

GOVT.POLYTECHNIC BALASORE

Department of Mechanical Engineering

Lesson Plan

Discipline: Mechanical Engineering	Semester: 6th	Faculty: SIBENDRA NATH GHOSE.
Subject: Advance Manufacturing processes	No. Of Days/Week Allotted: 4	Semester from : 14.03.22 To: No. Of Weeks : 15
Week	Class Day	Theory Topics
1st	1 st	Module 1.Non conventional machining process: What is Non-conventional machining process? Difference between Conventional and non-conventional machining. Types of non-conventional machining
	2 nd	Ultrasonic Machining: principle, Description of equipment, applications
	3 rd	Electric Discharge Machining: Principle, Description of equipment, Dielectric fluid, tools (electrodes), Process parameters, Output characteristics, applications.
	4 th	Abrasive Jet Machining: principle, description of equipment, Material removal rate, application.
2nd	1 st	Laser Beam Machining: principle, description of equipment, Material removal rate, application.
	2 nd	Electro Chemical Machining: principle, description of equipment, Material removal rate, application.
	3 rd	Electro Chemical Machining: principle, description of equipment, Material removal rate, application.
	4 th	Plasma Arc Machining – principle, description of equipment, Material removal rate, Process parameters, performance characterization, Applications
3rd	1 st	Plasma Arc Machining – principle, description of equipment, Material removal rate, Process parameters, performance characterization, Applications
	2 nd	Electron Beam Machining - principle, description of equipment, Material removal rate, Process parameters, performance characterization, Applications
	3 rd	Electron Beam Machining - principle, description of equipment, Material removal rate, Process parameters, performance characterization, Applications
	4 th	Topic end, Question answer discussion, Assignment 1
4th	1 st	Module2.Plastic Processing Introduction,thermoset and thermoplast plastic.

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	2 nd	Processing of plastics.
	3 rd	Moulding processes: Injection moulding,
	4 th	Compression moulding, Transfer moulding
5 th	1 st	Extruding; Casting; Calendering.
	2 nd	Fabrication methods-Sheet forming, Blow moulding, Laminating plastics (sheets, rods & tubes), Reinforcing.
	3 rd	Applications of Plastics.
	4 th	Topic end, Question answer discussion, Assignment 11
6 th	1 st	Module 3 Additive Manufacturing Process Introduction
	2 nd	Need for Additive Manufacturing
	3 rd	Fundamentals of Additive Manufacturing,
	4 th	AM Process Chain
7 th	1 st	Advantages and Limitations of AM,
	2 nd	Commonly used Terms, Classification of AM process,
	3 rd	Fundamental Automated Processes
	4 th	Distinction between AM and CNC,
8 th	1 st	Other related technologies.
	2 nd	Application –Application in Design, Aerospace Industry, Automotive Industry
	3 rd	Application- Jewellery Industry, Arts and Architecture. RP Medical and Bioengineering Applications
	4 th	Web Based Rapid Prototyping Systems.
9 th	1 st	Concept of Flexible manufacturing process
	2 nd	Concurrent engineering
	3 rd	production tools like capstan and turret lathes,
	4 th	Rapid prototyping processes
10 th	1 st	Topic end, Question answer discussion, Assignment III
	2 nd	Module4.Special Purpose Machines (SPM): Introduction
	3 rd	Concept, General elements of SPM
	4 th	Productivity improvement by SPM,
11 th	1 st	Productivity improvement by SPM,
	2 nd	Productivity improvement by SPM,
	3 rd	Principles of SPM design.
	4 th	Principles of SPM design.
12 th	1 st	Revision for
	2 nd	Module5.Maintenance of Machine Tools:
	3 rd	Types of maintenance
	4 th	Types of maintenance
13 th	1 st	Repair cycle analysis
	2 nd	Repair cycle analysis
	3 rd	Repair complexity

	4 th	Maintenance manual,
14 th	1 st	Maintenance records
	2 nd	Housekeeping
	3 rd	Introduction to Total Productive Maintenance (TPM).
	4 th	Total Productive Maintenance (TPM).
15 th	1 st	Revision
	2 nd	Revision
	3 rd	Revision
	4 th	Revision

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