Vedang Institute of Technology
Lesson Plan

Discipline: **Mechanical Engineering**	Semester: **6th**	Name of the Teaching Faculty: **Amruta Panda**
Subject: **Advance manufacturing Process**	No. of days/Per weeks Class Allotted Weeks: **04**	Semester starts: **16/01/2024** Semester ends: **26/04/2024** No. of Weeks: **15**
Weeks	**Class day**	**Theory**
1st	1st	Introduction – comparison with traditional machining
	2nd	Ultrasonic Machining: principle, Description of equipment, applications
	3rd	
	4th	Electric Discharge Machining: Principle, Description of equipment, Dielectric fluid, tools (electrodes), Process parameters, Output characteristics, applications.
2nd	1st	
	2nd	
	3rd	Wire cut EDM: Principle, Description of equipment, controlling parameters; applications.
	4th	
3rd	1st	Abrasive Jet Machining: principle, description of equipment, Material removal rate, application
	2nd	
	3rd	Laser Beam Machining: principle, description of equipment, Material removal rate, application
	4th	
4th	1st	Electro Chemical Machining: principle, description of equipment, Material removal rate, application.
	2nd	
	3rd	Plasma Arc Machining – principle, description of equipment, Material removal rate, Process parameters, performance characterization, Applications.
	4th	
5th	1st	
	2nd	Electron Beam Machining - principle, description of equipment, Material removal rate, Process parameters, performance characterization, Applications.
	3rd	
	4th	
6th	1st	Processing of plastics.
	2nd	Molding processes: Injection molding, Compression molding, Transfer molding.
	3rd	
	4th	Extruding; Casting; Calendaring.
7th	1st	
	2nd	Fabrication methods-Sheet forming, Blow molding, Laminating plastics (sheets, rods & tubes), Reinforcing.
	3rd	
	4th	Applications of Plastics.

8th	1st	
	2nd	Introduction, Need for Additive Manufacturing
	3rd	
	4th	Fundamentals of Additive Manufacturing, AM Process Chain
9th	1st	
	2d	Advantages and Limitations of AM, commonly used Terms
	3rd	
	4th	Classification of AM process, Fundamental Automated Processes, Distinction between AM and CNC, other related technologies.
10th	1st	
	2nd	
	3rd	Application –Application in Design, Aerospace Industry, Automotive Industry, Jewelry Industry, Arts and Architecture.
	4th	
11th	1st	
	2nd	RP Medical and Bioengineering Applications.
	3rd	Web Based Rapid Prototyping Systems.
	4th	Concept of Flexible manufacturing process
12th	1st	Concurrent engineering, production tools like capstan and turret lathes, rapid prototyping processes.
	2nd	
	3rd	
	4th	Concept, General elements of SPM, Productivity improvement by SPM
13th	1st	
	2nd	Principles of SPM design
	3rd	
	4th	Types of maintenance, Repair cycle analysis, Repair complexity
14th	1st	
	2nd	**Maintenance manual, Maintenance records, Housekeeping**
	3rd	
	4th	Introduction to Total Productive Maintenance (TPM).
15th	1st	Revision and Doubt Clearing
	2nd	Revision and Doubt Clearing
	3rd	Previous Year's Question-Answer Discussion
	4th	Previous Year's Question-Answer Discussion

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Discipline Mechanical Engineering	**Semester** 6th	**Name of the Teaching Faculty** Soumya Ranjan Nayak
Subject Automobile Engineering	**No. of days/Per weeks Class Allotted Weeks 4P/W**	**Semester from date 16.01.2024 to 26.04.2024** **No of Weeks - 15**
Weeks	**Class Period**	**Theory**
1st	1st	Automobiles: Definition, need and classification:
	2nd	Layout of automobile chassis with major components
	3rd	Clutch System: Need, Types
	4th	Working principle with sketch
2nd	1st	Gear Box: Purpose of gear box
	2nd	Construction and working of a 4 speed gear box
	3rd	Concept of automatic gear changing mechanisms
	4th	Concept of automatic gear changing mechanisms
3rd	1st	Propeller shaft: Constructional features
	2nd	Propeller shaft: Constructional features
	3rd	Differential: Need, Types and Working principle
	4th	Differential: Need, Types and Working principle
4th	1st	Braking systems in automobiles: Need and types
	2nd	Mechanical Brake
	3rd	Hydraulic Brake
	4th	Air Brake
5th	1st	Air assisted Hydraulic Brake
	2nd	Vacuum Brake
	3rd	Describe the Battery ignition
	4th	Magnet ignition system
6th	1st	Spark plugs: Purpose, construction and specifications
	2nd	Spark plugs: Purpose, construction and specifications
	3rd	State the common ignition troubles and its remedies
	4th	State the common ignition troubles and its remedies
7th	1st	Description of the conventional suspension system for Rear and Front axle
	2nd	Description of the conventional suspension system for Rear and Front axle
	3rd	Description of independent suspension system used in cars
	4th	Description of independent suspension system used in cars
8th	1st	Constructional features and working of a telescopic shock absorber
	2nd	Constructional features and working of a telescopic shock absorber
	3rd	Engine cooling: Need and classification
	4th	Describe defects of cooling and their remedial measures
9th	1st	Describe defects of cooling and their remedial measures
	2nd	Describe the Function of lubrication
	3rd	Describe the lubrication System of I.C. engine
	4th	Describe the lubrication System of I.C. engine
10th	1st	Describe Air fuel ratio
	2nd	Describe Air fuel ratio

	3rd	Describe Carburetion process for Petrol Engine
	4th	Describe Carburetion process for Petrol Engine
11th	1st	Describe Multipoint fuel injection system for Petrol Engine
	2nd	Describe Multipoint fuel injection system for Petrol Engine
	3rd	Describe the working principle of fuel injection system for multi cylinder Engine
	4th	Describe the working principle of fuel injection system for multi cylinder Engine
12th	1st	Filter for Diesel engine
	2nd	Filter for Diesel engine
	3rd	Describe the working principle of Fuel feed pump and Fuel Injector for Diesel
	4th	Describe the working principle of Fuel feed pump and Fuel Injector for Diesel
13th	1st	Hybrid and Electric Vehicles
	2nd	Hybrid and Electric Vehicles
	3rd	Electric Vehicles, operational advantages, present performance and
	4th	Electric Vehicles, operational advantages, present performance and
14th	1st	Battery for Electric Vehicles, Battery types and fuel cells
	2nd	Battery for Electric Vehicles, Battery types and fuel cells
	3rd	Types of Hybrid and Electric Vehicles
	4th	Types of Hybrid and Electric Vehicles
15th	1st	Drive train
	2nd	Drive train
	3rd	Solar powered vehicles
	4th	Solar powered vehicles

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Discipline : Mechanical Engineering	Semester : 6th	Name of the Teaching Faculty: SAMARESH PRATAP MOHANTY
Subject : Industrial Engg & Management	No. of days/Per weeks Class Allotted Weeks 4	Semester from date : 16.01.2024 to 26.04.2024 No of Weeks : 15
Weeks	**Class day**	**Theory**
1ST	1st	Selection of Site of Industry.
	2nd	Define plant layout
	3rd	Describe the objective and principles of plant layout.
	4th	Explain Process Layout, Product Layout and Combination Layout.
2ND	1st	Techniques to improve layout.
	2nd	Principles of material handling equipment.
	3rd	Importance of plant maintenance.
	4th	Break down maintenance.
3RD	1st	Preventive maintenance.
	2nd	Scheduled maintenance.
	3rd	Introduction to Operations Research and its applications.
	4th	Introduction to Operations Research and its applications.
4TH	1st	Define LPP
	2nd	Define LPP
	3rd	Solution of L.P.P. by graphical method
	4th	Solution of L.P.P. by graphical method
5TH	1st	Evaluation of Project completion time by Critical Path Method and PERT
	2nd	Simple Problem
	3rd	Explain distinct features of PERT with respect to CPM.
	4th	Explain distinct features of PERT with respect to CPM.
6TH	1st	Classification of inventory.
	2nd	Classification of inventory.
	3rd	Objective of inventory control.
	4th	Objective of inventory control.
7TH	1st	Describe the functions of inventories.
	2nd	Describe the functions of inventories.
	3rd	Benefits of inventory control.
	4th	Benefits of inventory control.
8TH	1st	Costs associated with inventory.
	2nd	Costs associated with inventory.
	3rd	Terminology in inventory control
	4th	Terminology in inventory control
9TH	1st	Explain and Derive economic order quantity for Basic model.
	2nd	Explain and Derive economic order quantity for Basic model.
	3rd	Define and Explain ABC analysis.
	4th	Define and Explain ABC analysis.
10TH	1st	Define Inspection and Quality control.
	2nd	Define Inspection and Quality control.
	3rd	Describe planning of inspection.

	4th	Describe types of inspection.
11^{TH}	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	Methods of attributes.
12^{TH}	1st	Concept of ISO 9001-2008
	2nd	Quality management system, Registration /certification procedure.
	3rd	Benefits of ISO to the organization.
	4th	JIT, Six sigma,7S, Lean manufacturing
13^{TH}	1st	Solve related problems.
	2nd	Introduction, Major functions of production planning and control
	3rd	Methods of forecasting
	4th	Routing
14^{TH}	1st	Scheduling
	2nd	Dispatching
	3rd	Controlling
	4th	Types of production
15^{TH}	1st	Mass production
	2nd	Batch production
	3rd	Job order production
	4th	Principles of product and process planning.

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Discipline **Mechanical Engineering**	**Semester** **6th**	**Name of the Teaching Faculty:** **Soumya Ranjan Nayak**
Subject **Power Station Engineering**	**No. of days/Per weeks Class Allotted Weeks** **4P/W**	**Semester from date** **16.01.2024 to 26.04.2024** **No of Weeks - 15**
Weeks	**Class Period**	**Theory**
1st	1st	Describe sources of energy
	2nd	Explain concept of Central and Captive power station
	3rd	Classify 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	Layout of steam power stations.
	4th	Steam power cycle.
3rd	1st	Explain Carnot vapour power cycle
	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
4th	1st	Solve Simple Problems
	2nd	List of thermal power stations in the state with their capacities.
	3rd	List of thermal power stations in the state with their capacities.
	4th	Boiler Accessories
5th	1st	Boiler Accessories
	2nd	Draught systems with their advantages & disadvantages.
	3rd	Draught systems with their advantages & disadvantages.
	4th	Steam prime movers
6th	1st	Steam prime movers
	2nd	Steam condenser
	3rd	Steam condenser
	4th	Cooling Tower
7th	1st	Cooling Tower
	2nd	Selection of site for thermal power stations.
	3rd	Selection of site for thermal power stations.
	4th	Classify nuclear fuel
8th	1st	Classify nuclear fuel
	2nd	Explain fusion and fission reaction.
	3rd	Explain fusion and fission reaction.
	4th	Explain working of nuclear power plants with block diagram
9th	1st	Explain working of nuclear power plants with block diagram
	2nd	Explain the working and construction of nuclear reactor
	3rd	Explain the working and construction of nuclear reactor
	4th	Compare the nuclear and thermal plants.

10th	1st	Compare the nuclear and thermal plants.
	2nd	Explain the disposal of nuclear waste
	3rd	Explain the disposal of nuclear waste
	4th	Selection of site for nuclear power stations
11th	1st	Selection of site for nuclear power stations
	2nd	List of nuclear power stations.
	3rd	List of nuclear power stations.
	4th	State the advantages and disadvantages of diesel electric power stations.
12th	1st	State the advantages and disadvantages of diesel electric power stations.
	2nd	Explain briefly different systems of diesel electric power stations
	3rd	Explain briefly different systems of diesel electric power stations
	4th	Selection of site for diesel electric power stations.
13th	1st	Selection of site for diesel electric power stations.
	2nd	Performance and thermal efficiency of diesel electric power stations.
	3rd	Performance and thermal efficiency of diesel electric power stations.
	4th	State advantages and disadvantages of hydroelectric power plant.
14th	1st	Classify and explain the general arrangement of storage type hydroelectric
	2nd	Selection of site of hydel power plant
	3rd	List of hydro power stations
	4th	Types of turbines and generation used.
15th	1st	Simple problems.
	2nd	Simple problems.
	3rd	Selection of site for gas turbine stations, Fuels for gas turbine
	4th	Elements of simple gas turbine power plants, Merits, demerits and application of gas turbine power plants.

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