

PERFORMA OF LESSON PLAN

NAME OF THE FACULTY : Manju bala
DISCIPLINE : Plastics
SEMESTER : 2nd
SUBJECT : ESDM
LESSON PLAN DURATION : 15 WEEKS
WORK LOAD PER WEEK : Lectures = 02

WEEK	THEORY	
	LECTURE DAY	TOPIC (WITH ASSIGNMENT & TESTS)
1	1	Introduction
	2	Basics of ecology , Eco system- concept
2	3	Sustainable development
	4	Renewable and non-renewable Sources of energy and their advantages & disadvantages
3	5	Rain water harvesting
	6	Deforestation – its effects & control measures
4	7	Air Pollution: Source of air pollution
	8	Effect of air pollution on human health, economy, Air pollution control methods
1st sessional test		
5	9	Defination and Source of noise pollution, Unit of noise, Effect of noise pollution, Acceptable noise level, Different method of minimizing noise pollution
	10	Revision of Soil and Noise Pollution
6	11	Water Pollution: Impurities in water, Cause of water pollution
	12	Source of water pollution. Effect of water pollution on human health, Concept of DO, BOD, COD
7	13	Prevention of water pollution- Water treatment processes, Sewage treatment
	14	Water quality standard. Defination and Sources of soil pollution
8	15	Effects and Control of soil pollution, Types of Solid waste- House hold, Industrial, Agricultural, Biomedical,
	16	Disposal of solid waste, Solid waste management E-waste, E – waste management
2nd sessional test		
9	17	Impact of Energy Usage on Environment Global Warming
	18	Green House Effect, Depletion of Ozone Layer, Acid Rain
10	19	Eco-friendly Material, Recycling of Material, Concept of Green Buildings
	20	Concept of Carbon Credit & Carbon footprint.

11	21	Revision of Impact of Energy Usage on Environment
	22	Natural Disaster: such as Flood, Cyclone
12	23	Natural Disaster: Earthquakes and Landslides etc
	24	Man-made Disaster: such as Fire, Industrial Pollution
13	25	Man-made Disaster: Nuclear Disaster, Biological Disasters, Accidents (Air, Sea Rail & Road)
	26	Man-made Disaster: Structural failures (Building and Bridge), War & Terrorism etc.
14	27	Disaster Preparedness Plan Prediction, Disaster Preparedness Early Warnings and Safety Measures of Disaster
	28	Psychological response and Management (Trauma, Stress), Psychological response and Management (Rumour and Panic)
3 rd Sessional test		
15	29	Revision and discussion of previous year Q. Papers
	30	Revision and discussion of previous year Q. Papers

Lesson Plan

Name of the Faculty : Rahul Singh
 Discipline : Plastic
 Semester : 2nd Semester
 Subject : **FUNDAMENTALS OF IT**

Week	Theory		Practical	
	Lecture Day	Topic (including assignment / test)	Practical Day	Topic
	1	Brief history of development of computers, Definition of Computer, Block diagram of a Computer	1	Browser features, browsing, using various search engines, writing search queries
	2	Hardware, Software, Booting: Cold and Hot Booting, Interaction between the CPU and Memory with Input/ Output devices	2	Visit various e governance/ Digital India portals, understand their features, services offered
	3	Function of CPU and major functional parts of CPU. Memory, Bit, Nibble, Byte, KB, MB, GB, TB, PB, Functions of memory	3	Read Wikipedia pages on computer hardware components, look at those components in lab, identify them, recognize various ports/interfaces and related cables, etc
	4	Use of storage devices in a Computer, List types of memory used in a Computer	4	Using Administrative Tools/Control Panel Settings of Operating Systems
	5	Importance of cache memory, CPU speed and CPU word length	5	Connect various peripherals (printer, scanner, etc.) to computer, explore various features of peripheral and their device driver software
	6	Understanding browser, Introduction to WWW, efficient use of search engines, awareness about Digital India portals (state and national portals) and college portals	6	Explore features of Open Office tools and MS-Office, create documents, create presentation, create spread sheet, using these features, do it multiple times
	7	Advantages of Email, Various email service providers,	7	Working with Conversion Software like pdf To Word, Word To PPT, etc
	8	Creation of email id, sending and receiving emails, attaching documents with email and drive	8	Working with Mobile Applications – Searching for Authentic Mobile app, Installation and Settings, Govt. of India Mobile Applications

	9	Effective use of Gmail, G-Drive, Google Calendar, Google Sites, Google Sheets	9	Creating email id, sending and receiving mails with attachments
	10	Online mode of communication using Google Meet & WebEx.	10	Using Google drive, Google calendar
	11	Introduction to Programming, Steps involved in problem solving, Definition of Algorithm	11	Create Flow chart and Algorithm for the following Addition of n numbers and display result
	12	Definition of Flowchart, Steps involved in algorithm development	12	To convert temperature from Celsius to Fahrenheit
	13	Differentiate algorithm and flowchart, symbols used in flowcharts	13	To find Area and Perimeter of Square
	14	Algorithms for simple problems, flowcharts for simple problems	14	Swap Two Numbers
	15	Practice logic building using flowchart/algorithms	15	Find the smallest of two numbers
	16	Office Tools like LibreOffice/OpenOffice/MsOffice	16	Find whether given number is Even or Odd
	17,18	OpenOffice Writer – Typesetting Text and Basic Formatting, Inserting Images, Hyperlinks, Bookmarks, Tables and Table Properties in Writer	17	To print first n even Numbers
	19, 20	Introducing LibreOffice/OpenOffice Calc, Working with Cells, Sheets, data, tables, using formulae and functions, using charts and graphics	18	Find sum of series $1+2+3+\dots+N$
	21, 22	OpenOffice Impress – Creating and Viewing Presentations, Inserting Pictures and Tables, Slide Master and Slide Design, Custom Animation	19	Print multiplication Table of a number
	23	Introduction to Digital Marketing – Why Digital Marketing	20	Generate first n Fibonacci terms $0,1,1,2,3,5\dots n (n>2)$
	24	Characteristics of Digital Marketing	21	Sum and average of given series of numbers
	25	Tools for Digital Marketing	22	Factorial of number n ($n!=1\times 2\times 3\times \dots n$)
	26, 27	Effective use of Social Media like LinkedIn, Google+, Facebook	23	Armstrong Number
	28	Twitter, etc.: Features of Social media	24	Find whether given number is Prime or not
	29	Advantages and Disadvantages of Social Media	25	

LESSON PLAN

Name of Faculty: Shiv Kumar Sharma (Theory)

Discipline: Plastic Engineering.

Semester: 2nd

Subject: Polymer chemistry

Lesson plan Duration: 15 WEEKS

Work Load (Lecture) per week: 3 PERIODS

Week	THEORY	
	Lecture DAY	TOPIC
		Unit 1: Introduction
1st	1	Classification of organic compounds; IUPAC nomenclature of Alkanes, Alkenes and Alkynes.
	2	
	3	IUPAC nomenclature of compounds containing various functional groups.
2nd	4	IUPAC nomenclature of poly functional compounds
	5	Nomenclature of Benzene derivatives. Writing the structure of a compound whose name is given.
	6	
	7	Some commonly used abbreviations. Names of simple aliphatic compounds.
3rd	8	UNIT II Macromolecular concept
	9	secondary bonding forces like dispersion forces, induced & permanent dipol
4th	10	Hydrogen bonding and vander - waal forces of interaction in polymers.
	11	Isomerism and its types (Origin of chirality, optical, geometric, racemic mixture). Alkenes
	12	
5th	13	Alkenes (Isomerism including cis,trans).
	14	UNIT III Polymer Solutions
	15	Polymer dissolution process
6th	16	Thermodynamics of polymer solution
	17	Flory-Huggins theory
	18	
7th	19	The effect of: molecular weight, crystalline and amorphous structure of polymers on
	20	dissolution

	21	
	22	Size and shape of macromolecule in solution
8th	23	the viscosity of dilute and concentrated polymer solution
	24	UNIT IV Industrial Chemicals
	25	Sources of monomers (Petrochemicals)
9th	26	manufacture of petrochemicals
	27	Properties and applications of Vinyl Chloride
	28	Properties and applications of Ethylene, Propylene,
10th	29	Properties and applications of Alkyl halides, Acrylonitril
	30	Properties and applications of Styrene,
	31	Properties and applications of Methyl Methacrylate
11th	32	Properties and applications of Ethylene Glycol
	33	Properties and applications of Terephthalic Acid
	34	Properties and applications of Phenol
12th	35	
	36	Properties and applications of Isocyanates
	37	UNIT V Introduction to polymer degradation
13th	38	factors or agents for polymers degradation
	39	
	40	types of degradation
14th	41	a brief introduction to polymer stabilization,
	42	role of polymers in energy conservation and protection of the environment
	43	concept of biodegradability
15th	44	Need of recycling
	45	methods of recycling of polymer (Primary, Secondary and Tertiary)

LESSON PLAN

Name of Faculty: Rahul Singh

Discipline: Plastic Engineering.

Semester: 2nd

Subject: IPPT (Theory)/Practical

Lesson plan Duration: 15 WEEKS

Work Load (Lecture)/Practical per week: 3 PERIODS/2 Period

Week		Theory	Practical
	Lecture	Topic	
	Day		
1st	1	UNIT I Plastics versus other materials	To draw the layout of Plastic Processing Lab.
	2	Significance of using Plastics materials compared to other conventional materials such as wood	To draw the layout of Plastic Processing Lab
	3	ceramics and metals, general properties of plastics	
2nd	4	plastic materials as a choice	To draw the layout of Plastic Processing Lab
	5		
	6	reduction in a number of parts during construction	Study of hand injection molding machine – parts and their function, Operating Principles
3rd	7	increased possibilities in several shapes	
	8	new products, cost-effectiveness and aesthetics, reusability.	Study of hand injection molding machine – parts and their function, Operating Principles
	9		Study of hand injection molding machine – parts and their function, Operating Principles
4th	10	UNIT II Applications of plastics in various fields such as agriculture	Practice on hand-operated injection moulding machine for making different products (at least three) by setting the moulds.
	11		

	12	household, automobile	Practice on hand-operated injection moulding machine for making different products (at least three) by setting the moulds.
5th	13	building and construction	
	14	electrical & electronics	Study of Automatic injection molding machine- parts and their function and specifications.
	15		Study of Automatic injection molding machine- parts and their function and specifications.
6th	16	medical, sports, space and defence sector	Study of hand-operated blow moulding machine–parts and their function, Operating Principles
	17	UNIT III Introduction and Preliminary ideas and basic terminology used in Injection moulding	Study of hand-operated blow moulding machine–parts and their function, Operating Principles
	18		
7th	19	Blow moulding	Practice on hand-operated Blow moulding machine (die setting and making different products (three) on available moulds
	20		Practice on hand-operated Blow moulding machine (die setting and making different products (three) on available moulds
	21		
8th	22	extrusion (pipe, cast-film and blown film)	Study of Automatic blow molding machine – parts and their function and specifications
	23		
	24	rotational moulding,	Study of Automatic blow molding machine – parts and their function and specifications
9th	25	thermoforming	
	26	types by taking examples of commonly used products made by each process.	Study of hand-operated compression moulding machine - parts and their function
	27	UNIT IV Preliminary ideas and basic terminology with advantages and limitations of compression moulding	Study of hand-operated compression moulding machine - parts and their function
10th	28	transfer moulding	Practice on hand-operated compression moulding machine and making different products (at least three on available moulds)
	29	reaction injection moulding (foam moulding), casting	Practice on hand-operated compression moulding machine and making different products (at least three on available moulds)
	30		
11th	31		Study of thermoforming machine, parts and their functions.

	32	UNIT 5 Drying /pre-conditioning of polymers	Study of thermoforming machine, parts and their functions.
	33	finishing of plastics (painting, coating)	
12th	34	screen printing	Practice on thermoforming machine and making different products (at least three) on available moulds.
	35		Practice on thermoforming machine and making different products (at least three) on available moulds
	36		
13th	37	pad printing	Study of thermoforming machine, parts and their functions.
	38		Study of thermoforming machine, parts and their functions.
	39	flexographic	
40			
14th	41	rotogravure printing	Practice on pad printing machine and printing on various products available for printing
	42		Practice on pad printing machine and printing on various products available for printing
15th	43	Lamination and its types such as plastic-plastic laminates,	Viva voce and final evaluation
	44	plastic -paper laminates, plastic metals laminates.	

LESSON PLAN

Name of Faculty: Arun Syan (Theory) / Sunil Kumar (Practical)

Discipline: Plastic Engineering.

Semester: 4th

Subject: **FUNDAMENTALS OF CHEMICAL ENGINEERING**

Lesson plan Duration: 15 WEEKS

Work Load (Lecture/Practical) per week: 3 PERIODS/ 4 PERIODS

WEEK	THEORY		PRACTICAL	
	LECTURE DAY	TOPIC	PRACTICAL DAY	TOPIC
1 ST	1	UNIT I: Heat Transfer Modes of Heat Transfer, -Heat transfer	1	To measure the thermal conductivity of insulating materials
	2	Fourier's law of heat conduction		
	3	Conduction across Single wall		
	4	Conduction across Composite wall		
2 ND	5	Conduction across Cylinder wall	2	To determine overall heat transfer co-efficient in, a double pipe heat exchanger in parallel and counter flow heat exchange modes
	6	Numerical Problems		
	7	Convection		
	8	Natural & forced convection		
3 RD	9	Numerical Problems	3	To measure diffusivity of solids in liquid or gas
	10	Individual heat transfer coefficients		
	11	overall heat transfer coefficients		
	12	LMTD		
4 TH	13	Shell and Tube Heat Exchanger	4	To perform an experiment on batch distillation unit.
	14	Numerical Problems		
	15	CLASS TEST 1		
	16	UNIT 2: Thermodynamics Thermodynamic system and surrounding		
5 TH	17	Total and specific property, cycle	5	Viva
	18	Homogenous and heterogeneous system		
	19	thermodynamic equilibrium		
	20	Equation of State		
6 TH	21	Three Laws of Thermodynamics	6	To perform an experiment on humidification
	22	Thermodynamic process- Isometric		

	23	Isothermal process		column.
	24	Isobaric, Isoentropic process		
7 TH	25	Numerical Problems	7	To carry out the calibration of a thermocouple
	26	Adiabatic & Polytropic process		
	27	Concept of Gibbs free energy		
	28	Phase change, Raoult's law		
8 TH	29	Numerical Problems	8	To carry out the sieve analysis of a product obtained from size reduction equipment such as ball mill, grinder etc
	30	CLASS TEST 2		
	31	UNIT 3: Mass Transfer Principle's of Diffusion		
	32	Mass Transfer Coefficient		
9 TH	33	Application of Mass Transfer	9	To carry out the sieve analysis of a product obtained from size reduction equipment such as ball mill, grinder etc
	34	Distillation (Simple and Steam)		
	35	Numerical Problems		
	36	Drying-Principle and definition of Drying		
10 TH	37	Equipment for Drying	10	Viva
	38	Humidification-Humidity and Saturation		
	39	Dry & Wet bulb Temperature		
	40	Percentage Saturation		
11 TH	41	Dew Point	11	To perform an experiment on cyclone separator
	42	Humid Volume		
	43	Humid Heat		
	44	Numerical Problems		
12 TH	45	CLASS TEST 3	12	To find the rate of filtration using filter press
	46	UNIT 4 Mechanical Operations Size Reduction law		
	47	Crushers		
	48	Grinders		
13 TH	49	Screening	13	To perform an experiment on a mixer for liquid-liquid mixing
	50	Screening Equipment		
	51	Filtration Principle		
	52	Filtration equipment		
14 TH	53	Filter press	14	To perform an experiment on a mixer for solid-liquid mixing
	54	Numerical Problems		
	55	Rotary drum filter		
	56	Centrifugal filter		
15 TH	57	Cyclones Separators	15	Viva
	58	Numerical Problems		
	59	CLASS TEST 4		
	60	EVALUATION		

LESSON PLAN

Name of Faculty: PankajGarg (Practical)

Discipline: Plastic Engineering.

Semester: 4th

Subject: Computer Aided Mould Design (CAMD) Lab

Lesson plan Duration: 15 WEEKS

Work Load (Practical) per week: 3 PERIODS

WEEK	PRACTICAL	
	PRACTICAL DAY	TOPIC
1 ST	1	Introduction to AutoCAD : Starting up, practice on – how to create a new drawing file, setting drawing limits & saving a file
2 ND	2	Drawing lines in different ways using absolute co-ordinates, user co-ordinates, WCS, UCS, drawing circles, drawing arcs, drawing ellipses. Drawing polygons, drawings splines, Drawing polylines, using window, zoom commands
3 RD	3	Practice on Edit commands such as erase, copy, mirror, array, offset, rotate, oops, undo, redo, scale, stretch command
4 TH	4	Practice on trim, break, extend, chamfer, fillet, O snap command; Draw orthographic views of simple objects
5 TH	5	Practice on Text commands: editing text, text size, text styles, change properties commands
6 TH	6	Practice on Layer Commands: creating layer, freeze, layer on/off, lock & unlock layer, move from one layer to other.
7 TH	7	

		Viva of Syllabus covered
8TH	8	Practice on Dimensioning, linear dimensioning, angular dimensioning radius/diameter dimensioning, snap command, aligned dimensioning; applying tolerance; Editing of dimensioning
9TH	9	Practice on print commands. Export commands Practice on plot commands. Import commands
10TH	10	Practice on making complete drawings of Stepped pulley and V-belt pulley using AUTOCAD (2D)
11TH	11	Practice on making complete drawings of Flanged coupling using AUTOCAD (3D)
12TH	12	Practice on making complete drawings of Screw jack using AUTOCAD (3D)
13TH	13	Practice on 3D drawing: drawing cube, sphere, cylinder, cone; 3D modeling: Transformation, translation, scaling, rotation etc. Isometric drawing
14TH	14	Introduction to CAD software like CATIA/ProE
15TH	15	Final viva and evaluation

LESSON PLAN

Name of Faculty: Rahul Singh

Discipline: Plastic Engineering.

Semester: 4th

Subject: Plastic Materials & Properties-II

Lesson plan Duration: 15 WEEKS

Work Load (Lecture) per week: 3 PERIODS

Week	THEORY	
	Lecture DAY	TOPIC
1 st		Unit 1: Introduction
	1	Introduction to Engineering thermoplastics
	2	Poly Ether Ether Ketone (PEEK),
	3	Poly Phenylene Oxide (PPO),
2 nd	4	Polysulphones (PSO) ,
	5	Poly Tetra Flouro Ethylene (PTFE),
	6	Liquid Crystalline Polymer (LCP)
3 rd	7	Poly acetals (POM),
	8	Unit 2. Introduction to Special Polymers
	9	Poly Ether Sulphones(PES)
4 th	10	Poly PhenyleneSulphide, (PPS)
	11	Polyarylates.
	12	Poly Phenylene Oxide (PPO),
5 th	13	Class test 1
	14	Unit 3 Introduction to Reinforced plastics
6 th	15	Principle of composite reinforcement
	16	Effect of reinforcement on strength of plastics.
	17	Role and nature of binders
	18	Coupling agents

7 th	19	properties and preparation graphite
	20	properties and preparation carbon fibers
	21	properties and preparation boron fibers
8 th	22	properties and preparation glass fibers
	23	Miscellaneous fillers (Talc, mica
	24	, glass beads).
9 th	25	Properties and applications of FRPs
	26	(un-saturated polyesters, epoxies, PU, nylon),
	27	Class test 2
10 th	28	Unit 4 Introduction to Poly blends and alloys -
	29	Difference between blend and alloys
	30	
11 th	31	Advantages of polymer blends
	32	Types of polymer blends and alloys,
	33	Role of composition of Resin
12 th	34	Role of composition compatilizer
	35	Properties and applications of parameters for compability
	36	interpenetrating polymer networks (IPN)
13 th	37	PVC- Nitrile rubber,
	38	ABS-PVC
	39	PP-EPDM
14 th	40	Unit 5 Preliminary concept of new materials such as conducting polymers,
	41	Biopolymers,
	42	Opto-electronic plastics
15 th	43	Nano-polymeric materials
	44	Polymer concretes
	45	Class Test 3

LESSON PLAN

Name of Faculty: Sunil Kumar (Theory)/ Virender Nehra (Practical)

Discipline: Plastic Engineering.

Semester: 4th

Subject: PLASTIC PROCESSING TECHNIQUES-1I

Lesson plan Duration: 15 WEEKS

Work Load (Lecture/Practical) per week: 3 PERIODS/ 4 PERIODS

Week	THEORY		PRACTICAL	
	Lecture DAY	TOPIC	Practical DAY	TOPIC
1 ST	1	Unit 1: Introduction Introduction to extrusion process,	1	To produce rigid PVC pipe of 3 different diameters on extruder
	2	different types of extruders:-		
	3	single screw extruder		
	4	twin screw extruder		
2 ND	5	vented barrel extruder	2	To study the specification and working of extruder available in the lab
	6	general principles of operation		
	7	Die swell		
	8	function of various parts with details of operating conditions.		
3 RD	9	Barrel,	3	Production of component on hand operated blow molding machine, using at least 3 moulds
	10	Screw,		
	11	Screenpack		
	12	Die,		
4 TH	13	Breaker plate,	4	To study the specification and working of automatic Blow Moulding Machine
	14	Adaptor		
	15	Types of screws in use for processing different plastics processing		
	16	Feed zone		
5 TH	17	Compression zone	5	Production of components on semi automatic blow machine by setting the process parameters
	18	Metering zone		
	19	Class Test-II		
	20	Die zone		
6 TH	21	L/D ratio and its significance		
	22	Nip rolls		

	23	Bubble casing		
	24	Winding equipment		
7 TH	25	Cutting devices		
	26	Stretching and orientation		
	27	Extruder performance their curves		
	28	Extruder performance their curves		
8 TH	29	Extruder performance their curves		
	30	Extruder performance their curves		
	31	Blown film extrusion		
	32	Extrusion of pipes,		
9 TH	33	Wires and cables		
	34	Sheets and filaments		
	35	Coextrusion of films and sheets		
	36	CLASS TEST 2		
10 TH	37	BLOW MOULDING : Basic principles of blow moulding		
	38	Types of blow moulding :- Extrusion blow moulding		
	39	Injection blow moulding		
	40	Blow molding of irregular shapes		
11 TH	41	Raw Materials for blow moulding		
	42	Production of parison,		
	43	a). by extrusion		
	44	b). by injection		
12 TH	45	Parison wall thickness control		
	46	Parison blowing systems		
	47	Effect of process variables on product design and properties.		
	48	Parison programming,		
13 TH	49	Mould venting		
	50	Newer concepts including EBM		
	51	Stretch blow moulding,		
	52	Injection stretch blow moulding,		
14 TH	53	Multi layer moulding etc		
	54	Conversion of plastic films into laminate		
	55	Metal plastic laminates,		
	56	Paper- plastic laminates,		
15 TH	57	Plastic-plastic laminates.		Viva voce and final evaluation
	58	Advantages of multi- layer packaging,		
	59	Disadvantages of multi layer packaging		
	60	CLASS TEST 3		

LESSON PLAN

Name of Faculty: Arun Syan (Theory +Practical)

Discipline: Plastic Engineering.

Semester: 4th

Subject: BEEE

Lesson plan Duration: 15 WEEKS

Work Load (Lecture/Practical) per week: 3 PERIODS/ 2 PERIODS

WEEK	THEORY		PRACTICAL	
	LECTURE DAY	TOPIC	PRACTICAL DAY	TOPIC
1 st	1.	Unit 1: introduction Application and Advantage of Electricity	1.	Connection of a three-phase motor and starter with fuses and reversing of direction of rotation
	2.	Difference between ac and dc,		
	3.	Various applications of electricity		
2 nd	4.	Advantages of electrical energy over other types of energy	2.	Connection of a single-phase induction motor with supply and reversing of its direction of rotation
	5.	Unit 2 Basic Electrical Quantities Definition		
	6.	Definition of voltage, current, power and energy with their units		
3 rd	7.	Name of instruments used for measuring above quantities	3.	Troubleshooting in domestic wiring system, including distribution board
	8.	Connection of these instruments in an electric circuit		
	9.	Unit 3 AC Fundamentals Electromagnetic induction-		
4 th	10.	Principles of a.c. Circuits; Alternating emf, Definition of cycle, frequency, amplitude and time period	4.	Connection and reading of an electric energy meter
	11.	Instantaneous, average, r.m.s and maximum value of sinusoidal wave;form factor and Peak Factor		
	12.	Concept of phase and phase difference		
5 th	13.	Concept of resistance, inductance and capacitance in simple a.c. circuit	5.	REVISION
	14.	Power factor and improvement of power factor by use of capacitors		

	15.	Concept of three phase system; star and delta connections; voltage and current relationship (no derivation)		
6th	16.	SESSIONAL TEST 1	6.	Use of ammeter, voltmeter, wattmeter, and multi-meter
	17.	Unit 4 Transformers Working principle and construction of single phasetransformer		

	18.	Transformer ratio, Emf equation, losses and efficiency		
7 th	19.	Cooling of transformers, isolation transformer	7.	Measurement of power and power factor in a given single phase ac circuit
	20.	CVT, auto transformer (brief idea), applications		
	21.	Unit 5 Distribution System Difference between high and low voltage distribution system		
8 th	22.	Identification of three-phase wires, neutral wire and earth wire in a low voltage distribution system	8.	Study of different types of fuses, MCBs and ELCBs
	23.	Identification of voltages between phases and between one phase and neutral		
	24.	Difference between three-phase and single-phase supply		
9 th	25.	Unit 6 Electric Motor Description and applications of single-phase and three-phase motors	9.	REVISION
	26.	Connection and starting of three-phase induction motors by star-delta starter		
	27.	Changing direction of rotation of a given 3 phase induction motor		
10 th	28.	Motors used for driving pumps, compressors, centrifuge, dyers	10.	Study of Zener diode as a constant voltage source and to draw its V-I characteristics
	29.	Totally enclosed submersible and flame proof motors		
	30.	Unit 7 Domestic Installation Distinction between light-fan circuit and single phase power circuit		
11 th	31.	SESSIONAL TEST 2	11.	Study of earthing practices
	32.	sub-circuits, various accessories and parts of domestic electrical installation		
	33.	Identification of wiring systems		
12 th	34.	Common safety measures and earthing	12.	To draw V-I characteristics of a (i) NPN transistor (ii) thyristor (SCR)
	35.	Unit 8 Electrical Safety Electrical shock and precautions against shock		
	36.	treatment of electric shock, concept of fuses and their classification, selection and application		
13 th	37.	concept of earthing and various types of earthing	13.	Study of construction and working of a (i) stepper motor and (ii) servo motor
	38.	Applications of MCBs and ELCBs		
	39.	Unit 9 Basic Electronics Basic idea of semiconductors – P and N type		

14 th	40.	diodes, zener diodes and their applications	14.	
	41.	transistor - PNP and NPN, their characteristics and uses		
	42.	Characteristics and applications of a thyristor		
15 th	43.	characteristics and applications of stepper motors		
	44.	characteristics and applications of servo motors in process control		
	45.	SESSIONAL TEST 3		
16 th	46.	REVISION		VIVA AND FINAL EVALUATION
	47.	REVISION		REVISION
	48.	REVISION		REVISION

LESSON PLAN

Name of Faculty: Sunil Kumar (Theory+Practical)

Discipline: Plastic Technology

Semester: 4th

Subject: Plastic Technique-I

Lesson plan Duration: 15 WEEKS

Work Load (Lecture/Practical) per week: 3 PERIODS/ 3 PERIODS

Week	THEORY		PRACTICAL	
	Lecture DAY	TOPIC	Practical DAY	TOPIC
1 ST	1	Unit 1: Introduction Basic concepts of testing	1	Identification of Plastic by Simple methods. Primary Tests-Elemental analysis-Confirmation tests.
	2	Overview of various test standard		
	3	Test specimen preparation milling, punching cutting sheets		
	4	Basic concept of statically quality control		
2 ND	5	Statically Process Control	2	Determination of Density by Displacement Method.
	6	Quality Control tool		
	7	Control chart		
	8	Pareto chart		
3 RD	9	Kaizen	3	Determination of Melting Point.
	10	Six sigma and root cause analysis		
	11	Analysis of test data		
	12	Control finished product in service requirement		
4 TH	13	Identification of plastic	4	Determination of Filler Content.
	14	Physical Identification		
	15	Visual examination		
	16	Solubility test, elemental analysis		
5 TH	17	Flame test, group detection test	5	Determination of Moisture Content.
	18	Chemically identification		
	19	Class Test-I		
	20	Physical properties		
6 TH	21	Specific gravity, bulk density	6	Determination of Volatile Content.
	22	Mechanical Properties		
	23	Tensile test		
	24	Impact test		
7 TH	25	Dart impact for films	7	Determination of Ash Content and Loss on Ignition.
	26	Flexure strength		

	27	Compression test, tear test		
	28	Creep and test relaxation		
8 TH	29	Hardness, abrasion resistance	8	Determination of Liner Shrinkage and Shrinkage on Transverse Direction.
	30	Thermal properties		
	31	Melting point		
	32	Melt flow index		
9 TH	33	Vicat softening point	9	Determination of Carbon Black Content and Dispersion.
	34	Sheets and filaments		
	35	Heat distortion temperature		
	36	CLASS TEST 2		
10 TH	37	Thermal properties	10	Determination of Rate of Burning.
	38	Introduction short term test		
	39	Determination of heat distortion temp.		
	40	Vicat softening temp.		
11 TH	41	Long term heat resistant test	11	Determination of Dilute Solution Viscosity.
	42	Thermal conductivity		
	43	Thermal expansion		
	44	Brittleness temperature		
12 TH	45	Cup and spiral flow test	12	Determination of K-Value for PVC resin.
	46	Dynamic viscosity		
	47	Block field viscometer		
	48	Heat distortion temperature		
13 TH	49	Mould venting		
	50	Melt flow index		
	51	Heat distortion temperature		
	52	Melt flow index		
14 TH	53	Melt flow index		
	54	Creep and test relaxation		
	55	Metal plastic laminates,		
	56	Melt flow index		
15 TH	57	Vicat softening point		Viva voce and final evaluation
	58	Sheets and filaments		
	59	Heat distortion temperature		
	60	CLASS TEST 3		

LESSON PLAN

Name of Faculty: Shiv Kumar Sharma (Practical)

Discipline: Plastic Engineering.

Semester: 4th

Subject: Repair and Maintenance of Plastic Processing Machines (RMPPM) Lab

Lesson plan Duration: 15 WEEKS

Work Load (Practical) per week: 2 PERIODS

WEEK	PRACTICAL	
	PRACTICAL DAY	TOPIC
1 ST	1	To check the alignment and leveling of various machinery like PVC pipe plant, injection moulding machine and blow moulding machine etc.
2 ND	2	Repair and maintenance of hydraulic system such as pumps, motors, valves, O-rings, oil seals and lubrication system in machines such as Injection Moulding, blow moulding machines.
3 RD	3	Repair and maintenance of pneumatic system viz air compressors and valves.
4 TH	4	Transmission system (ie. Gears, V-belts, chains, rope)
5 TH	5	Use of precision Equipments (such as vernier calipers, micrometer etc.) for measurement of dimension of parts/ components.
6 TH	6	Maintenance of mould, die, screw and barrel.
7 TH	7	To carry out breakdown maintenance of electrical equipments like induction motors, variable speed motors, circuit breakers used in plastics processing and testing machinery.
8 TH	8	Study of temperature control with thermocouples and timer (Digital and Analogue)

9TH	9	Maintenance of mould, die, screw and barrel.
10TH	10	Viva of Syllabus covered
11TH	11	To carry out breakdown maintenance of electrical equipments like induction motors, variable speed motors, circuit breakers used in plastics processing and testing machinery.
12TH	12	Internal Viva- voice and evaluation.
13TH	13	REVISION
14TH	14	REVISION

15TH	15	Final viva and evaluation
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LESSON PLAN

Name of Faculty: Arun Syan

Discipline: Plastic Engineering.

Semester: 6th

Subject: EDM

Lesson plan Duration: 15 WEEKS

Work Load (Lecture) per week: 3 PERIODS

WEEK	THEORY	
	LECTURE NOS	TOPIC
1 ST	1	UNIT-1. Introduction to EDM
	2	Concept /Meaning and its need
	3	Qualities and functions of entrepreneur and barriers in entrepreneurship
2 ND	4	Sole proprietorship and partnership forms of business organisations
	5	Schemes of assistance by entrepreneurial support agencies at National, State
	6	District level: NSIC, NRDC, DC:MSME, SIDBI
3 RD	7	NABARD, Commercial Banks
	8	SFC's TCO, KVIB, DIC, Technology Business Incubator (TBI)
	9	Science and Technology Entrepreneur Parks (STEP).
4 TH	10	CLASS TEST
	11	UNIT-2. Market Survey and Opportunity Identification
	12	Scanning of business environment
5 TH	13	Salient features of National and State industrial policies and resultant business opportunities
	14	Types and conduct of market survey
	15	Assessment of demand and supply in potential areas of growth
6 TH	16	Identifying business opportunity
	17	Considerations in product selection
	18	CLASS TEST
7 TH	19	UNIT-3. Project report Preparation
	20	Preliminary project report
	21	Detailed project report including technical, economic and market feasibility

8 TH	22	Common errors in project report preparations
	23	Exercises on preparation of project report
	24	UNIT-4: Introduction to Management
9 TH	25	Definitions and importance of management Functions of management: Importance and Process of planning, organising, staffing, directing and controlling
	26	Principles of management (Henri Fayol, F.W. Taylor) Concept and structure of an organisation
	27	Types of industrial organizations: Line organization, Line and staff organization, Functional Organisation
10 TH	28	UNIT-5: Leadership and Motivation Leadership: Definition and Need
	29	Qualities and functions of a leader
	30	Manager Vs leader
11 TH	31	Types of leadership
	32	Motivation: Definitions and characteristics
	33	Factors affecting motivation
12 TH	34	Theories of motivation (Maslow, Herzberg, McGregor)
	35	UNIT-6: Management Scope in Different Areas Human Resource Management : Introduction and objective, Introduction to Man power planning, recruitment and selection Introduction to performance appraisal methods
	36	Material and Store Management: Introduction functions, and objectives,
13 TH	37	ABC Analysis and EOQ
	38	Marketing and sales: Introduction, importance, and its functions
	39	Physical distribution, Introduction to promotion mix, Sales promotion
14 TH	40	Financial Management :Introductions, importance and its functions
	41	Elementary knowledge of income tax, sales tax, excise duty, custom duty and VAT
	42	UNIT-7: Miscellaneous Topics Customer Relation Management (CRM), Definition and need,Types of CRM
15 TH	43	Total Quality Management (TQM) :Statistical process control, Total employees Involvement, Just in time (JIT)
	44	Intellectual Property Right (IPR) :Introductions, definition and its importance, Infringement related to patents, copy right, trade mark
	45	CLASS TEST

LESSON PLAN

Name of Faculty: Pankaj Garg / Virender Nehra/Arun Syan/Shiv Kumar Sharma

Discipline: Plastic Engineering.

Semester: 6th

Subject: Major Project

Lesson plan Duration: 10 WEEKS

Work Load (Practical) per week: 5 PERIODS

WEEK	PRACTICAL	
	PRACTICAL DAY	TOPIC
1 ST	1	Selection of project assignment
2 ND	2	Planning and execution of considerations
3 RD	3	Planning and execution of considerations
4 TH	4	Quality of performance
5 TH	5	Providing solution of the problems or production of final product
6 TH	6	Providing solution of the problems or production of final product
7 TH	7	Sense of responsibility
8 TH	8	Sense of responsibility
9 TH	9	Self expression/ communication skills
10 TH	10	Self expression/ communication skills
11 TH	11	Interpersonal skills/human relations
12 TH	12	Interpersonal skills/human relations
13 TH	13	Report writing skills
14 TH	14	Report writing skills
15 TH	15	Checking of project file, viva and evaluation

LESSON PLAN

Name of Faculty: Sunil Kumar (Theory)/ Virender Nehra (Practical)

Discipline: Plastic Engineering.

Semester: 6th

Subject: PLASTIC PROCESSING TECHNIQUES-IV

Lesson plan Duration: 15 WEEKS

Work Load (Lecture/Practical) per week: 4 PERIODS/ 3 PERIODS

Week	THEORY		PRACTICAL	
	Lecture DAY	TOPIC	Practical DAY	TOPIC
1 ST	1	Unit 1: Compression Molding General principles and working of compression molding machine	1	To produce small components on hand operated compression molding machine
	2	Types of compression molding machine – hand operated, automatic		
	3	single and multi daylight machines		
	4	bulk factor, preheating of molds, cycle time		
2 ND	5	process variables and their control	2	To produce small components on hand operated compression molding machine
	6	Effect of process variables on product properties		
	7	Compression molding of Semiconductor		
	8	Compression molding of DMC		
3 RD	9	Compound and composites	3	To produce components on automatic/semi automatic compression molding machine
	10	Common faults and their remedies.		
	11	Unit 2. Transfer Molding Principles of transfer molding		
	12	Types of transfer molding machines,		
4 TH	13	molding cycle, theoretical calculation of line pressure	4	To produce components on automatic/semi automatic compression molding machine
	14	injection ram pressure, clamping pressure, pot capacity		
	15	Heating requirements, faults: causes and remedies		

	16	Spray up technique		
5 TH	17	Resin transfer molding	5	To produce articles on vacuum forming machine
	18	Filament winding		
	19	Unit 3. Introduction to Pultrusion, ,		
	20	Hand lay- up technique		
6 TH	21	Importance of Pultrusion	6	To produce articles on vacuum forming machine
	22	CLASS TEST 1		
	23	Unit 4 Forming Basic principles, method of forming – straight forming, free forming		
	24	Plug assist forming, drape forming, matched mold forming		
7 TH	25	Slip forming, snap back forming, reverse draw forming	7	To do casting of polyester resin
	26	Thermo forming and vacuum forming		
	27	Limitations and advantages of forming		
	28	Materials for forming		
8 TH	29	Types of heating systems	8	To do casting of polyester resin
	30	Faults: causes and their remedies		
	31	Unit 6 Casting Introduction		
	32	Casting of PMMA		
9 TH	33	Casting of unsaturated polyesters	9	To do casting of PMMA
	34	Casting of phenolic resins		
	35	Casting of Biopolymers		
	36	Unit 6 Calendaring Introduction to calendaring		
10 TH	37	Types of calendars,	10	To do casting of PMMA
	38	Advantages, limitations of calendaring over other techniques		
	39	major applications of calendaring		
	40	Coating of calendaring		
11 TH	41	Surface finishing.	11	Exercises on high frequency PVC welding machine
	42	CLASS TEST 3		
	43	Unit 7 Rotational Molding of Large Containers Basic principle, material selection		

	44	types of machine, process variables		
12 TH	45	charge size, wall thickness control	12	Preparation of FRP sheet by hand lay up technique
	46	heating and cooling system, application of rotational moulding		
	47	ejection and finishing		
	48	fault – causes and remedies		
13 TH	49	Unit 8 Foam Molding Introduction,	13	Preparation of FRP sheet by hand lay up technique
	50	Definition of molding		
	51	processes,		
	52	blowing agents		
14 TH	53	Applications of Foam Molding	14	To study various parts and operating conditions of transfer moulding machine
	54	Unit 9 Finishing of Plastics Cutting		
	55	Turning		
	56	Drilling		
15 TH	57	Sanding	15	Viva voce and final evaluation
	58	Polishing		
	59	Different types of welding		
	60	CLASS TEST 3		

LESSON PLAN

Name of Faculty: Shiv Kumar Sharma (THEORY+PRACTICAL)

Discipline: Plastic Engineering.

Semester: 6th

Subject: DESIGN OF DIES AND MOULDS – II

Lesson plan Duration: 15 WEEKS

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

Week	THEORY		PRACTICAL	
	Lecture DAY	TOPIC	Practical DAY	TOPIC
1 ST	1	Unit 1 Dies General features of extrusion dies	1	Design and drawing of a single impression compression mould
	2	Die materials		
	3	Design features dies		
2 ND	4	Polymer melt flow	2	Design and drawing of a single impression compression mould
	5	die geometry		
	6	material of construction		
3 RD	7	ease of maintenance	3	Design and drawing of a single impression compression mould
	8	elemental analysis		
	9	cleaning		
4 TH	10	Die land	4	Design and drawing of a multi-impresion compression mould
	11	die swell		
	12	Heating system		
5 TH	13	temperature control	5	Design and drawing of a multi-impresion compression mould
	14	Types of dies		
	15	Dies for rod		
6 TH	16	Dies for rod	6	Design and drawing of a transfer mould
	17	Dies for flexible tube		
	18	Dies for flexible tube		
7 TH	19	Dies for wire coating	7	Design and drawing of a transfer mould
	20	CLASS TEST 1		
	21	Unit 2 Compression and Transfer Moulds Types of compression moulds -, ,, , , and		

8 TH	22	positive, semi-positive	8	Design and drawing of a transfer mould
	23	flash and landed positive type		
	24	Calculation of clamp pressure, ram pressure		
9 TH	25	platen size, no. of impressions	9	Design and drawing of a blow mould
	26	Selection of compression moulding machine		
	27	Principles of transfer moulding		
10 TH	28	pot capacity	10	Design and drawing of a blow mould
	29	design of sprue		
	30	design of runner		
11 TH	31	design of gates	11	Design and drawing of a blow mould
	32	design of gates		
	33	CLASS TEST 2		
12 TH	34	Unit 3 Blow Moulds Introduction	12	Design and drawing of a die for pipe/tubing
	35	Materials for Blow moulds		
	36	Extrusion blow moulds		
13 TH	37	cavity	13	Design and drawing of a die for pipe/tubing
	38	pinch off		
	39	Injection blow moulds		
14 TH	40	neck design	14	Design and drawing of a die for pipe/tubing
	41	mandrel design		
	42	Parison		
15 TH	43	Thickness control	15	Viva voce and final evaluation
	44	Mould cooling		
	45	CLASS TEST 3		

LESSON PLAN

Name of Faculty: Pankaj Garg

Discipline: Plastic Engineering.

Semester: 6th

Subject:- PLASTIC PRODUCT DESIGN

Lesson plan Duration: 15 WEEKS

Work Load (Lecture/Practical) per week: 04 PERIODS

Week	THEORY	
	Lecture DAY	TOPIC
1 st		Unit 1: Introduction
	1	Introduction to Plastic Product Design
	2	Preliminary design considerations
	3	Design steps for plastic product,
	4	Mechanical requirements of Product Design
2 nd	5	Unit 2 Materials Selection
	6	Various materials for Plastic Product
	7	Selection of material for particular application
	8	Long Term Properties
3 rd	9	Short Term Properties
	10	Cost economics
	11	Effect of Costing
	12	Various processing limitations
4 th	13	Effects of environmental exposure
	14	Limitations of Product Design
	15	Class Test 1
	16	Unit 3 Product Design Features
5 th	17	Surface finish
	18	Texturing
	19	Shape
	20	Positioning of holes
6 th	21	Ribs
	22	Filletts
	23	rounds
	24	Wall thickness
7 th	25	Unit 4 Design Activities Introduction
	26	Stages of product development
	27	Feasibility study

	28	Product life cycle
8 th	29	Class test 2
	30	Unit 5 Method of joining
	31	welding
	32	Types of Welding
9 th	33	Riveting
	34	Types of Rivetings
	35	Cementing
10 th	36	Types of Cementing
	37	Adhesion
	38	Types of Adhesion
	39	Cutting & its types
11 th	40	Sampling & its types
	41	Drilling
	42	Assembly methods
	43	Inside sharp corners
12 th	44	Weld lines
	45	Draft angles
	46	Gate side and location
	47	Moulded inserts
13 th	48	Internal plastics threads
	49	Undercuts
	50	Tolerance
	51	Functional surfaces
14 th	52	Letters and alphabets
	53	Draft angles
	54	Gate side and location
	55	Case study of statically Loaded part
15 th	56	Dynamically loaded plastic product
	57	Gears & its design
	58	Spring & its design
	59	Various others plastic parts
	60	Class test 3