

GOVERNMENT POLYTECHNIC JAIPUR
A/ P: Ragadi, Block: Korei, Dist.: Jajpur, Odisha- 755019
DEPARTMENT OF MECHANICAL ENGINEERING (2026-2027)
LESSON PLAN

Discipline: Mechanical	Semester: 5TH	Name of the Teaching faculty: GEETANJALI SETHI, Sr. Lecturer, Mechanical Engg.	
Subject: TH:3(a)- INDUSTRIAL ENGINEERING AND MANAGEMENT	No of Days/ Week class alloted: 3	Semester from Date: 1/07/2026 No of weeks: 15	To Date: 5 /11 /2026
Week	Class Day	Topics	
1st	1st	<u>CH-1 Plant Engineering:</u> Plant; Selection of site of industry; Plant layout; Principles of a good layout	
	2nd	Types; Process; Product and Fixed position; Techniques to improve Layout	
	3rd	Principles of Material handling equipment	
2nd	1st	Plant maintenance; Importance; Break down maintenance; Preventive maintenance and Scheduled maintenance	
	2nd	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; Indian Factories Act 1948 and its provisions related to health, welfare and safety	
	2nd	REVISION & TEST	
	3rd	<u>CH-2 Work Study:</u> Productivity; Standard of living; Method of improving Productivity; Objectives; Importance of good working conditions	
4th	1st	Method Study: Definition; Objectives; Selection of a job for method study; Basic procedure for conduct of Method study	
	2nd	Tools used; Operation process chart; Flow process chart	
	3rd	Two handed process chart; Man Machine chart; String diagram and flow diagram.	
5th	1st	Work Measurement: Definition; Basic procedure in making a time study; Employees rating factor	
	2nd	Application of time allowances: Rest, Personal, Process, Special and Policy allowances;	
	3rd	Calculation of standard time; Numerical Problems; Basic concept of production study	
6th	1st	Techniques of Work Measurement; Ratio delay study; Synthesis from standard data	
	2nd	Analytical estimating and Predetermined Motion Time System (PMTS).	
	3rd	REVISION & TEST	
7th	1st	<u>CH-3 Production Planning and Control:</u> Introduction; Major functions of Production Planning and Control; Preplanning	
	2nd	Methods of forecasting; Routing and Scheduling; Dispatching and Controlling	
	3rd	Concept of Critical Path Method (CPM); Types of Production: Mass Production, Batch Production and Job Order Production; Characteristics	
8th	1st	Economic Batch Quantity (EBQ); Principles of Product and Process Planning; Make or Buy decision	
	2nd	Numerical problems.	
	3rd	Quality Control: Definition; Objectives; Types of Control	

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	2nd	Numerical problems.	
	3rd	Quality Control: Definition; Objectives; Types of Inspection: First piece, Floor and Centralized Inspection; Advantages and Disadvantages	

9th	1st	Statistical Quality Control; Types of Measurements; Method of Variables; Method of Attributes
	2nd	Uses of X, R, p and c charts; Operating Characteristics curve (O.C curve)
	3rd	Sampling Inspection; Single and Double Sampling plan
10th	1st	Concept of ISO 9001:2008 Quality Management System Registration/Certification procedure; Benefits of ISO to the organization
	2nd	REVISION & TEST
	3rd	CH-4 Principles of Management: Definition of Management; Administration; Organization; F.W. Taylor's and Henry Fayol's Principles of Management
11th	1st	Functions of Manager; Types of Organization: Line, Staff, Taylor's Pure functional types; Line and staff and committee type
	2nd	Directing; Leadership; Styles of Leadership; Qualities of a good leader; Motivation; Positive and Negative Motivation; Modern Management Techniques
	3rd	Just In Time; Total Quality Management (TQM); Quality circle; Zero defect concept; 5S Concept; Management Information Systems.
12th	1st	Responsibility of Human Resource Management; Selection Procedure; Training of Workers; Apprentice Training; On the Job training and Vestibule School Training
	2nd	Job Evaluation and Merit Rating; Objectives and Importance; Wages and Salary Administration
	3rd	Components of Wages; Wage Fixation; Type of Wage Payment: Halsey's 50% Plan, Rowan's Plan and Emerson's efficiency plan
13th	1st	Numerical Problems
	2nd	REVISION & TEST
	3rd	CH-5 Financial Management: Fixed and Working Capital; Resources of Capital; Shares Preference and Equity Shares; Debentures; Type of debentures; Public Deposits
14th	1st	Factory Costing; Direct Cost; Indirect Cost; Factory Overhead; Selling Price of a product; Profit
	2nd	Numerical Problems
	3rd	Depreciation; Causes; Methods: Straight line, sinking fund and percentage on Diminishing Value Method; Numerical Problems.
15th	1st	Material Management: Objectives of good stock control system; ABC analysis of Inventory
	2nd	Procurement and Consumption cycle; Minimum Stock, Lead Time, Reorder Level-Economic Order Quantity problems; Supply Chain.
	3rd	REVISION & TEST

REFERENCES:

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 Weihrich, 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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Signature of the faculty