

GOVERNMENT POLYTECHNIC JAJPUR

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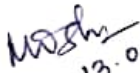
DEPARTMENT OF MECHANICAL ENGINEERING

LESSON PLAN

Discipline: Mechanical	Semester: 6th	Name of the Teaching faculty: Manas Kumar Mishra	
Subject: Advance Manufacturing Process(TH4b)	No of Days/Week class allotted: 4	Semester from Date: 16/01/24 To Date: 26/04/24 No of weeks: 16	
Week	Class Day	Topics	
1st	1st	i) Introduction to unconventional machining	
		ii) lesson plan, Cos, exam, class tests	
		iii) 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
	3rd	1st	i) Controlling parameters ii) Applications
			2nd
		3rd	
4th			i) Laser Beam Machining: principle, description of equipment
4th	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	1st	i) Material removal rate, Process parameters ii) Performance characterization	

5th	2nd	i) Advantages and limitations
		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
4th	i) Injection moulding process, applications	
7th	1st	i) Compression moulding process, applications
	2nd	i) Flash moulding, positive type, semi positive type moulding.
		ii) Transfer moulding process
	4th	i) Extrusion moulding process
ii) Casting		
8th	1st	i) Blow moulding; direct and indirect methods
		ii) High pressure laminates, manufacturing of sheets, rods and tubes
	2nd	i) laminating plastics
		ii) Reinforcing, bag moulding, vaccum forming
9th	1st	i) low pressure laminates
		ii) Applications of plastics
	2nd	i) Probable questions discussion/Quiz
		ii) Introduction to additive manufacturing
3rd	i) Fundamentals of Additive Manufacturing	
	ii) CAD Design, STL files, slicer, 3D printers	
10th	1st	i) Advantages and Limitations of AM
		ii) Prototypes
	2nd	i) Commonly used Terms
		ii) Classification of AM process
3rd	i) Distinction between AM and CNC	
	ii) Fundamental Automated Processes	
11th	1st	i) other related technologies
		ii) AM Process Chain
	2nd	i) AM Process Chain
		ii) Application in Design, Aerospace Industry
3rd	i) Automotive Industry, Jewelry Industry, Arts and Architecture.	
	ii) RP Medical and Bioengineering Applications	
12th	1st	i) Web Based Rapid Prototyping Systems.
		ii) Concept of Flexible manufacturing process
12th	2nd	i) Concurrent engineering, production tools like capstan and turret lathes,

	3rd	i) Rapid prototyping processes.
	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	i) Total Productive Maintenance (TPM).
16th	1st	Probable questions discussion, VST.


 13.01.24
 signature of faculty