



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	7
5	Maintenance of Machine Tools	8	8
6	Total Period:	60	60

Discipline: MECHANICAL ENGINEERING	Semester: 6th	Name of the Teaching Faculty: Er. YASOBANTA DAS
Week	Class Day	Theory / Practical 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.

3 rd	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.
	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.

7 th	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.

10 th	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.
	3 rd	3.7 Concept of Flexible manufacturing process, concurrent engineering, production tools like capstan and turret lathes, rapid prototyping processes.
	4 th	3.7 Concept of Flexible manufacturing process, concurrent engineering, production tools like capstan and turret lathes, rapid prototyping processes.
12 th	1 st	3.7 Concept of Flexible manufacturing process, concurrent engineering, production tools like capstan and turret lathes, rapid prototyping processes.
	2 nd	4.0 Special Purpose Machines (SPM)
	3 rd	4.0 Special Purpose Machines (SPM)
	4 th	4.0 Special Purpose Machines (SPM)
13 th	1 st	4.1 Concept, General elements of SPM, Productivity improvement by SPM, Principles of SPM design.
	2 nd	4.1 Concept, General elements of SPM, Productivity improvement by SPM, Principles of SPM design.
	3 rd	4.1 Concept, General elements of SPM, Productivity improvement by SPM, Principles of SPM design.
	4 th	4.1 Concept, General elements of SPM, Productivity improvement by SPM, Principles of SPM design.
14 th	1 st	5.0 Maintenance of Machine Tools

14 th	2 nd	5.0 Maintenance of Machine Tools
	3 rd	5.0 Maintenance of Machine Tools
	4 th	5.1 Types of maintenance, Repair cycle analysis, Repair complexity, Maintenance manual, Maintenance records, Housekeeping. Introduction to Total Productive Maintenance (TPM)
15 th	1 st	5.1 Types of maintenance, Repair cycle analysis, Repair complexity, Maintenance manual, Maintenance records, Housekeeping. Introduction to Total Productive Maintenance (TPM)
	2 nd	5.1 Types of maintenance, Repair cycle analysis, Repair complexity, Maintenance manual, Maintenance records, Housekeeping. Introduction to Total Productive Maintenance (TPM)
	3 rd	5.1 Types of maintenance, Repair cycle analysis, Repair complexity, Maintenance manual, Maintenance records, Housekeeping. Introduction to Total Productive Maintenance (TPM)
	4 th	5.1 Types of maintenance, Repair cycle analysis, Repair complexity, Maintenance manual, Maintenance records, Housekeeping. Introduction to Total Productive Maintenance (TPM)