



GANAPATI INSTITUTE OF ENGINEERING & TECHNOLOGY (Polytechnic), JAGATPUR, CUTTACK
DEPARTMENT OF MECHANICAL ENGINEERING

LESSON PLAN-2026 WINTER

Discipline : MECHANICAL ENGG.	Semester : 5th	Name of the Teaching Faculty : Er. ANANDITA NANDA
Subject: Advanced Manufacturing Processes [MEPE303(TH-4B)]	No. of days per week class allotted: 03	Semester From date: 01.07.2026 To Date: 05.11.2026 No. of Weeks: 15
Week	Class Day	Theory Topics
1st	1st	UNIT-I Introduction: Unconventional machining Process.
	2nd	Need – classification – Brief overview.
	3rd	Additive Manufacturing Process: Introduction, Need for Additive Manufacturing
2nd	1st	Fundamentals of Additive Manufacturing, Advantages and Limitations of AM.
	2nd	AM Process Chain.
	3rd	UNIT-II-Mechanical Energy Based Processes: Abrasive Jet Machining, Working Principles
3rd	1st	AJM equipment used – Process parameters, MRR, Applications.
	2nd	Water Jet Machining processes and working Principles.
	3rd	WJM equipment used, Process parameters, MRR- Applications.
4th	1st	Abrasive Water Jet Machining processes and Working Principles.
	2nd	AWJM equipment used – Process parameters, MRR, Applications.
	3rd	Ultrasonic Machining Working Principles, equipment used, Process parameters – MRR- Applications.
5th	1st	USM equipment used – Process parameters – MRR- Applications.
	2nd	CLASS TEST-I
	3rd	UNIT-III -Electrical Energy Based Processes: Electric Discharge Machining (EDM), working Principle.
6th	1st	Equipment and Process Parameters of EDM.
	2nd	Surface Finish and MRR electrode / Tool.
	3rd	Power and control Circuits, Tool Wear.
7th	1st	Dielectric, Flushing, Applications and Advantages.
	2nd	Wire CUT EDM, working Principle, Equipment and Process Parameters wire cut EDM.
	3rd	Equipment and Process Parameters wire cut EDM, Surface Finish and MRR electrode / Tool.
8th	1st	Power and control Circuits, Tool Wear. Dielectric, Flushing, Applications and Advantages.
	2nd	UNIT-IV- Chemical and Electro-Chemical Energy Based Processes: Chemical machining, Etchants.
	3rd	Maskant techniques of applying maskant.
9th	1st	Process Parameters.
	2nd	Surface finish and MRR.
	3rd	Applications and Advantages of CHM.
10th	1st	Electro-Chemical machining, Principles of ECM equipment.
	2nd	Surface Roughness and MRR.

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11 th	3 rd	Electrical Circuit.
	1 st	Process Parameters ECG.
	2 nd	Process Parameters ECH.
12 th	3 rd	Applications of CHM and ECM.
	1 st	CLASS TEST -2
	2 nd	UNIT-V - Thermal Energy Based Processes:
13 th	2 nd	Laser Beam machining and drilling (LBM), Principles and Equipment.
	3 rd	Types, Beam control techniques of LBM.
	1 st	Applications, Advantages of LBM.
14 th	2 nd	Plasma Arc machining (PAM) , Principles and Equipment.
	3 rd	Types, Beam control techniques of PAM.
	1 st	Applications, Advantages of PAM.
15 th	2 nd	Introduction to manufacturing.
	3 rd	Fundamental properties of materials including metals and polymers.
	1 st	Fundamental properties of materials including ceramics and composites.
15 th	2 nd	Fundamental properties of materials including ceramics and composites.
	3 rd	CLASS TEST -3

Learning Resources:

1. Vijay.K. Jain "Advanced Machining Processes" Allied Publishers Pvt. Ltd., New Delhi, 2007
2. Pandey P.C. and ShanH.S."Modern Machining Processes" Tata McGraw-Hill, New Delhi, 2007.
3. Benedict.G.F."Non-Traditional Manufacturing Processes", Marcel Dekker Inc., New York, 1987.
4. Mc Geough,"Advanced Methods of Machining", Chapman and Hall, London, 1998.
5. Paul De Garmo, J.T.Black, and Ronald.A.Kohser, "Material and Processes in Manufacturing" Prentice Hall of India Pvt. Ltd., 8thEdition, New Delhi, 2001

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Prepared By

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