

GOVT POLYTECHNIC BOLANGIR
Department of Mechanical Engineering

LESSON PLAN: 2025-26	
Name of the Faculty: Manabhanjan Bhoi (Lecturer Stage-II)	
Subject: Industrial Engineering and Management (TH1)	
Program: Diploma in Mechanical Engineering Semester: 6th	
Total Contact Hours: 60 Total Marks: 100	
Assessment: Progressive –20, End Term – 80	
Credits: 4	

COURSE OBJECTIVES:

After undergoing this course, the students will be able to:

1. Identify the place for a new plant set up and systematic arrangement of machinery and shop for smooth production.
2. Take right decisions to optimize resources utilizations by improving productivity of the lands, buildings, people, material, machines, money, methods and management effectively.
3. Understanding of stock management and maintenance to reduce plant ideal time.
4. To use the charts to record the quality of products.
5. To eliminate unproductive activities under the control of the management, supervisor, worker and the design of products and processes.

UNIT-I: PLANT ENGINEERING (Total Classes: 10)				
Class No.	Topic	Subtopics Covered	Teaching Aids / Activities	Course Objective
1	Introduction to Plant Engineering	Scope and importance of plant engineering	Lecture, PPT	CO1
2	Site Selection	Factors affecting selection of site of industry	Lecture, PPT	CO1
3	Plant Layout	Definition, objectives and principles of plant layout	Lecture, PPT	CO1
4	Process and product Layout	Meaning, advantages, disadvantages	PPT, examples	CO1
5	Combination Layout	Combination layout and applications	Lecture, PPT	CO1
6	Layout Improvement Techniques	Techniques to improve layout	Case study	CO1
7	Material Handling	Principles of material handling equipment	PPT, video	CO1

8	Plant Maintenance	Introduction to plant maintenance and Importance and objectives of maintenance	Lecture	CO3
9	Types of maintenance	Breakdown Maintenance	PPT	CO3
10	Types of maintenance	Preventive maintenance and Scheduled maintenance	Lecture	CO3

UNIT-II: OPERATIONS RESEARCH (Total Classes: 10)

11	Introduction to Operations Research	Meaning and applications of OR	Lecture, PPT	CO2
12	Linear Programming Problem	Definition and formulation of LPP	Lecture, PPT	CO2
13	Graphical Method (LPP)	Graphical solution of LPP	Board work	CO2
14	LPP Numerical Problems	Solving numerical problems	Problem solving	CO2
15	CPM & PERT	Introduction to CPM and PERT	PPT	CO2
16	CPM	Project network and critical path	PPT, examples	CO2
17	PERT	Evaluation of project completion time	PPT	CO2
18	CPM vs PERT	Distinct features of PERT and CPM	Discussion	CO2
19	CPM Problems	Simple numerical problems	Board work	CO2
20	PERT Problems	Simple numerical problems	Board work	CO2

UNIT-III: INVENTORY CONTROL (Total Classes: 10)

21	Inventory Control	Introduction to inventory	Lecture	CO3
22	Classification of Inventory	Types of inventory	PPT	CO3
23	Objectives of Inventory Control	Objectives and importance	Lecture	CO3
24	Functions of Inventory	Functions and benefits	PPT	CO3
25	Inventory Costs	Costs associated with inventory	Lecture	CO3
26	Inventory Terminology	EOQ, reorder level, lead time	Lecture	CO3

27	EOQ Model	EOQ derivation – basic model	Board work	CO3
28	EOQ Numerical	Solving EOQ numerical problems	Problem solving	CO3
29	EOQ Numerical	Solving EOQ numerical problems	Problem solving	CO3
30	ABC Analysis	Definition and explanation	PPT	CO3

UNIT-IV:INSPECTION AND QUALITY CONTROL (Total Classes: 15)

31	Inspection & QC	Definition of inspection and quality control	Lecture	CO4
32	Inspection Planning	Planning of inspection	PPT	CO4
33	Types of Inspection	Incoming, in-process, final	Lecture	CO4
34	Quality Control	Advantages and disadvantages of QC	Discussion	CO4
35	Quality Factors	Factors influencing quality	Lecture	CO4
36	SQC	Introduction to statistical quality control	PPT	CO4
37	Control Charts	X-bar and R charts	PPT, examples	CO4
38	Attribute Charts	P and C charts	PPT	CO4
39	Methods of Attributes	Concept and applications	Lecture	CO4
40	ISO 9001	Concept of ISO 9001–2008	PPT	CO4
41	Quality Management System	QMS and certification procedure	PPT	CO4
42	Benefits of ISO	Benefits to organization	Discussion	CO4
43	Modern Quality Tools	JIT, Six Sigma, 7S	PPT	CO4
44	Lean Manufacturing	Lean concepts and benefits	PPT	CO4
45	Quality Problems	Solving QC related problems	Board work	CO4

UNIT-V: PRODUCTION PLANNING AND CONTROL (Total Classes: 10)				
46	PPC	Introduction to PPC	Lecture	CO5
47	Functions of PPC	Major functions of PPC	PPT	CO5
48	Forecasting	Methods of forecasting	Lecture	CO5
49	Routing	Meaning and importance	PPT	CO5
50	Scheduling	Scheduling techniques	PPT	CO5
51	Dispatching	Dispatching and its role	Lecture	CO5
52	Controlling	Controlling function in PPC	Discussion	CO5
53	Types of Production	Mass production	PPT	CO5
54	Types of Production	Batch production	PPT	CO5
55	Types of Production	Job order production	PPT	CO5
56	Product & Process Planning	Principles of product planning	Lecture	CO5
57	Product & Process Planning	Principles of process planning	Lecture	CO5
58	Revision & Evaluation	Overall revision and interaction	Q&A	CO1-CO5
59	Revision & Evaluation	Overall revision and interaction	Q&A	CO1-CO5
60	Revision & Evaluation	Overall revision and interaction	Q&A	CO1-CO5

9Pdvt
27.12.25
Signature of Faculty

9Pbhc
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Signature of
HoD
H.O.D.

Dept. of Mechanical Engg.
Govt. Polytechnic Bolangir