

## Specimen of Lesson Plan

**\*Name of the Faculty :** Mr. Latish Chhabra (**Theory**)

**Discipline :** FAA

**Semester :** 4<sup>th</sup> Sem

**Subject :** Mass Transfer - I

**Lesson Plan Duration :** 12 weeks

**\*\*Work Load (Lecture / Practical) per week (in hours):** Lecturers-59

Week	Theory		Practical	
	Lecture Day	Topic (including assignment / test)	Practical Day	Topic
1 <sup>st</sup>	1	INSTRUCTION TO MASS TRANSFER OPERATIONS	1 <sup>st</sup>	INTRODUCTION ABOUT VARIOUS EQUIPMENT USED IN MASS TRANSFER LAB
	2	CLASSIFICATION OF MASS TRANSFER		
	3	CONTINUE CLASSIFICATION OF MASS TRANSFER OPERATIONS		
	4	DEFINATION OF DIFFUSION		
2 <sup>nd</sup>	5	CLASSIFICATION OF DIFFUSION I.E DIFFUSION UNDER CONCENTRATION	2 <sup>nd</sup>	THEORY WORK RELATED TO VARIOUS EXPERIMENTS PERFORMED IN MASS TRANSFER LAB
	6	PRESSURE AND THERMAL GRADIENT		
	7	FORCED & EDDY DIFFUSION		
	8	ROLE OF DIFFUSION IN MASS TRANSFER IE FICKS LAW		
3 <sup>rd</sup>	9	DIFFUSION IN THE GAS PHASE EQUIMOLAR COUNTER DIFFUSION	3 <sup>rd</sup>	BASIC DISCUSSION ON THE VARIOUS EQUIPMENTS USED DURING THE PRACTICAL WORK IN THE LAB
	10	DIFFUSION THROUGH STATIONARY GAS		
	11	MASS TRANSFER COEFFICIENT		
	12	FILM THEORY		
4 <sup>th</sup>	13	PENETRATION THEORY	4 <sup>th</sup>	DIFFUSION COEFFICIENT MEAUREMENT IN LIQUIDS
	14	DIFFUSION IN SOLIDS		
	15	RELATION BETWEEN FILM AND OVERALL MASS TRANSFER COEFFICIENT		
	16	PHYSICAL MEANING OF MASS TRANFER CO EFFICIENT		
5 <sup>th</sup>	17	SIMPLE NUMERICAL PROBLEMS BASED ON FICK'S LAW	5 <sup>th</sup>	THEORY AND CALCULATION WORK ON DIFFUSION COEFFICIENT
	18	CONTINUE WITH ABOVE NUMERCAL PROBLEMS		
	19	PRACTICE OF NUMERICAL		
	20	PRACTICE OF NUMERICAL		
6 <sup>th</sup>	21	MACHANISM OF ABSORPTION	6 <sup>th</sup>	FILE CHECKED & VIVA VOICE ON THE EXPERIMENT
	22	HTU HIEGHT OF TRANSFER UNITS		
	23	NTU NUMBER OF TRANSFER UNITS		
	24	HEIGHT OF COLUMN BASED ON CONDITION GAS FILM		
7 <sup>th</sup>	25	HEIGHT OF COLUMN BASED ON CONDITION LIQUID FILM	7 <sup>th</sup>	DIFFUSION COEFFICIENT MEASUREMENT IN SOLIDS
	26	HEIGHT OF COLUMN BASED ON OVERALL COEFFICIENT		
	27	HETP FOR PACKED COLUMN		
	28	EQUIPMENT USED		
8 <sup>th</sup>	29	CONTINUE WITH EQUIPMENT USED	8 <sup>th</sup>	CALCULATION AND THEORY WORK & COPY CHECKED & VIVA VOICE
	30	TYPES OF TOWER PACKING		
	31	CONTINUE WITH TOWER PACKING		
	32	PROPERTIES OF TOWER PACKING		
9 <sup>th</sup>	33	PROBLEMS ENCOUNTERED IN TOWER	9 <sup>th</sup>	WETTED WALL COLUMN THEORY &

	34	CONTINUE WITH TOWER PACKING		CALCULATION WORK
	35	CONTINUE WITH TOWER PACKING		
	36	CHOICE OF SOLVENT		
10 <sup>th</sup>	37	RAOULT'S LAW	10 <sup>th</sup>	VIVA VOICE AND COPY CHECKED
	38	HENRY LAW'S		
	39	REVISION OF UNIT –I		
	40	REVISION OF UNIT-I AND COPY CHECKED		
11 <sup>th</sup>	41	REVISION OF UNIT-II	11 <sup>th</sup>	PACKED BED ABSORPTION TOWER CALCULATION & THEORY WORK
	42	REVISION OF UNIT-II & COPY CHECKED		
	43	DEFINATION OF HUMIDITY, SATURATED GAS		
	44	DEFINATION OF RELATIVE HUMIDITY, PERCENTAGE HUMIDITY		
12 <sup>th</sup>	45	HUMID HEAT, HUMID VOLUME, DEW POINT, TOTAL ENTHALPY	12 <sup>th</sup>	COPY CHECKED & VIVA VOICE
	46	PHASE EQUILIBRIA,		
	47	RELATION BETWEEN EQUILIBRIUM MOLE FRACTION AND SATURATION HUMIDITY		
	48	USE OF HUMIDITY CHART		
13	49	DRY BULB AND WET BULB TEMPERATURE	13	USE OF HUMIDITY CHART AND VIVA VOICE
	50	GAS-LIQUID CONTACT OPERATION NAME OF ADIABATIC AND NON-ADIABATIC		
	51	NATURAL DRAFT COOLING TOWER DIFFERENT COOLING TOWER ARRANGEMENTS		
	52	SPRAY CHAMBER, SPRAY PONDS HUMIDIFIER & DEHUMIDIFIER		
14	53	GENERAL DEFINATION ON MOISTURE CENTENT WET & DRY BASIS EQUILIBRIUM MOISTURE CONTENT	14	BATCH DRYING IN TRAY DRYING IN TRAY DRYER AND VIVA VOICE
	54	BOUND , UNBOUND FREE & CRITICAL MOISTURE CONTENT		
	55	RATE OF DRYING CURVE		
	56	TIME OF DRYING		
15	57	DRYING EQUIPMENTS: - TRAY DRYER. ROTARY DRYER	15	COOLING TOWER & VIVA VOICE ON THE EXPERIMENT
	58	SPRAY AND FLUIDIZED BED DRYER		
	59	COPY CHECKED UNIT 4 <sup>TH</sup> & 5 <sup>TH</sup>		
	60	ASSIGNMENTS CHECKED		

## LESSON PLAN

Name of Faculty : PARVESH KUMAR

Discipline : CHEMICAL ENGG

Semester : VI

Subject : EMPLOYBILITY SKILLS-II

Work Load : PRACTICAL -02 LECTURES-NIL

Week	PRACTICAL
PRACTICAL DAY	
1	MOCK INTERVIEW
2	PRACTICE OF MOCK INTERVIEW
3	PREPARING FOR MEETING
4	GROUP DISCUSSION
5	PRACTICE OF GROUP DISCUSSION
6	PRACTICE OF GROUP DISCUSSION
7	SEMINAR PRESENTATION
8	PRACTICE OF SEMINAR PRESENTATION
9	PRACTICE OF SEMINAR PRESENTATION
10	MAKING A PRESENTATION A) ELEMENTS OF GOOD PRESENTATION B) STRUCTURE AND TOOLS
11	C) PAPER READING D) POWER POINT PRESENTATION
12	
13	PRACTICE FOR MAKING A PRESENTATION
14	REVISION OF SYLLABUS & MOCK INTERVIEW
15	REVISION OF SYLLABUS - MOCK INTERVIEW

## LESSON PLAN

Name of Faculty : JASBIR SINGH

Discipline : CHEMICAL ENGG

Semester : 6TH

Subject : EDM (ENT DEV AND MAN)

Work Load :

Week	Lecture day	Theory (Including Assignments and Tests)
1	1	SECTION -A ENTERPRENERSHIP INTRODUCTION ABOUT THE SUBJECT RATIONAL DETAILED CONTEST OF THE SUBJECT
	2	AND BASIS DISCUSSION ON SYLLABUS TO BE STUDIED
	3	CONCEPT / MEANING AND ITS NEED
2	4	QUALITIES & FUNCTIONS OF ENTERPRENEURE. & BARRIERS IN ENTERPRENEURE
	5	SOLE PROPRIETORSHIP & PARTENERSHIP
	6	SUPPORT AGENCIES FOR ENTERPRENEURE AT NATIONAL LEVEL DISSTT LEVEL NSIC
3	7	NRDC,DC:MSME; SIDBI
	8	NABARD, COMMERCIAL BASIC, SFC'S TCO, KVIB
	9	DIC TECHNOLOGY BUSINESS INCUBATOR (TBF)& STEP OF TEST FOR UNIT TEST
4	10	2ND UNIT- MARKET SURVEY
	11	SCANNING OF BUSINESS ENVIRONMENT, SALIENT FEATURE OF NATIONAL & STATE INDUSTRIAL POLICIES
	12	TYPES & CONDUCT OF MANUFACTURING SURVEY ASSESSMENT OF DEMAND & SUPPLY IN CONSIDERATION IN PRODUCT SELECTION
5	13	TEST- 1ST & 2ND UNIT WITH CHECKING CLASS WORK
	14	CLASSWORK
	15	UNIT-3- PROJECT REPORT (PPR) PRELIMINARY PROJECT REPORT) DETAILED PROJECT REPORT INCLUDING TECHNICAL ECONOMIC & MAJOR FEASIBILITY
6	16	COMMON ERRORS IN PP EXERCISE ON PREPARATION OF PR
	17	SECTION -B- MANAGEMENT DEFINATIONS & IMPORTANCE OF MANAGEMENT, FUNCTIONING OF MANAGEMENT
	18	IMPORTANCE & PROCESS OF PLANNING ORGANISING, STAFFING, DIRECTING CONTROLLING
7	19	PRINCIPLE OF MANAGEMENT
	20	CONCEPT & STRUCTURE OF AN ORGANISATION . TYPES OF INDUSTRIAL ORGANISATION
	21	LINE ORGANISATION LINE & STAFF ORGANISATION, FUNCTIONAL ORGANISATION
8	22	UNIT-5, LEADERSHIP & MOTIVATION A) LEADERSHIP-DEFINITIONS & NEED
	23	QUALITIES & FUNCTIONS OF A LEADER, MANAGEMENT V/S LEADER
	24	TYPES OF LEADERSHIP B) MOTIVATION: DEFINITION CHARACTERISTICS, FACTOR AFFECTING & THEORIES OF MOTIVATION
		TEST-3RD, 4TH UNIT CLASS & GIVING ASSIGNMENT-I

	25	UNIT-6TH MANAGEMENT SCOP IN DIFFERENT AREAS
		A) HUMAN RESOURCE MANAGEMENT INTRODUCTION & OBJECTIVE MAN POWER PLANNING & SOLUTION INTRODUCTION TO PERFORMANCE APPRASIAL METHOD
9	26	B) MATERIAL AND STORE MANAGEMENT
	27	INTRODUCTION FUNCTIONS, OBJECTIVE ABC ANALYSIS OF EOQ
		MARKETING OF SALES INTRODUCTION & IMPORTANCE, FUNCTION PHYSICAL DISTRIBUTION
	28	
	29	INTRODUCTION TO PROMOTION MIX SALES PROMOTION
10	30	GIVING ASSIGNMENT -2 AND CLASS WORK CHECKING
		D) FINANICAL MANAGEMENT: INTRODUCTION IMPORTANCE AND FUNCTION
	31	
	32	ELEMENTRY KNOWLEDGE OF INCOMETAX, SALES TAX, EXCISE DUTY
11	33	CUSTOM DUTY AND VAT
	34	TEST-UNIT 5,8,6TH
		UNIT 7TH- MISCELLANEOUS TOPICS A) CUSTOMER REATION MANAGEMENT (CRM) DEFINITION & NEED TYPES OF CRM
	35	
12	36	B) TQM-TOTAL QUALITY MANAGEMENT
		STATISTICAL PROCESS CONTROL
	37	TOTAL EMPLOYESS INVOLVEMENT
		JIT-JUST IN TIME
	38	1) INTELLECTUAL PROPERTY RIGHT
13	39	IPR-INTRODUCTION ,DEFINITION & ITS IMPORTANCE
	40	INFRINGMENT RELATED TO PATENTS, COPY RIGHT TRADE MARK ETC
	41	ASSIGNMENT GIVING -3
		TEST 3RD-6TH & 7TH
14	42	CLASS WORK CHECKING
		REVISION SOME IMPORTANT TOPIC & ASSIGNMENT, CLASS WORK CHECKING
	43	
	44	REVISION OF SYLLABUS
15	45	REVISION OF SYLLABUS



## LESSON PLAN

Name of Faculty : KULDEEP GULIA

Discipline : CHEMICAL ENGG

Semester : 6TH

Subject : PROCESS PLANT UTILITIES (PPU)

Work Load :

Week	Lecture day	Theory
		(Including Assignments and Tests)
1	1	UNIT-1 RATIONALE & DETAILED CONTENT OF THE SUBJECT
	2	BASIC DISCUSSION ON THE SYLLABUS TO BE STUDIED
	3	SOURCES OF WATER AND IMPURITIES IN WATER
	4	CONCEPT OF HARDNESS IN WATER ITS CAUSE AND TYPES OF HARDNESS
2	5	UNIT OF HARDNESS AND THEIR INTERRELATION
	6	ESTIMATION OF HARDNESS BY EDTA METHOD
	7	CONDITIONS FOR BOILER FEED WATER AND WATER BOILER PROBLEM
3	8	SCALE AND SLUDGE, CONCEPT OF PRIMING AND FOAMING
	9	CARRYOVER, BOILER CORROSION CAUSTIC EMBRITLIMENT
	10	WATER SOFTENING PROCESS, INTERNAL & EXTERNAL TREATMENT
	11	COLLOIDAL CONDITIONING, CARBONATE CONDITIONING OF WATER
4	12	PHOSPHATE AND CALGON CONDITIONING OF WATER
	13	EXTERNAL TREATMENT OF WATER-ZEOLITE, LIME SODA PROCESS
	14	ION-EXCHANGE PROCESS OF MIXED BED DEIONIZER PROCESS
5	15	CONCEPT OF SOFT, HARD AND DEIONIZED WATER AND DISTILLED WATER RESIN
	16	REGENERATION OF WATER-NON EXCHANGE & MIXED BED DEIONIZER
6	17	REVISION OF UNIT-1 & ASSIGNMENT NO-1
	18	UNIT-2: BRIEF INTRODUCTION OF STEAM
	19	FORMATION OF STEAM AT CONSTT. PRESURE FROM WATER
7	20	TEMP V/S TOTAL HEAT GRAPH DURING STEAM FROMATION
	21	TEST, EVOLUTION-TILL DATE SUBJECT COVERED
	22	TERMS USED IN STEAM-WET, DRY-SATURATED, SUPERHEATED STEAM
	23	DRYNESS FRACTION HEAT- SENSIBLE HEAT, LATEST HEAT OF VAPORISATION
8	24	ENTHALPY OR TOTAL HEAT OF STEAM & SPECIFIC VOLUME OF STEAM
	25	STEAM TABLES & SIMPLE NUMERICAL PROBLEM ON THEM
	26	ENTHALPY -ENTROPHY DIAGRAM OR MOILLER CHART
9	27	SIMPLE NUMERICAL PROBLEMS CONCERNED TO MOILLER CHART
	28	SPECIFICATION OF STEAM PIPES, LAYOUT OF PIPING
10	29	STEAM TRAP & STEAM EJECTORS
	30	BOILERS & TYPES OF BOILERS BABLOX & WILCOX SOILORS
	31	NESTLER COCHRAN BOILERS ALONG WITH ACCESSORIES
11	32	REMAINING OF TOPIC COVERED IN PREVIOUS LECTURE
	33	REVISION OF UNIT NO-2
	34	CHECKING OF COPIES TO UNIT-2
	35	UNIT-3: DEFINITION & CLASSFICATION OF REFRACTORIES
12	36	TYPES OF REFRACTORIES - ACID, BASIC FOR NEUTRAL
	37	SPECIAL & CERMETS REFRACTORIES
	38	TEST & EVALUATION THEREIN
13	39	PROPERTIES OF REFRACTORIES
	40	CHARACTERISTICS OF REFRACTORIES
14	41	GENERAL METHOD OF MANUFACTURING OF REFRACTORIES
	42	IMPORTANT REFRACTORIES VITH FIRE CLAY SILICA

11	43	HIGH ALUMINA, BOUXITE, CARBON/GRAPHITE
	44	CONCEPT OF FAILURE OF REFRACTORIES
12	45	REVISION & ASSIGNMENT-2
	46	UNIT-4: CONCEPT OF INSULATION & NATURALS
	47	CHARACTERISTICS OF INSULATION
	48	PROPERTIES OF INSULATIONS
13	49	TEST & EVALUATION THEREIN
	50	CLASSIFICATION OF INSULATIONS COLD & LOW TEMP INSULATION
	51	LOW TEMP INSULATION, HIGH VACUUM, RIGID FOAM & MULTILAYER INSULATION
	52	REVISION & CHECKING OF COPIES UNIT-5
14	53	INTRODUCTION TO REFRIGERANTS & COOLING WATER, CLASSIFICATION
	54	PROPERTIES OF REFRIGERANT & IMPORTANT REFRIGERENTS
	55	SELECTION OF REFRIGERANTS
	56	CONSTRUCTION & WORKING OF COOLING TOWER (NATURAL & FORCED DRAFT)
15	57	TEST & CHECKING OF COPIES
	58	REVISION OF SYLLABUS
	59	REVISION OF SYLLABUS
	60	REVISION OF SYLLABUS





## LESSON PLAN

Name of Faculty : Latish (

Discipline : Chemical Engg

Semester : VI

Subject : Paint Technolog

Work Load : 15 weeks (fr

Week	Lecture day
1	1
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## Chhabra

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om January, 2018 to April, 2018)

Theory
(Including Assignments and Tests)
Introduction to paint, Need of Surface Coating
Primer, Undercoat and final coat
Terms used in paint industry Enamel, Glaze, Lake, Ink
Putty, sealer, shellac stain, Thinner tinting strength
Toner vehicle ,Copy checked
Revision of Unit I
Defination and significance of pigments
properties of pigments hiding power tinting strength
Refractive index, light fastness Bleeding
Characteristics practice size and shape
Organic pigment - red, yellow, green, blue, black
Inorganic pigment
White colored, Mettalic extenders
Binders - Types alkyls, polysters
Acrylics, thermoset accylics vinyl
Defination and significance of solvents
Types of solvents - hydro carbon & oxygenated solvents
Additives - types thickening agents, surface active agents
Surface modifiers, levelling agent and coalescing space agent
catalytically active additives
special effects additives (skinning agents light stabilizer, corrosion inhibitors
Biocides, flame retardants
Copy checked Unit - II
Flow sheet and process description
Pigments dispersion equipments roller, pug mill
Attritions and extenders
Classification K types of architectural coating
Solvent based and water based paint, Interior flat paint
Exterior flat paints, industrial coatings, powder coatings
special purpose coatings varnishing, & lacquers

Pigment to Binder ratio, solid content
PVC cast. Brush coating
Roller coating, deep coating
electrode deposits, powder coating
Unit 3rd copy checked
Unit 4th copy checked
Causes for paint failure & defects in paints
Aeration Aging, Bleeding Blooming
Blistering, Blushing , Chalking
Checking Coagulation Coverage Cracking Embrittlement
Erosion, fading, foaming hazing
Lifting, Opacity
Peeling, pinholes
Sagging, Tackiness
Settling, Skinning
Thickening
Copy checked Unit - V
Assignment I & II
Quantitative aspects of electrolysis, Faraday's first law
Faraday's 2nd Law of electrolysis difference between electrochemical & electrolysis
Characteristics of electrodeposit
Methods of cleaning articles before electrodeposition
Electroplating method
Electroplating effects
Uses of electroplating
Difference between electroplating on metal & plastics
Copy checked Unit VI
Revision of Chapter VI
Assignment checked
Revision of Chapter II



## LESSON PLAN

**Name of Faculty : SAMARPAL SINGH**

**Discipline : CHEMICAL ENGG**

**Semester : 6TH**

**Subject : POLLUTION CONTROL IN CHEMICAL PROCESS INDUSTRY**

**Work Load : THEORY 4, PRACTICAL 1**

Week	Lecture day	Theory (Including Assignments and Tests)	Practical Day
1	1	INTRODUCTION OF POLLUTION CONTROL IN CHEMICAL PROCESS INDUSTRY	1st
	2	DEFINITION OF AIR POLLUTION DIFFERENT SCATE FOR MEASOXMENT AFAIR POLLUTION	
	3	SOURCES OF AIR POLLUTION (NATURAL AND MANMADE OR ANTHROPOGENIC)	
	4	CLASSOIFCTION ON OF AIR POLLUTION ACCORDING TO ORGIN.	
2	5	STATE OF MATTER (GASEOUS OF PARTICULATE MATTER)	2nd
	6	GASEOUS (CO, CO <sub>2</sub> , OXIDES OF NIROGEN AND OXIDE OF SOLPHUR	
	7	HYDROCARBON PARTICULATE (DUST, FUMES, SMOKE, MIST, FOGAND FLYASH)	
	8	EFFECT OF AIR POLLUTION ON, HUMAN HEALTH, ANIMALS, PLANTS, MATERIALS	
3	9	AIR SAMPLING (AMBIENT AND STUCK, GRAB SAMPLING)	3rd
	10	COLLECTION OF GASEOUS AIR POLLUTANTS (ABSORPTION IN LIQUID)	
	11	COLLECTION OF PARTICULATE POLLUTANTS (SEDIMENTATION)	
	12	HIGH VOLUME FITTRATION, IMPINGEMENT	
4	13	ELECTROSTATIC PRECIPITATION, THARMAL PRECIPITON	4th
	14	ANALYSIS OF AIR POLLUTIONS- SO <sub>2</sub> , CO, NITROGON OXIDES, HYDROCARBON	
	15	REVISION OF UNIT 1 & 2	
	16	COPLY CHECKING OF UNIT 1 & 2 AND ASSIGNMENT NO 1	
5	17	GASES CONTROL EQUIPMENT (ABSORPTION BY LIQUID)	5th
	18	ABSORPTION BY SOLID, COMBUSTION	
	19	PARTICULATE CONTROL EQUIPMENTS ( FABRIC FITTERS, ESP)	
	20	VENTURI SCRUBBER, SPRUY TOWER, CENTRI FUIGAL SEPARTOR	
6	21	CONTROL METHODS SUBSTITUTION OF RAW MATERIALS.	6th
	22	PROCESS MODIFICATIONS, EQUIPMENT MODIFICATION.	
	23	MAINTENANCE OF EQUIPMENT	
	24	REVISION OF UNIT 3	
7	25	CLASS TEST OF UNIT 1, 2 & 3	7th
	26	COPY CHECKING OF UNIT 3	
	27	EXTRACTION OF SELPHUR FROM FUEL.	
	28	DESEL PHURIZATION OF FUEL OIL.	
8	29	SULPHUR REACTION DURING COMBUSTION.	8th
	30	DESEL PHURIZATION OF FUEL GASES.	
	31	REVISION OF UNIT 4	
	32	CLASS TEST OF UNIT NO4	

9	33	COPY CHECKING OF UNIT NO 4 & ASSIGNMENT NO -2	9th
	34	DEFINITION OF WATER POLLUTION	
	35	SOURCES OF WATER POLLUTION, HEALTH HAZARD OF WATER POLLUTION.	
	36	TYPE OF SAMPLING (GRAB AND COMPOSITE)	
10	37	METHOD OF ANALYSIS (BOD) (COD) & (TOC)	10th
	38	DIFFERENT TREATMENT METHODS FOR EFFLUENT	
	39	PRIMARY TREATMENT (PRETREATMENT FLOATATION AND SEDIMENTATION)	
	40	SECONDARY TREATMENT (ACTIVATED SLUDGE PROCESS AND TRICKLING FILTER)	
11	41	ADVANCED WASTE WATER TREATMENT.	11th
	42	REMOVAL OF SUSPENDED SOLID MEMBRANE SEPARATION,	
	43	FILTRATION, REMOVAL OF DISSOLVED SOLIDS.	
	44	ABSORPTION ON ACTIVATED CARBON, ION EXCHANGE.	
12	45	REVISION OF UNIT NO 4	12th
	46	CLASS TEST OF UNIT NO 4	
	47	COPY CHECKING OF UNIT NO 4	
	48	CLASSIFICATION OF SOLID WASTE	
12	49	HEALTH HAZARDS OF SOLID WASTE POLLUTION	13th
	50	DISPOSAL OF SOLID WASTE METHODS	
	51	COLLECTION, DISPOSAL	
	52	WASTE UTILIZATION	
12	53	INCINERATION, COMPOSITING	14th
	54	DUMPING SANITARY LAND FILLING ETC.	
	55	REVISION OF UNIT NO 5	
	56	COPY CHECKING OF UNIT NO 5	
12	57	TEST OF UNIT NO 5	15th
	58	REVISION OF UNIT NO 1	
	59	REVISION OF UNIT NO 2	
	60	REVISION OF UNIT NO 3	



Practicals
Topic
INTRODUCTION ABOUT THE PCCPI LAB
THEORY WORK RELATED TO VARIOUS EXPERIMENTS PERFORMED IN PCCPI LAB
BASIC DISCUSSION ON THE VARIOS EQUIPMENTS USED DURING THE PRACTICAL WORK IN PCC PI LAB
ESTIMATION OF TS, TDS, S, VSS (EXPT- 1)
ESTIMATION OF DISSOLVED OXYGEN (EXPT - 2)
ESTIMATION OF BOD (EXPT -3)
ESTIMATION OF COD BY TITRATION METHOD (EXPT NO - 4)
ESTIMATION OF PH VALUE (EXPT NO-5) OF FILE CHECKING UP TO (EXPT NO-5)

ESTIMATION OF CARBONATE, BICARBONATE HYDROXIDE AND ALKALINITY OF WASTE WATER SAMPLE (EXPT NO-6)
ESTIMATION OF ACIDITY OF WASTE WATER SAMPLE (EXPT NO -7)
TO DETERMINE THE TURBIDITY OF WASTE WATER SAMPLE (EXPT NO - 8)
TO DETERMINE THE HARDNESS OF WATER (EXPT NO - 9)
TO DETERMINE SPM IN AMBIENT AIR BY HIGH VOLUME SAMPLER (EXPT NO - 10)
DEMONSTRATION OF ISOKINETIC SAMPLING OF SPM IN STOCK (EXPT NO- 11)
FILE CHECKING 6 UP TO EXPT NO 11

## LESSON PLAN

Name of Faculty :Kuldeep Gulia

Discipline : Chemical Engg

Semester : 4th

Subject : Heat-Transfer- II (H.T-2)

\*\*Work load: Lecturers-4 hrs, practicals-3 hrs

Week	Lecture day	Theory	Practical Day
		Unit-1 (Including Assignments and Tests)	
1	1	Rationale, detailed content of the subject	1
	2	Basic discussion on syllabus to be studied	
	3	Revision of the basics of heat-transfer	
	4	Concept of condensation of types of condensation	
2	5	Dropwise & filwise condinstion.	2
	6	Concept of boiling & boling curve	
	7	Heat-transfer medium-diptenyl &down thern	
3	8	Concept of evaporation & difference with other processes	3
	9	Boiling point elevation (concept)	
	10	Giving assignment (I) along with revision of unit-I	
3	unit-2 11	Meaning of LMTD ,LMTD for co-current & counter-current flow	3
	12	Types of flows, LMTD for cross -current flow	
4	13	Derivation of LMTD for co-current flow	4
	14	Derivation of LMTD for counter-current flow	
	15	Construction, theory , merits & demerits-double pipe H.E	
	16	Construction, theory , merits & demerits-shell & tube H.E	
5	17	Plate type heat-exchanger-explanation,with diagram	5
	18	simple numerical problem-1-1&1-2 shell & tube H.E	
	19	Concpt of fouling & fouling factor	
	20	Roughness of surfaus & reir effect	
6	21	Concept of individual & overall heat transfer coefficient	6
	22	Extended surface equipment & their efficiency	
	23	Checking of copies upto unit-2	
	24	Test of unit -2 & unit -2(along with evaluation )	
7	Unit-3 25	Concept of condensers along with examples.	7
	26	types of condensers,concept of coolant in conduners.	
	27	Construction detail & working of sheel & tube heat condenser	
	28	Construction, working, merits & demerits of contact condenser	
8	29	Revision of the unit-3,giving assignmennnnnt no-2	8
	30	Test of unit -3	
	Unit-4 31	Concept of boilers, examples of boilers	
	32	Types of boilers, prerequisite of good boiler	
	33	Difference between water tube & fire tube poiler.	
	34	Simple vertical tube boiler-construction,working,merit &demerits	

9	35	Cochron boiler-construction,working, advantage & disadvantage	9
	36	Babcox & wilcox-boiler-construction working,merits & demerits	
10	37	Lanka shire boiler-theory,working,advantage & disadvantage	10
	38	Nestler oil gired-boiler-diagram,theory & working details	
	39	Precaution need before starting of a boiler	
	40	Revision of unit -4 & checking of copies	
11	41	Test of unit-4	11
	Unit-5 42	Concept of evaporation along with examples	
	43	Difference between evaporation & other processes	
	44	Difference between capacity & economy of evaporators	
12	45	Types of evaporators-open pan evaporator	12
	46	Long tube vertical evaporator - theory,working,merits & demerits	
	47	Falling film evaporators - working advantage & disadvantages	
	48	Forced circulation evaporators-theory & working, use of above.	
13	49	Feeding arrangement in evaporators & multiple effect evaporators	13
	50	Revision of unit-5 along with test	
	Unit-6 51	Concept of furnaces & its types.	
	52	classification of furnaces passed or full used	
14	53	Cupola furnaces- construction & working details	14
	54	Reverperatory & muffle furnaces- construction & working	
	55	Revision of unit -6	
	56	Checking of copies	
15	57	Test	15
	58	Revision of syllabus	
	53	Revision of syllabus	
	60	Revision of syllabus	

Practicals
Topic
Introduction about the heat-transfer lab-II
Theory work related to various equipments performed in heat-transfer lab-II in brief
Basic discussion on the various equipments used during the practical work in heat - transfer-II lab
To determine the heat-transfer coefficient with the help of double pipe heat-exchanger using parallel flow {expt-1}
To determine the heat-transfer coefficient with the help of double pipe heat-exchanger using counter, current flow {Expt-2}
To determine the heat transfer coefficient with in shell & tube heat-exchanger using counter flow {Expt-3}
File checking up to III rd practical [evaluation & feedback] therein
To determine the heat transfer coefficient in shell & tube heat exchanger using parallel flow {expt-4}
To determine the rate of evaporation in a jacketed

To determine the rate of evaporation in a jacketed bottle (open pan evaporator) {Expt-5}
Experiment or single effect evaporator & determination of steam economy {Expt-6}
File checking up to sixth practical (evaluation & feedback therein )
Experiment or cooling tower & to determine rate of cooling {Expt-7}
To determine heat-transfer rate in finned tube heat exchanger {Exot-8}
To find the effect of concentration on boiling point of a solution (Dühring rule ) {Expt-9}
checking of file ( practical) up to 9th expt along with evaluation & feedback



## LESSON PLAN

Name of Faculty : VISITING FACULTY-1

Discipline : Chemical Engg

Semester : 6th

Subject : Process Instrumentation & Control.

Lesson Plan Duration :- 15 Week (From January, 2018 to April, 2018)

Week	Lecture day	Theory (Including Assignments and Tests)	Practical Day
1	1	Measurement & its aims, primary & secondary element	1
	2	Manipulating & functioning Elements	
	3	Static Charoctaistics, Calibration, Accuracy	
	4	Precision, repeatability, drift , sensitivity	
2	5	Resolution , dead zone , static error	2
	6	Various tempeloture scales expansion thermometers	
	7	Bimetallic & liquid in glass thermometers	
	8	Liquid in metal & gas thermometers	
3	9	Filled system thermometers , gas & liquid filled thermometer	3
	10	Mercury filled & vapour pressure thermometer	
	11	Electrical temp. Instruments, resistance thermometer	
	12	Thermocouple & thermostats	
4	13	Radiation & optical pyrometers	4
	14	Revision & copy checking of unit 1 & 2	
	15	Class test of unit 1 & 2, assignment 1	
	16	Pressure 7 its units , methods of pressure measurement	
5	17	Manometers , U-tube & well type manometer	5
	18	Barometer , Inclined manometer & micro manometer	
	19	Elastic pressure transducers	
	20	Elastic pressure transducers continued	
6	21	Force balance pressure gauges	6
	22	Electrical pressure transducers	
	23	Measurement of vacuum , capsule , Mc Peod & thermal conductivity gauges	
	24	Pirani , thermocouple & Ionisation gauges	
7	25	Methods of liquid level measurement direct methods	7
	26	Sight glass float type level indicator .	
	27	Displacer level detector indirect methods	
	28	Pressure gauge , air trap , diaphragm box method	
8	29	Solid level measurement ultrasonic level detectors	8
	30	Radioactive method ,air purge , capacitance level indicator	
	31	pH meter & viscosity measurement	
	32	Oxygen & infrared analyzer	
9	33	Orsat analyzer	9
	34	Circular chart recorders	
	35	Strip chart recorders	
	36	Revision of unit 3,4 & 5	
10	37	Copy checking of unit 3,4, & 5	10
	38	Class test of unit 3,4 &5, assignment 2	
	39	Definition & Examples of process control system	
	40	Block diagram representation of process control system	
	41	Components of a process control system	



11	42	Transfer function of a control system	11
	43	Open - loop control system	
	44	Closed -loop control system	
12	45	Feed forward control system	12
	46	Feed Back control system	
	47	Cascade control system	
	48	Step, ramp, sinusoidal & pulse system input	
13	49	Control valve, valve characteristics	13
	50	Valve types	
	51	Valve actuator & valve positioning	
	52	Revision of unit 6 & 7, copy checking	
14	53	Class test of unit 6 & 7	14
	54	Revision of unit 1	
	55	Revision of unit 2	
	56	Revision of unit 3	
15	57	Revision of unit 4	15
	58	Revision of unit 5	
	59	Revision of unit 6	
	60	Revision of unit 7	

<b>Practicals</b>
<b>Topic</b>
Introduction about the process Instrumentation & Control Lab
Theory work related to various experiments performed in the process instrumentation & control lab
Basic discussion of the various equipments used in the process instrumentation & control Lab.
To calibrate pressure gauge with the helpm of dead weight pressure gauge.
To calibrate bimetallic thermometer, resistance thermometer, thermocouple, enagmeter & watt meter
To measure pressure with the help of different types of manometers.
Revision & repeat above experiments and file checking .
To determine the characteristics of a flapper nozzle system
To study on-off controller for temperature control.
To study constructional details of strip chart recorder.
Revision & repeat above experiments and file checking.

TO study measurement of relative humidity & to compare the value with psychometric chart.

To study constructional details of circular chart recorder.

To plot the curve between flow rate and percent opening of control valve with the help of distributed control system.

Revision & repeat above experiments & file checking.

## LESSON PLAN

Name of Faculty :VISITING FACULTY-2

Discipline : Chemical Engg

Semester : 4th

Subject : Chemical Engineering Thermodynamics

Work Load : lecturers-04,Practicals-NIL

Week	Lecture day	Theory (Including Assignments and Tests)
1	1	Introduction to chemical Engg. Thermodynamics
	2	Definitions,differcnce between thermodynamics & Heat transter
	3	System, process, surroundings & universe
	4	Boundary, Homogenous and Heterogeneous system
2	5	Open system
	6	Closed system
	7	Isolated system
	8	Extensive & Intensive properties
3	9	State function & path functions
	10	Internal Energy & Enthalpy
	11	Entropy & free Eeneegy
	12	Equilibbrium & thermodynamic Equilibrium
4	13	Equation of state , Ideall Gas equation
	14	Van der walls Equation, Amagats Law
	15	Daltions Law, henrys Law
	16	Roults Law , zeroth Law of thermodynamics
5	17	Patial pressure , vapour pressure, critical temp. & pressure
	18	Revision of unit I & Assignment 1
	19	copy checking of unit I
	20	Test of unit I
6	21	First Law of thermodynamics (F.L.T)
	22	F.L.T. FOR Cyclic & closed systems.
	23	F.L.T. For open system
	24	Isometric process
7	25	Isobaric process
	26	Isothermal process
	27	Adiabatic procass
	28	Poly tropic process
8	29	Revision of unit 2
	30	Copy checking of unit 2
	31	Class test of unit 2
	32	Limitations of F.L.T.
9	33	Kelvin plank & classius statement of second law of thermodynamics
	34	Reversible & Irreversible processes
	35	Entropy change for reversible 4 Irreversible processes
	36	Heat engine & its Efficiency
10	37	Calculation of Entropy change for phase change
	38	Calculation of Entropy change for process involing Ideal gas
	39	Entropy change for Adiabatic mixing process
	40	Entropy change for isothermal mixing of ideal gases

11	41	Entropy change for process involving chemical Reaction
	42	Carnot cycle
	43	Thermodynamic temperature scale
	44	Revision of unit 3 and Assignment 2
12	45	Copy checking of unit 3
	46	Class test of unit 3
	47	Third law of Thermodynamics
	48	Applications of third law of thermodynamics
13	49	Heat pump & Refrigeration
	50	Co-efficient of performance (C.O.P)
	51	Properties of Refrigerant, commonly used refrigerants
	52	Vapour compression Refrigeration cycle
14	53	Absorption Refrigeration cycle
	54	Revision of unit 4
	55	Copy checking of unit 4
	56	Class test of unit 4
15	57	Revision of unit 1
	58	Revision of unit 2
	59	Revision of unit 3
	60	revision of unit 4



## LESSON PLAN

Name of Faculty :Samarpal Singh

Discipline : Chemical Engg

Semester : 4th

Subject : POLYMER TECHNOLOGY

Work Load : lecturers-04,Practicals-NIL

Week	Lecture day	Theory (Including Assignments and Tests)
1	1	Introduction of Polymer Technology.
	2	Concept of Molecular weight, weight coverage ,molecular weight
	3	number average molecular weight viscosity coverage molecular weight
	4	Effect of molecular weight on properties of Polymer
2	5	Definition of some useful terms as Copolymer,monomer
	6	free radical, degree of polymerization.
	7	elestomers or rubber,fibers and plastic
	8	Revision of Unit-1 of Assignment 1
3	9	Copy checking of Unit --1
	10	Test of Unit--1
	11	Step growth polymerization or condensation polymerization
	12	Chain growth polymerization or Addition polymerization
4	13	Brief Introduction to copolymerization
	14	Brief Introduction to copolymerization
	15	Revision Of Unit--2
	16	Class Test of Unit--2
5	17	Copy checking of Unit--2
	18	Polymerization techniques ,their relative advantage and disadvantage
	19	Bulk polymerization
	20	Suspension Polymerization
6	21	Solution Polymerization
	22	Emulsion Polymerization
	23	Revision Of Unit--3
	24	copy checking of Unit--3
7	25	Class Test of Unit--3
	26	Introduction to some Industrial Polymer
	27	Polyster
	28	Polythylene
8	29	Polystyrene
	30	Polypropylene
	31	Polyvinylchloride
	32	Nylon 66, Nylon6
9	33	Backlite
	34	Teflon
	35	Ureaformaldehyde Resin
	36	Revision of Unit-4 and Assignment no.2
10	37	Copy checking of Unit-4
	38	Class Test of Unit-4
	39	Additives for plastics
	40	Fillers
	41	Plasticizers

11	42	Stablizers
	43	Coloring Matters
	44	Cross Linking Agents
12	45	Revision of Unit-5
	46	Copy checking of Unit-5
	47	Class Test of Unit-5
	48	Introduction to Extrusion moulding
13	49	Injection Molding
	50	Blow Molding
	51	Calendering
	52	Revision of Unit-6
14	53	Class Test of Unit--6
	54	Copy checking of Unit-6
	55	Revision of Unit--1
	56	Revision of Unit--2
15	57	Revision of Unit--3
	58	Revision of Unit--4
	59	Revision of Unit--5
	60	Revision of Unit--6





## LESSON PLAN

Name of Faculty :Samarpal Singh

Discipline : Chemical Engg

Semester : 4th

Subject : ENERGY TECHNOLOGY

Work Load : lecturers-04,Practicals-NIL

Week	Lecture day	Theory
		(Including Assignments and Tests)
1	1	Types of conventional fuels
	2	merits & demerits of conventional fuels
	3	Types of non conventional fuels & their sources
	4	Importance of non-conventional fuels for sustainable growth & enviornmental growth
2	5	origin of coal & their types
	6	Proximate analysis of coal
	7	Ultimat analysis of coal
	8	Coal preparation and washing Method
3	9	Safe storage of coal
	10	Low and high temprature carbonization
	11	Products of carbonization
	12	By -products of coke ovens
4	13	Synthetic fuels from coal-Bergius process
	14	Synthetic fuels from coal Fischer Tropsch process
	15	Determination of net calorific value by Bomb calorimeter
	16	Determination of net calorific value by Bomb calorimeter
5	17	Ch. -3. Liquid Fuels: Origin of petroleum
	18	Refining of crude oil
	19	Distilallation of crude oil
	20	Distilallation of crude oil
6	21	Uses of petroleum
	22	ch.--4. Gaseous Fuels: Natural Gas
	23	LPG
	24	Water Gas
7	25	Producer Gas
	26	Ch.--5. Furnance: Classification of Furnaces
	27	Blast Furnace
	28	Rotary Kiln
8	29	Protective atmosphere furnace
	30	Special atmosphere furnace
	31	Draugh Furnace
	32	Glass melting furnace
9	33	CH.--6. Solar Energy
	34	Solar water heater
	35	Solar cooker
	36	Solar Concentratoors

10	37	Solar thermal power generation
	38	Solar cells
	39	Photosynthesis
	40	Biomass conversion systems
11	41	Wind Energy
	42	Horizontal axes wind turbine.
	43	Vertical axes wind turbine.
	44	Geothermal energy
12	45	Tidal energy
	46	Ch.--7. Hydro-electric powerplant
	47	Ch.--7. Hydro-electric powerplant
	48	Advantages and disadvantages of Hydro-electric powerplant
13	49	Thermal Powerplant
	50	Thermal Powerplant
	51	Advantages and disadvantages of Thermal powerplant
	52	Nuclear powerplant
14	53	Nuclear powerplant
	54	Advantages and disadvantages of Nuclear powerplant
	55	Revision of Syllabus
	56	Revision of Syllabus
15	57	Revision of Syllabus
	58	Revision of Syllabus
	59	Revision of Syllabus
	60	Revision of Syllabus



## LESSON PLAN

Name of Faculty : Jasbir Singh

Discipline : Chemical Engg

Semester : 4th

Subject : Chemical Technology

Work Load : lecturers-04,Practicals- 03

Week	Lecture day	Theory (Including Assignments and Tests)
1	1	Rational Detailed Content of the subject
	2	Basic discussion on syllabus to be studies
	3	Introduction of the basis of chemical technology
	4	Concept of flow sheets & symbols used in Chemical Industry
2	5	Types of flow sheet such as block diagram. Process flowsheet
	6	Piping & inst. Diagram utility line design
	7	Equipement Layout
	8	Discussion of Reactions,size reduction equipments
3	9	Filters,Dryers,different types of column,heat exchanger
	10	Pump & compressor,material handling,storage vessel
	11	Mixers, screen separation
	12	Unit-2: Method of extracting vegetables oil by mechanical & solvent Process
4	13	Flow sheets Process discription
	14	Soap & detergents,Distinction between soap & detergent
	15	Different addativs & their role in soap & detergent
	16	Continuous hydrolysis and saponification processes
5	17	Flow sheet for continuous process for fatty acid
	18	Soap & glycerine manufacture of detergent
	19	<b>Unit- 3</b> Introduction about sugar industries
	20	Process discription for manufaturing of sugar
6	21	Major Engg. Problems brief discription of sulfitation
	22	Process of carbonation Process
	23	Manufacturing Process of starch from maize & Dextrin by hydrolysis method with flow sheet
	24	Test --1,2,3rd unit
7	25	Introduction of fermentation process, manufacturing of
	26	ethanal by fermentation of molasses with flow sheet
	27	Major Engg. Problems
	28	Manufacturing of Beer & wine (Process only)
8	29	Unit-4 (Giving Assignmnt)Introduction about pulp & Paper industry
	30	Definition of Pulp,raw material used for making pulp
	31	Brief discription of mechanical pulping, chemical pulping & semi-chemical pulping
	32	Semi-chemical Pulping comparison of sulfate pulping
9	33	Sulfite pulping process. Process description of pulping &
	34	chemical recovery by sulfate (Kraft process)with flow sheet
	35	Major Engg. Problem.
	36	Definition of Paper. Types of papers production.
10	37	General manufacturing steps for paper making
	38	using Fourdinier machine

10	39	Revision- for unit--4th. Checking of copy upto 4th Unit
	40	Assignment # 2 and physical properties of paper Test.--3,4th Unit
11	41	Giving Assignment-2. Unit-5 Fertilizer Industries
	42	NPK Fertilizer, Properties & uses.
	43	Manufacturing Process of Ammonia with flow sheet,
12	44	Major Engg. Problems. Properties & uses of urea
	45	Manufacturing process of urea with flow sheet.
13	46	Major Engg. Problems. Properties & uses
	47	Manufacturing Process of Ammonia Nitrate with flow sheet & Major
	48	Engg. Problems. Properties, uses, manufacturing of
14	49	Single super & triple super Phosphate with Flow sheet
	50	Major Engg. Problems. Property, uses and manufacturing process
	51	of Ammonia Phosphate with flow sheet. Giving Assignment #2
	52	class work checking & Revision of Unit-5th.
15	53	Unit--6 Cement Industries. Name and different types of Cement
	54	Portland Cement Composition and raw materials; Dry Process
	55	Major Engg. Problems
15	56	Unit--7th Sulphur Industry. Properties, uses, grades of
	57	sulphuric Acid, Methods of Production, raw materials,
	58	Contact Process with flow sheet and major engg. Problems.
	59	Giving Assignment #3, Tes-4,5,6 checked # 2nd Assign. and
	60	7th Unit- Revision, class work, Assignment checking.

Practical Day	Practicals Topic
1	Introduction about the chemical technology Lab.
2	Theory work related to different example which performed in chemical tech. Lab.
3	Some important discussion on the different chemicals & equipments used during the Practical work in C.T.Lab.
4	1st Exp. To determine or to find out the acid value of given oil
5	2nd Exp. To find out the saponification value of given oil.
6	File checking upto 2nd practical & Taking viva
7	Theory work writing for exp. # 3, & again performed exp. 1st & 2nd no. those student which is continuous absent for last 2 Labs.
8	Exp. --3 To find out the preparation of different soap cake
9	Exp. --4 To find out the refractive index of sugar solution by refractometer.
10	File checking upto 4th practical , Evaluation & feed back or viva

10	
11	Exp. --5th To essential the amount of Ash & moisture in the given sample of coal.
12	Exp.--6th To determine the normality and strength of the given solutions of dilute HCL acid by titrating against 0.1 N Na <sub>2</sub> Co <sub>3</sub> solution
13	Exp.--7th To determine the Nitrogen Content of given Fertilizer.
14	File checking upto the 7th Practical.
15	Viva.





## LESSON PLAN

Name of Faculty : Samarpal Singh

Discipline : Chemical Engg.

Semester : 2nd

Subject : ED-II

Work Load : Practical-6

Week	Practical Day	Practicals
		Topic
1	1	Principle and utility of detail and assembly drawings
	2	Wooden joints i.e. corner mortice and tenon joint, Tee halving joint, Mitre faced corner joint, Tee bridge joint, Crossed wooden joint, Cogged joint, Dovetail joint, Through Mortice and Tenon joint, furniture drawing - freehand and with the help of drawing instruments.
2	3	Screw threads and threaded fasteners (8 sheets) Types of threads-External and Internal threads,
	4	Right and Left hand threads (Actual and Conventional representation),
3	5	single and multiple start threads.
	6	Different Forms of screw threads-V threads B.S.W threads
4	7	B.A thread (American National ) Metric thread
	8	Square threads (square Acme,) Buttress and Knuckle thread
5	9	Different views of hexagonal and square nuts and hexagonal headed bolt
	10	Assembly of Hexagonal headed bolt and Hexagonal nut with washer.
6	11	Assembly of square headed bolt with hexagonal and with washer.
	12	Different types of locking devices-Lock nut, castle nut, split pin nut, locking plate, slotted nut and spring washe
7	13	Foundations bolts-Rag bolt, Lewis bolt, curved bolt and eye bolt.
	14	Drawing of various types of machine screw, set screw, studs and washers
8	15	Various types of keys and cotters and their practical application and preparation of drawing of various keys and cotters showing keys and cotters in position
	16	Various types of joints (3 sheets) Spigot and socket joint
9	17	Gib and cotter joint
	18	Knuckle joint
10	19	Types of general purpose-rivets heads (4 Sheets)
	20	Caulking and fullering of riveted joints
11	21	Types of riveted joints (i) Lap joint-Single riveted, double riveted (chain and zig-zag type) (ii) Single riveted, Single cover plate butt joint (chain type)
	22	(iii) Single riveted, double cover plate butt joint (chain type) (iv) Double riveted, double cover plate butt joint(chain and zig-zag type)
12	23	Couplings (2 sheets) Flange coupling (Protected and non-protected),
	24	Couplings (2 sheets) Flange coupling (Protected and non-protected),
13	25	muff coupling and half-lap muff coupling
	26	muff coupling and half-lap muff coupling
14	27	Civil engineering sanitary fitting symbols
	28	Electrical fitting symbols for domestic interior installations
15	29	Concept of AutoCAD, Tool bars in AutoCAD, coordinate system, snap, grid, and ortho mode

Drawing commands – point, line, arc, circle, ellipse Editing commands – scale, erase, copy, stretch, lengthen and explode



## LESSON PLAN

Name of Faculty : VISITING FACULTY-2

Discipline : Chemical Engg

Semester : 2ND

Subject : APPLIED MECHANICS

Lesson Plan Duration :- 15 Week (From January, 2018 to April, 2018)

Week	Lecture day	Theory (Including Assignments and Tests)	Practical Day
1	1	Concept of engineering mechanics definition of mechanics, statics, dynamics, application of engineering mechanics in practical fields. Definition of Applied Mechanics.	1
	2	Definition, basic quantities and derived quantities of basic units and derived units	
	3	Different systems of units (FPS, CGS, MKS and SI) and their conversion from one to another for density, force, pressure, work, power, velocity, acceleration	
2	4	Concept of rigid body, scalar and vector quantities	2
	5	Definition of force, measurement of force in SI units, its representation, types of force: Point force/concentrated force & Uniformly distributed force, effects of force, characteristics of a force	
	6	Different force systems (coplanar and non-coplanar),	
3	7	principle of transmissibility of forces, law of super-position	3
	8	Composition and resolution of coplanar concurrent forces, resultant force, method of composition of forces	
	9	laws of forces, triangle law of forces, polygon law of forces - graphically, analytically	
4	10	resolution of forces, resolving a force into two rectangular components	4
	11	Free body diagram	
	12	Equilibrant force and its determination Lami's theorem (concept only) [Simple problems on above topics]	
5	13	Concept of moment	5
	14	Moment of a force and units of moment	
	15	Varignon's theorem (definition only) Principle of moment and its applications (Levers – simple and compound,	
6	16	steel yard, safety valve, reaction at support)	6
	17	Parallel forces (like and unlike parallel force), calculating their resultant, Concept of couple, its properties and effects	
	18	General conditions of equilibrium of bodies under coplanar forces	
7	19	Position of resultant force by moment	7
	20	[Simple problems on the above topics]	
	21	Definition and concept of friction, types of friction, force of friction	
8	22	Laws of static friction, coefficient of friction, angle of friction,	8
	23	angle of repose, cone of friction	
	24	Equilibrium of a body lying on a horizontal plane	
	25	equilibrium of a body lying on a rough inclined plane.	

9	26	Concept, definition of centroid of plain figures and centre of gravity of symmetrical solid bodies	9
	27	Determination of centroid of plain and composite lamina using moment method only	
10	28	centroid of bodies with removed portion	10
	29	Determination of center of gravity of solid bodies - cone, cylinder	
	30	hemisphere and sphere;	
11	31	composite bodies and bodies with portion removed	11
	32	[Simple problems on the above topics]	
	33	Definition of effort, velocity ratio, mechanical advantage and efficiency of a machine and their relationship, law of machines	
12	34	Simple and compound machine (Examples)	12
	35	Definition of ideal machine, reversible and self locking machine	
	36	Effort lost in friction, Load lost in friction, determination of maximum mechanical advantage and maximum efficiency	
13	37	System of pulleys (first, second, third system of pulleys), determination of velocity ratio, mechanical advantage and efficiency	13
	38	Working principle and application of wheel and axle, Weston's Differential Pulley Block, simple screw jack, worm and worm wheel, single and double winch crab. Expression for their velocity ratio and field of their application	
	39	[Simple problems on the above topics]	
14	40	Torsion in shafts/bars	14
	41	Modulus of rigidity	
	42	Torsional Equation	
15	43	(simple numerical problems)	15
	44	Power Transmission in shafts	
	45	(simple numerical problems)	

<b>Practicals</b>
<b>Topic</b>
INTRODUCTION ABOUT THE APPLIED MACHANICS LAB
THEORY WORK RELATED TO VARIOUS EXPERIMENTS TO BE PERFORMED IN APPLIED MECHANICS LAB IN BRIEF.
BASIC DISCUSSION ON VARIOUS APPARATUS USED DURING THE PRACTICAL WORK IN APPLIED MECHANICS LAB
Verification of the polygon law of forces using greaves and apparatus.
To verify the forces in different members of jib crane.
To verify the reaction at the supports of a simply supported beam.
To find the mechanical advantage, velocity ratio and efficiency in case of an inclined plane
To find the mechanical advantage, velocity ratio and efficiency of a screw jack.
To find the mechanical advantage, velocity ratio and efficiency

of worm and worm wheel

To find mechanical advantage, velocity ratio and efficiency of single purchase crab.

To find out center of gravity of regular lamina

To find out center of gravity of irregular lamina

To determine coefficient of friction between three pairs of given surface.

REVISION OF EXPERIMENTS

REVISION OF EXPERIMENTS