
14	File checking of experiments & Viva voice
15	Revision of experiments work

Specimen of Lesson Plan

***Name of the Faculty** : Vikas
Discipline : Chemical Engg.
Semester : 3rd Sem
Subject : BEEE
Lesson Plan Duration : 15 weeks (July 2018 to Nov 2018)
Work Load : **03 Lecturer per week**

Week	Theory	
	Lecture Day	Topic (including assignment / test)
1 st	1	DIFFERENCE BETWEEN AC AND DC
	2	VARIOUS APPLICATIONS OF ELECTRICITY
	3	ADVANTAGES OF ELECTRICAL ENERGY OVER OTHER TYPES OF ENERGY
2 nd	4	DEFINITION OF VOLTAGE, CURRENT & THEIR UNITS
	5	DEFINITION OF POWER, ENERGY & THEIR UNITS.
	6	INSTRUMENTS USED FOR MEASURING VOLTAGE & CURRENT
3 rd	7	INSTRUMENTS USED FOR MEASURING POWER & ENERGY
	8	PRODUCTION OF EMF
	9	TRANSFORMER & ITS CONSTRUCTION
4 th	10	PRINCIPLE & WORKING OF TRANSFORMER
	11	REVISION OF UNIT 1, 2 & 3
	12	COPY CHECKING OF UNIT 1, 2 & 3 ASSIGNMENT NO. 1
5 th	13	TRANSMISSION & DISTRIBUTION SYSTEM & KEY DIAGRAM OF 3 PHASE
	14	Accessories of transmission line.
	15	Difference between high and low voltage distribution system. Identification of three phase wires, neutral & earth wire.
6 th	16	Phase & line voltage, Difference between single and three phase supply.
	17	Arrangement of supply from pole to distribution board.
	18	Function of service line, energy meter, main switch & distribution board.
7 th	19	Various types of domestic circuits.
	20	Various accessories & parts of domestic electrical installation.
	21	Identification of wiring systems.
8 th	22	Stair case installation
	23	Single phase & Three phase motors.
	24	Connection & Starting of three phase induction motors by star-delta starts.
9 th	25	Conversion of HP into watts & kilowatts, Types of pumps & their application.
	26	Difference between direct online and star delta starter
	27	Characteristics of applications of servo motors
10 th	28	Revision of Unit 4, 5 & 6
	29	Copy checking of unit 4, 5 & 6 Assignment 10.2
	30	Electrical shock & precautions against shock, treatment of electric shock.
11 th	31	Concept of fuses & their classification, selection & application
	32	Earthing & its various types
	33	Applications of MCB's & ELCB's
12 th	34	Basic idea of semi-conductors P & N Type
	35	Diodes, Zener diode & their applications
	36	Pn P & NPN transistor, symbol, identification of terminals.
13	37	Current flowing in a transistor
	38	Transistor characteristics & uses
	39	Characteristics & applications of a thyristor
14	40	Revision of Unit 7 & 8
	41	Copy checking of Unit 7 & 8 Assignment no 3
	42	Revision of Unit 1 & 2
15	43	Revision of Unit 3 & 4
	44	Revision of Unit 5 & 6
	45	Revision of Unit 7 & 8

LESSON PLAN

Name of Faculty : Vikas

Discipline : CHEMICAL ENGG

Semester : 3rd

Subject : Chemical reaction Engg.

Work Load : 04 Hrs. Per week(theory)

Lesson plan duration - 15 weeks (July 2018 to Nov 2018)

Week	Lecture	Topic (Including assignments/tests)
1	1	Homogenous reaction & Heterogenous reaction
	2	Catalytic & Non-Catalytic reation
	3	Elementary & Non-elementary reaction
	4	Simple & Multiple reaction
2	5	Reversible and Irreversible Reaction
	6	Endothermc & Exothermic reaction
	7	Chemical Equiliblia, Le-Chatlier principle
	8	Factors affecting chemical equilisation like temperature, concentration, pressure, catalyst.
3	9	Revision of Unit-1
	10	Copy checking of Unit -1
	11	Concept of Rate of Reaction
	12	Rate equation and rate constant
4	13	Order of reaction
	14	Molecularity of reaction
	15	Factors affecting rate of reaction
	16	Theories of reaction rate constant
5	17	Arrhenive law and problem based on it flow thermodynamics
	18	collision theory
	19	Transition state theory
	20	concept of activation energy
6	21	Revision of Unit-2
	22	Copy checking of Unit -2 & Assignment no. 1
	23	Constant volume batch reactor
	24	Relation of concentration Conversion for constant volume batch reactor
7	25	Analysis of total pressure data obtained on constant volume batch reactor
	26	Methods used to aalyse rate data or order of raction
	27	Integral method for zero order reaction
	28	Integral method of analysis of rate data
8	29	Integral method for unimolectlal first order reaction
	30	Integral method for bimoleclar second order reaction
	31	Integral method for nth order reaction
	32	Numerical problems on Integral method
9	33	Numertical problem on Intregal method cont.
	34	Half life concept for overall order of irreversible reaction
	35	Differential method of analysis of rate data
	36	Procedure of differential method
	37	Differece between Integral and differential method

10	38	Variable volume batch reactor concept only
	39	Revision of Unit 3
	40	Copy checking of unit 3 & assignment no 2
11	41	Batch reactor
	42	CSTR
	43	Plug flow Reactor
	44	Semi batch reactor
12	45	Fixed bed Vs fluidised bed reactor
	46	Performance equation for ideal batch reactor, MFR & PFR
	47	Concept of space time & space velocity & holding time
	48	Revision of unit 4
13	49	Copy checking of unit 4 & assignment no. 3
	50	Catalyst, Types of catalysts & Classification
	51	Preparation of catalyst
	52	Ingredients (Promoters, inhibitors & accelerators)
14	53	Catalyst poisoning & regeneration
	54	Revision of unit 5
	55	Copy checking of unit 5
	56	Revision of Unit 1
15	57	Revision of unit 2
	58	Revision of Unit 3
	59	Revision of Unit 4
	60	Revision of Unit 5

LESSON PLAN

Name of Faculty : SAMARPAL SINGH

Discipline : Chemical Engg.

Semester : 3rd

Subject : Chemical Process Calculation

WORKLOAD: - 04+01 (Remedial Lecture)

Lesson Plan Duration :15 weeks(from July,2018 to November,2018)

Week	Lecture Day	Theory Topic
1	1	Definition of Chemical Engineering
	2	Future and career opportunities for Chemical Engg.
	3	Revision of Unit No.- 1
	4	Class of Unit No.- 1
2	5	Introduction of Unit Operation
	6	Introduction of Unit Process
	7	Difference between Unit operation and Unit Process
	8	Revision of Unit No.- 2
3	9	Class Test of Unit No- 2
	10	Copy checking of Units No- 1 and Unit No- 2
	11	Units and Dimensions
	12	Inter Conversion of Units of pressure
4	13	Volume, Force, Work
	14	Energy, Viscosity
	15	Temperature, Specific gravity
	16	Heat in SI, CGS, MIES
5	17	Simple numerical problems
	18	Continued to Simple numerical problems
	19	Class Test of Unit No- 3
	20	Copy checking of Units No- 3
6	21	Boyle's low, Charle's law
	22	Ideal gas equation
	23	Dalton's low
	24	Amagat's law
7	25	Relation between Vol% = Mole% = Press%
	26	Average molecular weight of gas mixture
	27	Density of gas mixture
	28	Simple numerical problems
8	29	Copy checking of Unit No- 4
	30	Class test of Unit No- 4
	31	Concept of mole, gm mole, gm atom
	32	Mole fraction
9	33	Concentration of solution in different ways molarity
	34	Molality & Normolity
	35	Mass% & Mass fraction
	36	Volume% & Volume fraction
	37	Copy checking Unit No- 5
	38	Definition and meaning of material balance

10	39	Basic steps to be followed in the material balance calculation
	40	Numerical problem based on material balance
11	41	Without Chemical reaction
	42	Unit operation like distillation, drying
	43	Evaporation, Meaning of by pass
	44	Recycle and purge system of material balance
12	45	Revision of Unit No- 6
	46	Definition and meaning of energy balance
	47	Standard heat of reaction and formation
	48	Sensible heat, latent heat
13	49	Heat Capacity at Constant pressure
	50	Relationship between C_p and C_v , Hess law
	51	Standard heat of reaction, formation
	52	Heat of Combustion
14	53	Revision of Unit No- 7
	54	Definition of Combustion, heat of Combustion
	55	Air requirement
	56	Theoretical air, Excess air
15	57	Theoretical oxygen requirement
	58	Revision of Unit No- 8
	59	Copy checking of Unit No- 6, 7, 8
	60	Class Test of Unit No- 6, 7, 8

LESSON PLAN

Name of Faculty : Jasbir Singh

Discipline : CHEMICAL ENGG

Semester : 3rd

Subject : Fluid Flow Lab

Work Load : 06 hrs.

Lesson plan duration - 15 weeks (July 2018 to Nov 2018)

Week	PRACTICAL
PRACTICAL DAY	
1	Introduction about the equipment of machinery used in lab
2	1st exp. Verification of Bernoulli's equation
3	2nd exp. Determination of friction loss in flow through pipe.
4	File checking upto 2nd practical and taking viva
5	Theory work writing for exp # 3 & again performed 1st and 2nd practical for absenties
6	Exp- 3rd; calibration of orific meter & calculation for of Cd, or Co
7	Exp-4th; calibration of venturimeter
8	File checking upt 4th practical, evaluation and feed back or viva
9	Exp. 5th calibration of ratameter
10	Exp. 6th. Determination of discharge coefficient of V-notch
11	Theory work writing for Exp-7, again performed 3rd, 4th practical for absenties
12	Exp 7- Study for centrifugal, gear, Resiprocating, diaphragm pump.
13	Exp-8. Study for characteristics curves of centrifugal, resiprocating pump.
14	Exp-9. study of fluidized bed characteristics
15	Exp-10.- Calculation of Reynolds no of file checking utp 10th practical and taking 3rd viva

LESSON PLAN

Name of Faculty : JASBIR SINGH

Discipline : CHEMICAL ENGG

Semester : 3rd

Subject : FLUID FLOW

Work Load : (lecture-3 / Weak)

Lesson plan duration - 15 weeks (July 2018 to Nov 2018)

Week	Lecture	Topic (Including assignments/tests)
1	1	Introduction about the subject
	2	Various types of flow-steady and unsteady, uniform flow
	3	Non-uniform flow, streamline flow, seminars and turbulent flow
	4	Rotational & irrotational flow revision of unit-1
2	5	Type of fluid compressible and incompressible fluids
	6	Newtonian and non-newtonian fluid, propertise of fluid
	7	Fluid starts of dynamics: Pascl's law, hydrostatic law
	8	Various types of manometers, u-tube & different manometer
3	9	Types of differential manometer in details and class work checking
	10	Continuity eq". Bernoullis theorm. Flow through pipes
	11	Hagan poisculli's - equation friction factor charts
	12	Friction losses in pipes, revision of unit 2, 1st assignment
4	13	Effect of roughness in pipes;
	14	Flow measurements; flow through venturimeter
	15	Orific meter, flow nozzels, pitot tube
	16	details construction and working of rota meter
5	17	Class work checking & revision of unit-3, 2nd assignment
	18	Test 1st for unit 1st and 2nd
	19	Introduction about the fluid machinery
	20	Introduction about the different pumps.
6	21	Classification of pipes
	22	Construction and working of reciprocating pump.
	23	Contruction and working of centrifugal pump
	24	Construction and working of Rotary pump.
7	25	Copy checked and revision of unit-4
	26	Prinning and NPSH
	27	cavitation, power requirement for centrigugal pump.
	28	Equation for efficiency of centrifugal pump.
8	29	Revision for unit 4
	30	Test 2nd from unit 3rd and half 4th unit
	31	Pipe & fittings; Different types of pipes
	32	Different types of fitting for fluid handling
9	33	Schedule number for ID and OD of pipe
	34	Colour coding of industrial piping used for transportation of fluids.
	35	Different types of valves; Gate valve
	36	Globe valve, butterfuly valve
10	37	Copy checked and revision of unit 4th
	38	Ball value and needle valve

10	39	Flange fitting and its use. Assignment no 3
	40	Friction losses from sudden enlargement
11	41	Friction losses from sudden contraction of pipes
	42	Dimensional analysis; Rayleigh's method
	43	Buckingham-Pi method
12	44	Different types of dimensionless number
	45	significances of dimensionless number
	46	Copy checked and revision of 4th unit
	47	Assignment -1st discuss
13	48	Assignment -2nd discuss
	49	Assignment -3rd discuss
	50	Class work and assignment copy checking
	51	Revision for manometer
14	52	Revision for Bernoulli's theorem
	53	Revision for roughness in pipes
	54	Simple numerical problem
	55	Revision for rota meter
15	56	Revision for venturimeter
	57	copy checking and test 3rd for whole syllabus
	58	Revision for types of flow
	59	Revision for types of fluid
	60	Revision for colour coding of industrial pipe.

LESSON PLAN

Name of Faculty : KULDEEP GULIA

Discipline : Chemical Engg.

Semester : 3rd

Subject : HEAT - TRANSFER - I LAB

Work Load : 06 HRS

Lesson Plan Duration:- (from July ,2018 to November,2018)

Practical Week	Practicals
1	Rationale & Introduction about the subject Heat- Transfer- I including theory & Practical
2	Various Equipment Introduction to be studied & practical conducted during the Semester
3	To find the thermal conductivity of Metal rod (Material at different temperature)
4	To calculate the rate of heat loss through composite wall
5	To determine experimentally the value of 'k' of Insulating powder
6	To determine the heat-transfer-coefficient (h) for natural convection
7	To determine the heat-transfer-coefficient (h) for forced convection
8	Review of the practical conducted along with problem solving (if any)
9	To determine overall heat-transfer coefficient for an open pan Evaporator
10	To study the dropwise & filmwise condensation
11	To study Stefan Boltzmann law
12	To calculate emissivity of a material
13	Review of the practical conducted along with problem solving (if any)
14	Viva-voice-for Group I & Group II
15	Revision

LESSON PLAN

Name of Faculty : Kuldeep Gulia

Discipline : CHEMICAL ENGG

Semester : 3rd

Subject : Heat Transfer-I

Work Load : (lecture-4 / Week)

Lesson plan duration - 15 weeks (July 2018 to Nov 2018)

Week	Lecture	Topic (Including assignments/tests)
1	1	Rationale of the subject - HT-I (a breif discussion)
	2	Introduction of subject-syllabus brief review
	3	Definition of Heat-transfer along with examples from industry as well as from day today life
2	4	Modes of Heat transfer namely-conduction, convection & radiation
	5	Definition (only) & examples of modes of Heat Transfer
	6	Conduction-Theory behind conduction. Examples of Metal Rod M detoil
3	7	Convection- theory behind convection. Example in detail & types of convection-free & forced
	8	Radiation- theory behind radiation. Example of Sun-earth
	9	Difference between steady -state of unsteady state Heat-transfer
4	10	Fourier's law of heat conduction-Assumption also & meaning of each term therein
	11	Definition of thermal conductivity 'k', units of thermal conductivity & on what factors 'k' depends
	12	k' of solids, liquid & gases.
5	13	Effect of temperature on thermal conductivity
	14	Expression of one dimensiional steady-state heat conduction through a flat wall & composite wall
	15	Expression of one dimensiional steady-state heat conduction through a variable area-cylinder
6	16	Expression of one dimensiional steady-state heat conduction through a variable area-sphere
	17	definit ion of insulation & insulating materials & examples
	18	Critical thickness of insulation
7	19	Physical properties of insulating materials
	20	checking of copies & test upto unit 2
	21	convective heat-transfer-definition, types & examples
8	22	Concept of heat transfer coefficient (h) unit of H.T.L
	23	Difference between free of forced convection
	24	Dimensional analysis-definition & dimensional formula for various physical quantities
9	25	significance of various dimensional groups-raynold number
	26	Nusselt number, grasshofis number & stantion number, paclet number
	27	Dimensional analysis for free & forced convection
10	28	Define bolter and sider trade equation-experical correlation for free & forced convection
	29	Brief introduction about boiling -Theory of examples
	30	Types of boiling & boiling curve
11	31	concept of condensation of types of condensation
	32	Concept of evaporation along with example
	33	Checking of copies upto unit III
12	34	Test of Unit III
	35	Radiative HT, Black body radiation

	36	Planks law, Wien's displacement law
13	37	Stefan Boltzmann law & Kirchhoff's law
	38	Grey body & view factor
	39	Radiative exchange of heat between black bodies
14	40	Radiation shield
	41	Absorption of emission in a gaseous medium
	42	Checking of copies up to unit IV
15	43	Test of Unit IV
	44	Revision
	45	Revision

LESSON PLAN

Name of Faculty : Ajay Tyagi

Discipline : CHEMICAL ENGG

Semester : 3rd

Subject : Mechanical Operation

Work Load : (lecture-3 / Weak)

Lesson plan duration - 15 weeks (July 2018 to Nov 2018)

Week	Lecture	Topic (Including assignments/tests)
1	1	Introduction to chemical engg and Mechanical operation
	2	Unit-1 - Particle shape and particle size
	3	Mixed particle size & size analysis
2	4	Average particle size, number of particle in mixture
	5	Unit-2- size reduction, necessity of size reduction
	6	Principles of size reduction machines, energy and power consumption of size reduction equipments
3	7	Crushing laws (Rittinger law, Bond's law and Kick law)
	8	Work index, crushing efficiency, Mechanical efficiency
	9	Power required by machines, size reduction equipments
4	10	Crushers: Jaw crusher (Blake and Dodge jaw crusher)
	11	Roll crusher (working, construction principle)
	12	Grinders: Hammer mill, Impactor
5	13	Ball mill, attrition mill, rolling mill
	14	Ultrafine grinders, fluid energy mill
	15	colloidal mill, cutting machines
6	16	Rotary knife cutter
	17	Open and closed circuit grinding
	18	Revision of copy check upto 2nd unit
7	19	Unit-3- screening, Importance of screen
	20	Classification of screen, mesh number
	21	Screen size analysis: Differential analysis
8	22	cummulative analysis, material balance over screen
	23	screen efficiency and screen capacity
	24	Screening equipment: Gyratory screen
9	25	Stationary & vibrating screens
	26	Filteration, mechanism of filteration
	27	Filter media, Filter aids
10	28	Classification of filteration process
	29	Batch filteration, shell and leaf filter
	30	Plate and frame filter press
11	31	Continuous vacuum filter
	32	Rotary drum vacuum filter
	33	Revision of centrifugal filters
12	34	Suspended batch centrifuge
	35	Clarifying filters
	36	Gravity classifier & sorting classifier
13	37	Thickness, rate of sedimentation
	38	Centrifugal settling process
	39	Cyclone, Hydro cyclone
14	40	Tubular centrifuge, Disk centrifuge
	41	Nozzle discharge centrifuge
	42	Mixing of solids and pastes, change can mixer
15	43	Double motion paste mixer
	44	Two arm kneader, kneader and disperse blade
	45	Revision of above topics & copy check.

LESSON PLAN

Name of Faculty : Ajay tyagi

Discipline : CHEMICAL ENGG

Semester : 3rd

Subject : Mechanical Operation Lab

Work Load : Lab-6 hrs.

Lesson plan duration- 15 weeks (July 2018 to Nov. 2018)

Week	PRACTICAL
PRACTICAL DAY	
1	Introduction to Mechanical operation lab & Layout
2	To find out the shiere analysis of given sample of solid by shiere shaken
3	To determine grind ability of solids by ball mill
4	To determine crushing efficiency by roll mill
5	To perform an experiment f cycline seprator
6	To find the rate of filteration by filter press
7	Viva-Voice of 1st and 2nd practical and file checking
8	To perform an experiment on rotary vaccum
9	To perform an experiment on vibrating screen
10	Viva-Voice of 3rd and 4th practical and file checking
11	Revision of experiments performed till
12	Revision of experiments on mixer for liquid -liquid mix
13	To perform an experiment experiment on mixer for solid-liquid mix
14	To perform and experimnet on sebration of solid particles using sedione nuteal tank
15	Revision and copy checking and final viva-voice