C. V. RAMAN POLYTECHNIC, BHUBANESWAR

LESSON PLAN

Session (2025-2026)

Discipline: Mechanical Engineering	**Semester: 5th** Semester, Winter/2026	**Name of the Faculty:** Dr. Soumya Dash, Asst. Prof. **Email ID: soumya.dash@cvrp.edu.in**
Subject: Industrial Engineering & Management Theory-3 (A), Course code: MEPE301(A)	**No. of Days/week:** 03	**Start Date:** 01.07.2026 **End Date:**

Week	Class Day	Theory Topics
1st	1st	Plant Engineering: Plant: Selection of site of industry: Plant layout:
	2nd	Principles of a good layout; Types; Process; Product and Fixed position; Techniques to improve Layout; Principles of Material handling equipment;
	3rd	Plant maintenance; Importance; Break down maintenance;
2nd	1st	Importance; Break down maintenance; Preventive maintenance and Scheduled maintenance.
	2nd	**Plant Safety:** Importance; Accident: Causes and Cost of an Accident,
	3rd	Accident Proneness, Prevention of Accidents; Industrial disputes;
3rd	1st	Settlement of Industrial disputes; Collective bargaining; Conciliation; Mediation; Arbitration;
	2nd	Indian Factories Act 1948 and its provisions related to health, welfare and safety.
	3rd	**Work Study:** Productivity; Standard of living; Method of improving Productivity;
4th	1st	Objectives; Importance of good working conditions.
	2nd	Method Study: Definition; Objectives; Selection of a job for method study; Basic procedure for conduct of Method study.
	3rd	Tools used; Operation process chart; Flow process chart; Two handed process chart;
5th	1st	Man Machine chart; String diagram and flow diagram.
	2nd	**Work Measurement:**

		Definition; Basic procedure in making a time study; Employees rating factor;
	3rd	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;
	3rd	Analytical estimating and Predetermined Motion Time System (PMTS).
7th	1st	**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); Types of Production: Mass Production, Batch Production and Job Order Production;
8th	1st	Characteristics; Economic Batch Quantity (EBQ); Principles of Product and Process Planning; Make or Buy decision;
	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;
	2nd	Method of Variables; Method of Attributes; Uses of X, R, p and c charts;
	3rd	Operating Characteristics curve (O.C curve);
10th	1st	Sampling Inspection; Single and Double Sampling plan;
	2nd	Concept of ISO 9001:2008 Quality Management System Registration/Certification procedure; Benefits of ISO to the organization.
	3rd	**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
	3rd	Motivation; Positive and Negative Motivation; Modern Management Techniques; Just In Time; Total Quality Management (TQM);
12th	1st	Quality circle; Zero defect concept; 5S Concept; Management Information Systems.
	2nd	**Personnel Management:** Responsibility of Human Resource Management; Selection Procedure; Training of Workers; Apprentice Training;

	3rd	On the Job training and Vestibule School Training; Job Evaluation and Merit Rating; Objectives and Importance; Wages and Salary
13th	1st	Administration; Components of Wages; Wage Fixation; Type of Wage Payment: Halsey's
	2nd	50% Plan, Rowan's Plan and Emerson's efficiency plan; Numerical Problems.
	3rd	**Financial Management:** Fixed and Working Capital; Resources of Capital; Shares Preference and Equity Shares; Debentures;
14th	1st	Type of debentures; Public Deposits; Factory Costing:
	2nd	Direct Cost; Indirect Cost; Factory Overhead; Selling Price of a product;
	3rd	Profit; Numerical Problems; Depreciation; Causes; Methods: Straight line, sinking fund and percentage on Diminishing Value Method;
15th	1st	Numerical Problems.
	2nd	**Material Management:** Objectives of good stock control system; ABC analysis of Inventory; Procurement and Consumption cycle; Minimum Stock
	3rd	Lead Time, Reorder Level-Economic Order Quantity problems; Supply Chain. **REVISION**

Concerned Faculty

H.O.D.