LESSON PLAN

SPINTRONIC TECHNOLOGY AND ADVANCE RESEARCH, BBSR

Department: Mechanical Engineering

Subject- Advanced manufacturing process
Semester: 5th Semester
Faculty Name:Dr. Sitesh Mahapatra
Academic Session: 2026-27
Total Periods: 45

Sl.No	Unit	Lecture Topic	Period	Cumulative
1	Unit-I	Introduction to Unconventional Machining	1	1
2		Need and Classification of UMP	1	2
3		Overview of UMP	1	3
4		Introduction to Additive Manufacturing	1	4
5		AM Process Chain, Advantages & Limitations	1	5
6	Unit-II	Abrasive Jet Machining (AJM)	1	6
7		AJM Equipment and Working	1	7
8		AJM Process Parameters and MRR	1	8
9		Water Jet Machining (WJM)	1	9
10		WJM Applications	1	10
11		Abrasive Water Jet Machining (AWJM)	1	11
12		Ultrasonic Machining (USM)	1	12
13		Revision / Numerical	1	13
14	Unit-III	Introduction to EDM	1	14
15		EDM Working Principle	1	15
16		EDM Equipment	1	16
17		EDM Process Parameters	1	17
18		Surface Finish and MRR	1	18
19		Electrode and Tool Wear	1	19
20		Dielectric and Flushing	1	20
21		Wire Cut EDM Applications	1	21
22	Unit-IV	Chemical Machining (CHM)	1	22
23		Electro Chemical Machining (ECM)	1	23
24		Etchants and Maskants	1	24
25		Maskant Application Techniques	1	25

26		CHM Process Parameters	1	26
27		Surface Finish and MRR	1	27
28		Principles of ECM Equipment	1	28
29		Surface Roughness in ECM	1	29
30		Electrical Circuit of ECM	1	30
31		ECG Process	1	31
32		ECH Process & Applications	1	32
33	Unit-V	Laser Beam Machining (LBM)	1	33
34		LBM Equipment and Applications	1	34
35		Plasma Arc Machining (PAM)	1	35
36		PAM Types and Applications	1	36
37		Electron Beam Machining (EBM)	1	37
38		Beam Control Techniques	1	38
39		Introduction to Manufacturing Materials	1	39
40		Properties of Metals	1	40
41		Properties of Polymers	1	41
42		Properties of Ceramics	1	42
43		Properties of Composites	1	43
44		Material Selection	1	44
45		Revision	1	45
46		Class Test / Doubt Clearing	1	46

REFERENCES:

1. Vijay.K. Jain “Advanced Machining Processes” Allied Publishers Pvt. Ltd., NewDelhi, 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”, MarcelDekker Inc.,New York, 1987.

4. Mc Geough,“Advanced Methods of Machining”, Chapman andHall, 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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