



NILASAILA INSTITUTE OF SCIENCE & TECHNOLOGY
SERGARH-756060, BALASORE (ODISHA)
(Approved by AICTE& affiliated to SCTE&VT, Odisha)



LESSON PLAN

SUBJECT: TH-4B (ADVANCE MANUFACTURING PROCESSES)

CHAPTER WISE DISTRIBUTION OF PERIODS

Sl.No.	Name of the chapter as per the Syllabus	No. of Periods as per the Syllabus	No. of periods actually needed
1	Modern Machining Processes	20	20
2	Plastic Processing	10	10
3	Additive Manufacturing Process	15	15
4	Special Purpose Machines	7	6
5	Maintenance of Machine Tools	8	7
6	Total Period:	60	60

DISCIPLINE: MECHANICAL ENGINEERING	SEMESTER: 6TH	NAME OF THE TEACHING FACULTY: Er.Yashobanta Das	
		SESSION:2023-24	EXAMINATION:2024(S)
WEEK	CLASS DAY	THEORY TOPICS	
1 st	1 st	1.0 Modern Machining Processes	
	2 nd	1.1 Introduction — comparison with traditional machining.	
	3 rd	1.2 Ultrasonic Machining: principle, Description of equipment, applications.	
	4 th	1.2 Ultrasonic Machining: principle, Description of equipment, applications.	
2 nd	1 st	1.3 Electric Discharge Machining: Principle, Description of equipment, Dielectric fluid, tools (electrodes), Process parameters, Output characteristics, applications.	
	2 nd	1.3 Electric Discharge Machining: Principle, Description of equipment, Dielectric fluid, tools (electrodes), Process parameters, Output characteristics, applications.	
	3 rd	1.4 Wire cut EDM: Principle, Description of equipment, controlling parameters; applications.	
	4 th	1.4 Wire cut EDM: Principle, Description of equipment, controlling parameters; applications.	
3 rd	1 st	1.5 Abrasive Jet Machining: principle, description of equipment, Material removal rate, application.	
	2 nd	1.5 Abrasive Jet Machining: principle, description of equipment, Material removal rate, application.	
	3 rd	1.5 Laser Beam Machining: principle, description of equipment, Material removal rate, application.	
	4 th	1.5 Laser Beam Machining: principle, description of equipment, Material removal rate, application.	
4 th	1 st	1.6 Electro Chemical Machining: principle, description of equipment, Material removal rate, application.	
	2 nd	1.6 Electro Chemical Machining: principle, description of equipment, Material removal rate, application.	
	3 rd	1.7 Plasma Arc Machining — principle, description of equipment, Material removal rate, Process parameters, performance characterization, Applications.	
	4 th	1.7 Plasma Arc Machining — principle, description of equipment, Material removal rate, Process parameters, performance characterization, Applications.	
5 th	1 st	1.7 Plasma Arc Machining — principle, description of equipment, Material removal rate, Process parameters, performance characterization, Applications.	
	2 nd	1.8 Electron Beam Machining - principle, description of equipment, Material removal rate, Process parameters, performance characterization, Applications.	

5 th	3 rd	1.8 Electron Beam Machining - principle, description of equipment, Material removal rate, Process parameters, performance characterization, Applications.
	4 th	1.8 Electron Beam Machining - principle, description of equipment, Material removal rate, Process parameters, performance characterization, Applications.
6 th	1 st	2.0 Plastic Processing
	2 nd	2.1 Processing of plastics
	3 rd	2.1 Processing of plastics.
	4 th	2.2 Moulding processes: Injection moulding, Compression moulding, Transfer moulding.
7 th	1 st	2.2 Moulding processes: Injection moulding, Compression moulding, Transfer moulding.
	2 nd	2.2 Moulding processes: Injection moulding, Compression moulding, Transfer moulding.
	3 rd	2.3 Extruding; Casting; Calendering.
	4 th	2.3 Extruding; Casting; Calendering.
8 th	1 st	2.4 Fabrication methods-Sheet forming, Blow moulding, Laminating plastics (sheets, rods & tubes), Reinforcing.
	2 nd	2.4 Fabrication methods-Sheet forming, Blow moulding, Laminating plastics (sheets, rods & tubes), Reinforcing.
	3 rd	3.0 Additive Manufacturing Process
	4 th	3.1 Introduction, Need for Additive Manufacturing
9 th	1 st	3.1 Introduction, Need for Additive Manufacturing
	2 nd	3.2 Fundamentals of Additive Manufacturing, AM Process Chain
	3 rd	3.3 Advantages and Limitations of AM, Commonly used Terms
	4 th	3.4 Classification of AM process, Fundamental Automated Processes, Distinction between AM and CNC, other related technologies.
10 th	1 st	3.4 Classification of AM process, Fundamental Automated Processes, Distinction between AM and CNC, other related technologies.
	2 nd	3.4 Classification of AM process, Fundamental Automated Processes, Distinction between AM and CNC, other related technologies.
	3 rd	3.5 Application —Application in Design, Aerospace Industry, Automotive Industry, Jewelry Industry, Arts and Architecture. RP Medical and Bioengineering Applications.
	4 th	3.5 Application —Application in Design, Aerospace Industry, Automotive Industry, Jewelry Industry, Arts and Architecture. RP Medical and Bioengineering Applications.
11 th	1 st	3.6 Web Based Rapid Prototyping Systems.
	2 nd	3.6 Web Based Rapid Prototyping Systems.

11th	3rd	3.7 Concept of Flexible manufacturing process, concurrent engineering, production tools like capstan and turret lathes, rapid prototyping processes.
	4th	3.7 Concept of Flexible manufacturing process, concurrent engineering, production tools like capstan and turret lathes, rapid prototyping processes.
12th	1st	3.7 Concept of Flexible manufacturing process, concurrent engineering, production tools like capstan and turret lathes, rapid prototyping processes.
	2nd	MID SEM EXAM
	3rd	MID SEM EXAM
	4th	4.0 Special Purpose Machines (SPM)
13th	1st	4.1 Concept, General elements of SPM, Productivity improvement by SPM, Principles of SPM design.
	2nd	4.1 Concept, General elements of SPM, Productivity improvement by SPM, Principles of SPM design.
	3rd	4.1 Concept, General elements of SPM, Productivity improvement by SPM, Principles of SPM design.
	4th	4.1 Concept, General elements of SPM, Productivity improvement by SPM, Principles of SPM design.
14th	1st	4.1 Concept, General elements of SPM, Productivity improvement by SPM, Principles of SPM design.
	2nd	5.0 Maintenance of Machine Tools
	3rd	5.0 Maintenance of Machine Tools
	4th	5.0 Maintenance of Machine Tools
15th	1st	5.1 Types of maintenance, Repair cycle analysis, Repair complexity, Maintenance manual, Maintenance records, Housekeeping. Introduction to Total Productive Maintenance (TPM)
	2nd	5.1 Types of maintenance, Repair cycle analysis, Repair complexity, Maintenance manual, Maintenance records, Housekeeping. Introduction to Total Productive Maintenance (TPM)
	3rd	5.1 Types of maintenance, Repair cycle analysis, Repair complexity, Maintenance manual, Maintenance records, Housekeeping. Introduction to Total Productive Maintenance (TPM)
	4th	5.1 Types of maintenance, Repair cycle analysis, Repair complexity, Maintenance manual, Maintenance records, Housekeeping. Introduction to Total Productive Maintenance (TPM)