

ORISSA SCHOOL OF MINING ENGINEERING. KEONJHAR
DEPARTMENT OF MECHANICAL ENGINEERING

<u>LESSON PLAN</u>		
Discipline: Mechanical Engineering	Semester: 6th	Name of the Teaching Faculty: GEETANJALI MARDI
Subject:ADVANCE MANUFACTURING PROCESSES	No. of days/week class allotted 4	Semester From date:22.12.2025 To date:18.04.2026 No. of Week: 15
PRE-REQUISITE	Basic knowledge about Manufacturing process.	
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. CO5:-Understand the Maintenance of Machine Tools.	
Week	Class Day	Theory/Practical Topics
1st	1st	Introduction- comparíson with traditional machining
	2nd	Ultrasonic Machining:- Principle, Description of equipment
	3rd	Ultrasonic Machining:- Advantages, Disadvantages applications
	4th	Electric Discharge Machining:-Principle, Description of equipment
2nd	1st	Electric Discharge Machining:- Dielectric fluid, tools (electrodes)
	2nd	Electric Discharge Machining:- Process parameters, Output characteristics, application
	3rd	Wire cut EDM:- Principle, Description of equipment
	4th	Wire cut EDM:- Controlling parameters, applications
3rd	1st	Abrasive et Machining:- Principle, description of equipment
	2nd	Abrasive Jet Machining:- Material removal rate, application
	3rd	Abrasive Jet Machining:- Advantages, Dis advantagesapplication
	4th	Laser Beam Machining:- principle, description of equipment
4th	1st	Laser Beam Machining:- Material removal rate, application
	2nd	Electro Chemical Machining:-principle, description of equipment
	3rd	Electro Chemical Machining:-Material removal rate, application
	4th	Plasma Arc Machining :- Principle, description of equipment, Material removal rate.
5th	1st	Plasma Arc Machining :-Process parameters, performance characterization,application
	2nd	Electron Beam Machining:- Principle, description of equipment, Material removal rate
	3rd	Electron Beam Machining :- Process parameters, performance characterization, Applications
	4th	REVISION CH-1/QUIZ & ASSIGNMENT-1
6th	1st	Processing of plastics
	2nd	Moulding processes: Injection moulding
	3rd	Moulding processes:Compression moulding
	4th	Moulding processes:Transfer moulding.
7th	1st	Extruding; Casting; Calendering.
	2nd	Fabrication methods-Sheet forming
	3rd	Fabrication methods-Blow moulding
	4th	Fabrication methods- Laminating plastics (sheets, rods & tubes), Reinforcing
8th	1st	Applications of Plastics
	2nd	REVISION CH-2/QUIZ & ASSIGNMENT-2
	3rd	Introduction, Need for Additive Manufacturing
	4th	Fundamentals of Additive Manufacturing, AM Process Chain
9th	1st	Advantages and Limitations of AM, Commonly used Terms
	2nd	Classification of AM process, Fundamental Automated Processes
	3rd	Distinction between AM and CNC, other related technologies
	4th	Application -Application in Design, Aerospace Industry
10th	1st	Application - Automotive Industry, Jewelry Industry
	2nd	Application - Arts and Architecture.

10th	3rd	RP Medical and Bioengineering Applications
	4th	Web Based Rapid Prototyping Systems
11th	1st	Concept of Flexible manufacturing process
	2nd	Concurrent engineering
	3rd	Production tools like capstan and turret lathes
	4th	Rapid prototyping processes
12th	1st	REVISION CH-3/QUIZ & ASSIGNMENT-3
	2nd	Special Purpose Machines (SPM), Concept
	3rd	General elements of SPM
	4th	Productivity improvement by SPM
13th	1st	Productivity improvement by SPM
	2nd	Principles of SPM design
	3rd	Principles of SPM design
	4th	REVISION CH-4/QUIZ & ASSIGNMENT-4
14th	1st	Types of maintenance
	2nd	Repair cycle analysis
	3rd	Repair complexity
	4th	Maintenance manual
15th	1st	Maintenance records
	2nd	Housekeeping
	3rd	Introduction to Total Productive Maintenance (TPM)
	4th	REVISION CH-5/QUIZ & ASSIGNMENT-5


Learning Resources:

01:- Production technology -Vol-II, O.P.KHANNA

02:-Workshop Technology, Vol-I,B.S. Raghuwanshi

03:- Production Technology , HMT, Bangalore

04:- Rapid prototyping: Principles and Applications, Chua C.K., Leong K.F. and LIM C.S,


Signature
of Faculty


Signature of HOD/


Signature of Academic
Coordinator


Signature of Principal