

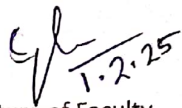
GOVERNMENT POLYTECHNIC JAJPUR
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DEPARTMENT OF MECHANICAL ENGINEERING

LESSON PLAN

Discipline: Mechanical	Semester: 6th	Name of the Teaching faculty: Gitanjali Sethi, Sr. Lect. Mechanical
Subject: Advance Manufacturing Process (TH4b)	No of Days/Week class allotted: 4	Semester from Date: 04/02/25 To Date: 17/05/25 No of weeks: 15
Week	Class Day	Topics
1st	1st	i) Introduction to unconventional machining
		ii) Comparison with traditional machining.
	2nd	i) Ultrasonic Machining: working principle
		ii) description of equipment
	3rd	i) Advantages and limitations
		ii) Applications
2nd	1st	i) Electric Discharge Machining: Principle
		ii) Description of equipment
	2nd	i) Dielectric fluid properties , examples
		ii) Tool materials
		iii) Process parameters
	3rd	i) Process characteristics
		ii) Advantages and limitations
		iii) Applications
	4th	i) Wire cut EDM: Principle, Description of equipment
3rd	1st	i) Controlling parameters
		ii) Applications
	2nd	i) Abrasive Jet Machining: principle, description of equipment
	3rd	i) Material removal rate, advantages and limitations
		ii) Application
4th	4th	i) Laser Beam Machining: principle, description of equipment
	1st	i) Material removal rate, advantages and limitations
		ii) Application
	2nd	i) Electro Chemical Machining: principle, description of equipment
	3rd	i) Material removal rate, advantages and limitations
		ii) Application
	4th	i) Plasma Arc Machining – principle, description of equipment
	1st	i) Material removal rate, Process parameters
		ii) Performance characterization
	2nd	i) Advantages and limitations

5th		ii) Applications
	3rd	i) Electron Beam Machining - principle, description of equipment
	4th	i) Material removal rate, Process parameters
		ii) Performance characterization, Applications
6th	1st	CLASS TEST 1, probable questions discussion
	2nd	i) Thermoplastic and thermosetting materials
		ii) Materials added to polymer to enhance properties
	3rd	i) Properties of plastics and processing methods
7th	4th	i) Injection moulding process, applications
	1st	i) Compression moulding process, applications
	2nd	i) Flash moulding, positive type, semi positive type moulding.
	3rd	i) Transfer moulding process
8th	4th	i) Extrusion moulding process
		ii) Casting
		iii) Calendering
	1st	i) Blow moulding; direct and indirect methods
9th	2nd	i) laminating plastics
		ii) High pressure laminates, manufacturing of sheets, rods and tubes
	3rd	i) low pressure laminates
		ii) Reinforcing, bag moulding, vaccum forming
10th	4th	i) Applications of plastics
	1st	Probable questions discussion/Quiz
	2nd	i) Introduction to additive manufacturing
		ii) Need of AM
11th		iii) Prototypes
	3rd	i) Fundamentals of Additive Manufacturing
		ii) CAD Design, STL files, slicer, 3D printers
	4th	i) Advantages and Limitations of AM
12th	1st	i) Commonly used Terms
		ii) Classification of AM process
	2nd	i) Distinction between AM and CNC
	3rd	i) other related technologies
13th		ii) Fundamental Automated Processes
	4th	i) AM Process Chain
14th	1st	i) AM Process Chain
	2nd	i) Application in Design, Aerospace Industry
	3rd	i) Automotive Industry, Jewelry Industry, Arts and Architecture.
	4th	i) RP Medical and Bioengineering Applications
15th		i) Web Based Rapid Prototyping Systems.
	1st	ii) Concept of Flexible manufacturing process
	2nd	i) Concurrent engineering, production tools like capstan and turret lathes,
	3rd	i) Rapid prototyping processes.
16th	4th	CLASS TEST-2

13th	1st	i) concepts of Special Purpose Machines
	2nd	i) General elements of SPM
	3rd	i) General elements of SPM
	4th	i) Productivity improvement by SPM
14th	1st	i) Principles of SPM design
	2nd	i) Types of maintenance
	3rd	i) Repair cycle analysis
	4th	i) Repair complexity
15th	1st	i) Maintenance manual
	2nd	i) Maintenance records, Housekeeping
	3rd	i) Total Productive Maintenance (TPM).
	4th	Probable questions discussion, VST.


1.2.25
Signature of Faculty

signature of faculty