

GANAPATI INSTITUTE OF ENGINEERING & TECHNOLOGY (Polytechnic), JAGATPUR, CUTTACK
DEPARTMENT OF MECHANICAL ENGINEERING.

LESSON PLAN-2026 WINTER

Discipline : MECHANICAL ENGG.	Semester : 5th	Name of the Teaching Faculty:- Er.PRAVAT KUMAR SWAIN
Subject: Industrial Engineering and Management (MEPE301)TH:3	No. of days/per week class allotted: 03	Semester From date: 01.07.2026 To Date: 05.11.2026 No. of Weeks: 15
Week	Class Day	Theory Topics
1st	1st	UNIT -I Plant Engineering: Plant; Selection of site of industry; Plant layout; Principles of a good layout; Types; Process; Product and Fixed position.
	2nd	Techniques to improve Layout; Principles of Material handling equipment;
	3rd	Plant maintenance; Importance; Break down maintenance.
2nd	1st	Preventive maintenance and Scheduled maintenance.
	2nd	Plant Safety; Importance; Accident: Causes and Cost of an Accident, Accident Proneness, Prevention of Accidents.
	3rd	Industrial disputes; Settlement of Industrial disputes.
3rd	1st	Collective bargaining; Conciliation; Mediation; Arbitration;
	2nd	Indian Factories Act 1948 and its provisions related to health, welfare and safety
	3rd	CLASS TEST-1
4th	1st	UNIT -II Work Study: Productivity; Standard of living; Method of improving Productivity; Objectives; Importance of good working conditions.
	2nd	Method Study: Definition; Objectives; Selection of a job for method study.
	3rd	Basic procedure for conduct of Method study.
5th	1st	Tools used; Operation process chart; Flow process chart; Two handed process chart;
	2nd	Man Machine chart; String diagram and flow diagram.
	3rd	Work Measurement: Definition; Basic procedure in making a time study; Employees rating factor; Application of time allowances: Rest, Personal, Process, Special and Policy allowances;
6th	1st	Calculation of standard time; Numerical Problems; Basic concept of production study;
	2nd	Techniques of Work Measurement; Ratio delay study; Synthesis from standard data; Analytical
	3rd	Estimating and Predetermined Motion Time System (PMTS).
7th	1st	UNIT-III Production Planning and Control: Introduction; Major functions of Production Planning and Control;
	2nd	Preplanning; Methods of forecasting; Routing and Scheduling; Dispatching and Controlling;
	3rd	Concept of Critical Path Method (CPM).
8th	1st	Types of Production: Mass Production, Batch Production and Job Order Production.
	2nd	Characteristics; Economic Batch Quantity (EBQ).

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	3 rd	Principles of Product and Process Planning; Make or Buy decision; Numerical problems.
9 th	1 st	Quality Control: Definition; Objectives; Types of Inspection: First piece, Floor and Centralized Inspection; Advantages and Disadvantages; Statistical Quality Control;
	2 nd	Types of Measurements; Method of Variables; Method of Attributes; Uses of X, R, p and c charts;
	3 rd	Operating Characteristics curve (O.C curve); Sampling Inspection; Single and Double Sampling plan
10 th	1 st	Concept of ISO 9001:2008 Quality Management System Registration/Certification
	2 nd	Procedure; Benefits of ISO to the organization.
	3 rd	CLASS TEST-2
11 th		UNIT -IV
	1 st	Principles of Management: Definition of Management; Administration; Organization; F.W. Taylor's and Henry Fayol's Principles of Management; Functions of Manager; Types of Organization: Line, Staff, Taylor's Pure functional types;
	2 nd	Line and staff and committee type; Directing; Leadership; Styles of Leadership; Qualities of a good leader;
	3 rd	Motivation; Positive and Negative Motivation;
12 th	1 st	Modern Management Techniques; Just In Time; Total Quality Management (TQM)
	2 nd	Quality circle; Zero defect concept; 5S Concept; Management Information Systems.
	3 rd	Personnel Management: Responsibility of Human Resource Management; Selection Procedure; Training of Workers; Apprentice Training; On the Job training and Vestibule School Training.
13 th	1 st	Job Evaluation and Merit Rating; Objectives and Importance; Wages and Salary
	2 nd	Administration; Components of Wages; Wage Fixation; Type of Wage Payment;
	3 rd	Halsey's 50% Plan, Rowan's Plan and Emerson's efficiency plan; Numerical Problems.
14 th		UNIT -V
	1 st	Financial Management: Fixed and Working Capital; Resources of Capital; Shares Preference and Equity Shares; Debentures; Type of debentures; Public Deposits; Factory Costing; Direct Cost; Indirect Cost;
	2 nd	Factory Overhead; Selling Price of a product; Profit; Numerical Problems; Depreciation;
	3 rd	Causes; Methods: Straight line, sinking fund and percentage on Diminishing Value Method; Numerical Problems.
15 th	1 st	Material Management: Objectives of good stock control system; ABC analysis of Inventory;
	2 nd	Procurement and Consumption cycle; Minimum Stock, Lead Time, Reorder Level-Economic Order Quantity problems; Supply Chain.
	3 rd	CLASS TEST-3

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Learning Resources:

1. Industrial Engineering & Management, S.C. Sharma, Khanan Book Publishing Co(P) Ltd., New Delhi
2. Industrial Engineering and Management, O.P.Khanna, Revised Edition, Dhanpat Rai Publications (P) Ltd., New Delhi – 110002.
3. Management, A global perspective, Heinz Wehrich, Harold Koontz, 10th Edition, McGraw Hill International Edition 1994.
4. Essentials of Management, 4th Edition, Joseph L. Massie, Prentice-Hall of India, New Delhi 2004.
5. Principles and Practices of Management, Premvir Kapoor, Khanna Publishing House, N. Delhi

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