

LESSON PLAN-6TH SEMESTER (2021)

SUBJECT - ADVANCE MANUFACTURING PROCESSES (TH 4b)

Name of the Faculty- DEBENDRA JENA

MONTH	CHAPTER /TOPIC	COURSE TO BE COVERED	CLASSES REQUIRED	REMARKS (IF ANY)
	Chapter-1	Modern Machining Processes:	20	
	1.1	Introduction – comparison with traditional machining	1	
	1.2	Ultrasonic Machining: principle, Description of equipment, applications	2	
	1.3	Electric Discharge Machining: Principle, Description of equipment, Dielectric fluid, tools (electrodes), Process parameters, Output characteristics, applications.	3	
	1.4	Wire cut EDM: Principle, Description of equipment, controlling parameters; applications.	2	
	1.5	Abrasive Jet Machining: principle, description of equipment, Material removal rate, application.	2	
	1.6	Laser Beam Machining: principle, description of equipment, Material removal rate, application	2	
	1.7	Electro Chemical Machining: principle, description of equipment, Material removal rate, application.	2	
	1.8	Plasma Arc Machining – principle, description of equipment, Material removal rate, Process parameters, performance characterization, Applications.	3	
	1.9	Electron Beam Machining - principle, description of equipment, Material removal rate, Process parameters, performance characterization, Applications.	3	
	Chapter -2	Plastic Processing:	10	
	2.1	Processing of plastics.	1	
	2.2	Moulding processes: Injection moulding, Compression moulding, Transfer moulding.	2	
	2.3	Extruding; Casting; Calendering.	2	
	2.4	Fabrication methods-Sheet forming, Blow moulding, Laminating plastics (sheets, rods & tubes), Reinforcing.	2	
	2.5	Applications of Plastics.	2	
	Chapter-3	Additive Manufacturing Process:	15	
	3.1	Introduction, Need for Additive Manufacturing	2	
	3.2	Fundamentals of Additive Manufacturing, AM Process Chain	2	
	3.3	Advantages and Limitations of AM, Commonly used Terms	2	
	3.4	Classification of AM process, Fundamental Automated Processes, Distinction between AM and CNC, other related technologies.	3	
	3.5	Application –Application in Design, Aerospace Industry, Automotive Industry, Jewelry Industry, Arts and Architecture. RP Medical and Bioengineering Applications.	3	
	3.6	Web Based Rapid Prototyping Systems.	1	
	3.7	Concept of Flexible manufacturing process, concurrent engineering, production tools like capstan and turret lathes, rapid prototyping processes.	2	
	Chapter-4	Special Purpose Machines (SPM):	07	

	4.1	Concept, General elements of SPM, Productivity improvement by SPM, Principles of SPM design	07	
	Chapter-5	Maintenance of Machine Tools:	08	
	5.1	Types of maintenance, Repair cycle analysis, Repair complexity, Maintenance manual, Maintenance records, Housekeeping. Introduction to Total Productive Maintenance (TPM).	08	