



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



## LESSON PLAN

**SUBJECT: TH-4(B) ( ADVANCE MANUFACTURING PROCESSES )**

**Name Of The Faculty :-** Er. Yashobanta Das

**Branch :-** Mechanical Engineering

**Session :-** 2024-25

**Semester :-** 6th

**Examination :-** 2025 (s)

### 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	22
2	Plastic Processing	10	8
3	Additive Manufacturing Process	15	16
4	Special Purpose Machines	7	8
5	Maintenance of Machine Tools	8	8
	Total Period:	60	62

*Y.Das*  
03/02/2025  
Sign of Faculty

*MJ*  
03/02/25  
Sign of H.O.D.

DISCIPLINE: MECHANICAL ENGINEERING	SEMESTER: 6TH	NAME OF THE TEACHING FACULTY: Er. Yashobanta Das	
		SESSION:2024-25	EXAMINATION:2025(S)
Week	Class Day	Topics to be Covered	
1 <sup>st</sup>	1 <sup>st</sup>	1.0 Modern Machining Processes	
	2 <sup>nd</sup>	1.1 Introduction — comparison with traditional machining.	
	3 <sup>rd</sup>	1.2 Ultrasonic Machining: principle, Description of equipment, applications.	
	4 <sup>th</sup>	1.2 Ultrasonic Machining: principle, Description of equipment, applications.	
2 <sup>nd</sup>	1 <sup>st</sup>	1.3 Electric Discharge Machining: Principle, Description of equipment, Dielectric fluid, tools (electrodes), Process parameters, Output characteristics, applications.	
	2 <sup>nd</sup>	1.3 Electric Discharge Machining: Principle, Description of equipment, Dielectric fluid, tools (electrodes), Process parameters, Output characteristics, applications.	
	3 <sup>rd</sup>	1.4 Wire cut EDM: Principle, Description of equipment, controlling parameters; applications.	
	4 <sup>th</sup>	1.4 Wire cut EDM: Principle, Description of equipment, controlling parameters; applications.	
3 <sup>rd</sup>	1 <sup>st</sup>	1.5 Abrasive Jet Machining: principle, description of equipment, Material removal rate, application.	
	2 <sup>nd</sup>	1.5 Abrasive Jet Machining: principle, description of equipment, Material removal rate, application.	
	3 <sup>rd</sup>	1.5 Laser Beam Machining: principle, description of equipment, Material removal rate, application.	
	4 <sup>th</sup>	1.5 Laser Beam Machining: principle, description of equipment, Material removal rate, application.	
4 <sup>th</sup>	1 <sup>st</sup>	1.6 Electro Chemical Machining: principle, description of equipment, Material removal rate, application.	
	2 <sup>nd</sup>	1.6 Electro Chemical Machining: principle, description of equipment, Material removal rate, application.	
	3 <sup>rd</sup>	1.7 Plasma Arc Machining — principle, description of equipment, Material removal rate, Process parameters, performance characterization, Applications.	
	4 <sup>th</sup>	1.7 Plasma Arc Machining — principle, description of equipment, Material removal rate, Process parameters, performance characterization, Applications.	
5 <sup>th</sup>	1 <sup>st</sup>	1.7 Plasma Arc Machining — principle, description of equipment, Material removal rate, Process parameters, performance characterization, Applications.	
	2 <sup>nd</sup>	1.8 Electron Beam Machining - principle, description of equipment, Material removal rate, Process parameters, performance characterization, Applications.	



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

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

Y. Das  
Sign of Faculty 03/02/25

Sign of H.O.D. 31/02/25