

DHABALESWAR INSTITUTE OF POLYTECHNIC

DEPARTMENT OF MECHANICAL ENGINEERING

SUB – ADVANCE MANUFACTURING PROCESSES TH 4

SEM - 6th

SESSION – SUMMER 2022

NO OF DAY/WEEK -4

PRE-REQUISITE	Basic knowledge about various machining process, moulding process, NC and CNC technologies and maintainance.		
COURSE OUTCOMES	CO1: Understand the working principle of modern machining processes. CO2: Understand the Plastic Processing CO3: Understand the additive manufacturing process. CO4: Understand the Special Purpose Machines		
Week	Class Day	Theory / Practical Topics	DELIVERY METHOD
1ST	1ST	Modern Machining Processes - Introduction	Whiteboard
	2ND	Introduction – comparison with traditional machining	Whiteboard
	3RD	Ultrasonic Machining: principle, Description of equipment, applications.	Whiteboard
	4TH	Ultrasonic Machining: principle, Description of equipment, applications	PPT
2ND	1ST	Electric Discharge Machining: Principle, Description of equipment, Dielectric fluid, tools (electrodes), Process parameters, Output characteristics, applications.	PPT
	2ND	Electric Discharge Machining: Principle, Description of equipment, Dielectric fluid, tools (electrodes), Process parameters, Output characteristics, applications.	Whiteboard
	3RD	Wire cut EDM: Principle, Description of equipment, controlling parameters; applications.	Whiteboard
	4TH	Wire cut EDM: Principle, Description of equipment, controlling parameters; applications.	PPT
3RD	1ST	Abrasive Jet Machining: principle, description of equipment, Material removal rate, application.	Whiteboard
	2ND	Abrasive Jet Machining: principle, description of equipment, Material removal rate, application.	PPT
	3RD	Laser Beam Machining: principle, description of equipment, Material removal rate, application.	PPT
	4TH	Laser Beam Machining: principle, description of equipment, Material removal rate, application.	Whiteboard
4TH	1ST	Electro Chemical Machining: principle, description of equipment, Material removal rate, application.	Whiteboard
	2ND	Electro Chemical Machining: principle, description of equipment, Material removal rate, application.	PPT
	3RD	Plasma Arc Machining – principle, description of equipment, Material removal rate, Process parameters, performance characterization, Applications.	Whiteboard
	4TH	Plasma Arc Machining – principle, description of equipment, Material removal rate, Process parameters, performance characterization, Applications.	Whiteboard
5TH	1ST	Electron Beam Machining - principle, description of equipment, Material removal rate, Process parameters, performance characterization, Applications.	Whiteboard
	2ND	Electron Beam Machining - principle, description of equipment, Material removal rate, Process parameters, performance characterization, Applications.	PPT
	3RD	QUIZ & ASSIGNMENT-I	GOOGLE FORMS
	4TH	Processing of plastics.	Whiteboard
6TH	1ST	Moulding processes: Injection moulding, Compression moulding, Transfer moulding.	PPT
	2ND	Moulding processes: Injection moulding, Compression moulding, Transfer moulding.	Whiteboard
	3RD	Extruding: Casting: Calendering	Whiteboard
	4TH	Extruding: Casting: Calendering	Whiteboard
7TH	1ST	Fabrication methods-Sheet forming, Blow moulding, Laminating plastics (sheets, rods & tubes), Reinforcing.	Whiteboard
	2ND	Fabrication methods-Sheet forming, Blow moulding, Laminating plastics (sheets, rods & tubes), Reinforcing.	PPT

9TH	3RD	Advantages and Limitations of AM, Commonly used Terms	
	4TH	QUIZ & ASSIGNMENT-II	Whiteboard
9TH	1ST	Classification of AM process, Fundamental Automated Processes, Distinction between AM and CNC, other related technologies	GOOGLE FORMS
	2ND	Classification of AM process, Fundamental Automated Processes, Distinction between AM and CNC, other related technologies	Whiteboard
	3RD	Application - Application in Design, Aerospace Industry, Automotive Industry, Jewelry Industry, Arts and Architecture, RP Medical and Bioengineering Applications	Whiteboard
	4TH	Application - Application in Design, Aerospace Industry, Automotive Industry, Jewelry Industry, Arts and Architecture, RP Medical and Bioengineering Applications	Whiteboard
10TH	1ST	Web Based Rapid Prototyping Systems	Whiteboard
	2ND	Concept of Flexible manufacturing process, concurrent engineering, production tools like capstan and turret lathes, rapid prototyping processes	PPT
	3RD	Concept of Flexible manufacturing process, concurrent engineering, production tools like capstan and turret lathes, rapid prototyping processes	Whiteboard
	4TH	Special Purpose Machines (SPM)	Whiteboard
11TH	1ST	Concept of SPM	PPT
	2ND	Concept, General elements of SPM	Whiteboard
	3RD	Productivity improvement by SPM	Whiteboard
	4TH	QUIZ & ASSIGNMENT-III	GOOGLE FORMS
12TH	1ST	Principles of SPM design	Whiteboard
	2ND	Principles of SPM design	Whiteboard
	3RD	Maintenance of Machine Tools	Whiteboard
	4TH	Types of maintenance, Repair cycle analysis, Repair complexity	Whiteboard
13TH	1ST	Types of maintenance, Repair cycle analysis, Repair complexity	PPT
	2ND	Maintenance manual, Maintenance records	Whiteboard
	3RD	Maintenance manual, Maintenance records	Whiteboard
	4TH	Housekeeping Introduction to Total Productive Maintenance (TPM)	Whiteboard
14TH	1ST	Housekeeping Introduction to Total Productive Maintenance (TPM)	Whiteboard
	2ND	Housekeeping Introduction to Total Productive Maintenance (TPM)	Whiteboard
	3RD	QUIZ & ASSIGNMENT-IV	Whiteboard
	4TH	GOOGLE FORMS	
15TH	1ST	REVISION	
	2ND	REVISION	
	3RD	REVISION	
	4TH	REVISION	