LESSON PLAN: SUMMER 2023

Discipline: **Mechanical**	Semester: **6th SUMMER 2023**	Name of the teaching faculty: **Dambarudhar Patel**
Subject: **Industrial Engineering & Management**	No of days/per week class allotted: **04**	Semester From Date: 14/02/23 to 23/05/23 No of weeks: 14
Week:	Class day:	Theory/practical topics:
1st:	1ST	Selection of Site of Industry.
	2ND	Define plant layout.
	3RD	Describe the objective and principles of plant layout.
	4TH	Explain Process Layout
2ND	1ST	Explain Product Layout
	2ND	Explain Combination Layout.
	3RD	Techniques to improve layout.
	4TH	Principles of material handling equipment.
3RD	1ST	Plant maintenance.
	2ND	Importance of plant maintenance.
	3RD	Break down maintenance.
	4TH	Preventive maintenance.
4TH	1ST	Scheduled maintenance.
	2ND	Introduction to Operations Research and its applications.
	3RD	Define Linear Programming Problem
	4TH	Problem Solution of L.P.P. by graphical method.
5th	1ST	Evaluation of Project completion time by CPM
	2ND	Evaluation of Project completion time by PERT
	3RD	Explain distinct features of PERT with respect to CPM.
	4TH	Solving some basic problems on CPM and PERT for comparison
6th	1ST	Classification of inventory
	2ND	Objective of inventory control.
	3RD	Describe the functions of inventories.
	4TH	Benefits of inventory control.
7th	1ST	Costs associated with inventory.
	2ND	Terminology in inventory control
	3RD	Explain and Derive economic order quantity for Basic model.
	4TH	Basic Numerical
8th	1ST	Define and Explain ABC analysis.
	2ND	Define Inspection and Quality control.
	3RD	Describe planning of inspection.
	4TH	Describe types of inspection.
9th	1ST	Advantages and disadvantages of quality control.
	2ND	Study of factors influencing the quality of manufacture
	3RD	Explain the Concept of statistical quality control, Control charts
	4TH	X Chart, R Chart
10th	1ST	P Chart, C Chart
	2ND	Methods of attributes.

	3RD	Concept of ISO 9001-2008.
	4TH	Quality management system, Registration /certification procedure. Benefits of ISO to the organization.
11th	1ST	JIT
	2ND	Six sigma
	3RD	7S, Lean manufacturing
	4TH	Basic Numerical
12th	1ST	Introduction to Production planning and control
	2ND	Major functions of production planning and control
	3RD	Methods of forecasting
	4TH	Routing
13th	1ST	Scheduling
	2ND	Dispatching
	3RD	Controlling
	4TH	Types of production
14th	1ST	Mass production
	2ND	Batch production
	3RD	Job order production
	4TH	Principles of product and process planning.

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LESSON PLAN

Discipline: Mechanical Engg.	Sem: 6th	Name of the Teaching Faculty: Sri Anirudha Tarai
Subject: Advance Manufacturing Processes	No. of days/Week class allotted: 4	Semester From date:14-02-2023 To Date: 23-05-2023 No. of Weeks: 15
Week	Class Day	Theory Topics
1st	1st	Set induction about the subject,objectives,question pattern
	2nd	Unit-1(Modern Machining Processes): Objectives,Introduction,application, Chalk board summary
	3rd	comparison with traditional machining
	4th	Ultrasonic Machining: principle, Description of equipment, applications
2nd	1st	
	2nd	Electric Discharge Machining: Principle, Description of equipment, Dielectric fluid,
	3rd	tools (electrodes), Process parameters, Output characteristics, applications.
	4th	Wire cut EDM: Principle, Description of equipment, controlling parameters;
3rd	1st	applications
	2nd	Abrasive Jet Machining: principle, description of equipment, Material removal rate,
	3rd	application.
	4th	Laser Beam Machining: principle, description of equipment, Material removal rate,
4th	1st	application
	2nd	Electro Chemical Machining: principle, description of equipment,
	3rd	Material removal rate,application
	4th	Plasma Arc Machining – principle, description of equipment, Material removal rate,
5th	1st	Process parameters, performance characterization, Applications
	2nd	Electron Beam Machining - principle, description of equipment, Material removal rate, Process parameters, performance characterization, Applications.
	3rd	
	4th	MILEY,Video presentation,Assignments,Questions and Answers session
6th	1st	Unit-2(Plastic Processing): Set Induction,Objectives,Plastic Processing,Chalk board summary
	2nd	Processing of plastics.
	3rd	Moulding processes: Injection moulding, Compression moulding, Transfer moulding.
	4th	
7th	1st	
	2nd	Extruding; Casting; Calendering
	3rd	Fabrication methods-Sheet forming, Blow moulding, Laminating plastics (sheets, rods & tubes), Reinforcing
	4th	
8th	1st	Applications of Plastics
	2nd	MILEY,Video presentation,Assignments,Questions and Answers session
	3rd	Unit-3(Additive Manufacturing Process): Set Induction,Objectives,Needs of Additive Manufacturing Process,Chalk board summary
	4th	Fundamentals of Additive Manufacturing, AM Process Chain
9th	1st	
	2nd	Advantages and Limitations of AM, Commonly used Terms
	3rd	Classification of AM process, Fundamental Automated Processes, Distinction between AM and CNC, other related technologies
	4th	
10th	1st	

	2nd	Application –Application in Design, Aerospace Industry, Automotive Industry, Jewelry Industry, Arts and Architecture. RP Medical and Bioengineering Applications
	3rd	
	4th	
11th	1st	Web Based Rapid Prototyping Systems
	2nd	
	3rd	Concept of Flexible manufacturing process, concurrent engineering, production tools like capstan and turret lathes, rapid prototyping processes
	4th	
12th	1st	MILEY,Video presentation,Assignments,Questions and Answers session
	2nd	Unit-4(Special Purpose Machines (SPM)): Set Induction,Objectives,Needs of Special Purpose Machines (SPM),Chalk board summary
	3rd	Concept, General elements of SPM
	4th	
13th	1st	Productivity improvement by SPM
	2nd	
	3rd	Principles of SPM design
	4th	
14th	1st	MILEY,Video presentation,Assignments,Questions and Answers session
	2nd	Unit-5(Maintenance of Machine Tools): Set Induction,Objectives of Maintenance of Machine Tools,Chalk board summary
	3rd	Types of maintenance
	4th	Repair cycle analysis, Repair complexity
15th	1st	Maintenance manual,
	2nd	Maintenance records, Housekeeping
	3rd	Introduction to Total Productive Maintenance (TPM)
	4th	MILEY,Video presentation,Assignments,Questions and Answers session

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LESSON PLAN: POWER STATION ENGINEERING LAB

(SUMMER SEMESTER 2023)

Discipline: **Mechanical Engineering**	Semester: 6TH **Summer 2023**	Name of the teaching faculty: **Mr. Aurobinda Biswas**
Subject: **PSE Lab**	No of days/per week class allotted: **04**	Semester From Date: **14/02/2023** To Date: **23/05/2023** No of weeks: **14**
Week:	**Class day:**	**Theory/practical topics:**
1st	1st	To study the modern steam power plant with model.
	2nd	- Do -
	3rd	- Do -
	4th	Viva voce test-1 (experiment-1)
2nd	1st	To determine the various efficiencies of steam turbine.
	2nd	- Do -
	3rd	- Do -
	4th	Viva voce test-2 (experiment-2)
3rd	1st	To study the cooling tower.
	2nd	- Do -
	3rd	- Do -
	4th	Viva voce test-3 (experiment-3)
4th	1st	Study of jet condenser.
	2nd	- Do -
	3rd	- Do -
	4th	Viva voce test-4 (experiment-4)
5th	1st	Study of De-lavel turbine.
	2nd	- Do -
	3rd	- Do -
	4th	Viva voce test-5 (experiment-5)
6th	1st	To study the Spring-loaded safety valve.
	2nd	- Do -
	3rd	- Do -
	4th	Viva voce test-6 (experiment-6)
	1st	Record checking of the students

7th	2nd	Record checking of the students
	3rd	Grand viva voce test- 1
	4th	Grand viva voce test- 1
8th	1st	To study the following steam generators (Lancashire boiler) models.
	2nd	- Do -
	3rd	- Do -
	4th	Viva voce test-7 (experiment-7)
9th	1st	To study the following steam generators (Cornish boiler) models.
	2nd	- Do -
	3rd	- Do -
	4th	Viva voce test-8 (experiment-8)
10th	1st	To study the following steam generators (Babcock & Wilcox Boiler) models
	2nd	- Do -
	3rd	- Do -
	4th	Viva voce test-9 (experiment-9)
11th	1st	To study the following steam generators (Vertical water tube boiler) models
	2nd	- Do -
	3rd	- Do -
	4th	Viva voce test-10 (experiment-10)
12th	1st	Revision 1
	2nd	Revision 2
	3rd	Revision 3
	4th	Revision 4
13th	1st	Revision 5
	2nd	Revision 6
	3rd	Revision 7
	4th	Revision 8

14th	1st	Record checking of the students
	2nd	Record checking of the students
	3rd	Grand viva voce test- 2
	4th	Grand viva voce test- 2

Aurobinda Biswas

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LESSON PLAN: POWER STATION ENGINEERING

(SUMMER SEMESTER 2023)

Discipline: **Mechanical Engineering**	Semester: 6TH **Summer 2023**	Name of the teaching faculty: **Mr. Aurobinda Biswas**
Subject: **PSE**	No of days/per week class allotted: **04**	Semester From Date:**14/02/2023** To Date: **23/05/2023** No of weeks: **14**
Week:	**Class day:**	**Theory/practical topics:**
1st	**1st**	Describe sources of energy.
	2nd	Explain concept of Central and Captive power station.
	3rd	Classification of power plants.
	4th	Importance of electrical power in day today life.
2nd	**1st**	Overview of method of electrical power generation.
	2nd	Layout of steam power stations.
	3rd	Steam power cycle with P-V, T-S diagram
	4th	Explain Carnot vapour power cycle with P-V, T-S diagram
3rd	**1st**	Determination of thermal efficiency of steam power plant.
	2nd	Explain Rankine cycle with P-V, T-S & H-S diagram
	3rd	Determine thermal efficiency, Work done, work ratio, and specific steam Consumption.
	4th	Solve Simple Problems on Rankine cycle.
4th	**1st**	Solve Simple Problems on Rankine cycle.
	2nd	List of thermal power stations in the state with their capacities.
	3rd	Boiler Accessories: Operation of Air pre heater, Operation of Economiser.
	4th	Boiler Accessories: Electrostatic precipitator and Operation of super heater.
5th	**1st**	Need of boiler mountings and operation of boiler.
	2nd	Draught systems (Natural draught, Forced draught & balanced draught)
	3rd	Advantages & disadvantages of Draught systems.
	4th	Steam prime movers: Advantages & disadvantages of steam turbine, Elements of steam turbine, governing of steam turbine
	1st	Performance of steam turbine; Explain Thermal efficiency, Stage efficiency and Gross efficiency
	2nd	Steam condenser: Function of Condenser

6th	3rd	Classification of Condenser.
	4th	Function of condenser auxiliaries such as hot well, condenser extraction pump, air extraction pump, and circulating pump.
7th	1st	Introduction of Cooling Tower and working principle.
	2nd	Types of cooling tower, and spray ponds.
	3rd	Selection of site for Thermal power stations.
	4th	Introduction of Nuclear fuel
8th	1st	Classify nuclear fuel (Fissile & fertile material)
	2nd	Explain fusion and fission reaction.
	3rd	Explain working of nuclear power plants with block diagram
	4th	Explain the working and construction of nuclear reactor
9th	1st	Compare the nuclear and thermal plants.
	2nd	Explain the disposal of nuclear waste.
	3rd	Selection of site for nuclear power stations.
	4th	List of nuclear power stations.
10th	1st	Introduction of Diesel electric power stations.
	2nd	State the advantages and disadvantages of diesel electric power stations.
	3rd	Explain briefly different systems of diesel electric power stations: Fuel storage and fuel supply system
	4th	Fuel injection system, Air supply system, Exhaust system
11th	1st	Cooling system, Lubrication system, starting system, governing system.
	2nd	Selection of site for diesel electric power stations.
	3rd	Performance and thermal efficiency of diesel electric power stations.
	4th	Solve Simple Problems on Diesel electric power stations.
12th	1st	Introduction of Hydroelectric power plant.
	2nd	State advantages and disadvantages of Hydroelectric power plant.
	3rd	Classification of Hydroelectric project.
	4th	Explanation of the general arrangement of storage type Hydroelectric project.
	1st	Explanation of Hydroelectric project operation.
	2nd	Selection of site of Hydroelectric power plant.

13th	3rd	List of hydro power stations with their capacities and number of units in the state.
	4th	Types of turbines and generation used in Hydro power stations.
14th	1st	Introduction of Gas turbine stations.
	2nd	Selection of site for Gas turbine stations.
	3rd	Fuels for Gas turbine & Elements of simple Gas turbine
	4th	Merits, demerits and application of Gas turbine power plants.

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