

BHUBANANANDA ODISHA SCHOOL OF ENGINEERING, CUTTACK  
DEPARTMENT OF MECHANICAL ENGINEERING



LESSON PLAN

SUBJECT: **Advance Manufacturing Processes**(TH-4)

FACULTY: PRABIR KUMAR SWAIN

ACCADEMIC SESSION: 2023-24

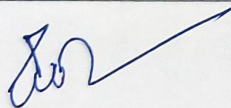
SEMESTER: 6<sup>TH</sup>

SEC: B

H O D (MECHANICAL ENGG.)

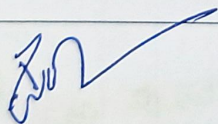
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**DEPARTMENT OF MECHANICAL ENGINEERING**  
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|-----------------------------------------------------------|-----------------------------------------------------------------------------------------------------------------------------------------------|-------------------------------|------------------------------------------------------------------------------------------------------------------------------|
| <b>Discipline:</b><br><b>Mechanical Engineering</b>       | <b>Semester:</b> 6 <sup>TH</sup>                                                                                                              | <b>Section-B</b>              | <b>Name of the teaching faculty:</b><br><b>Prabir Kumar Swain</b>                                                            |
| <b>Subject:</b><br><b>Advance Manufacturing Processes</b> | <b>No. of Days/ per week class allotted:</b><br><b>04 periods per week</b><br><b>(Mon-1 period, Thu-1 period, Fri-1 period, Sat-1 period)</b> |                               | <b>Semester From Date: 16-01-2024 To Date: 26-04-2024</b><br><b>No. of weeks: 15 weeks</b>                                   |
| <b>Week</b>                                               | <b>Class Day</b>                                                                                                                              | <b>No of period available</b> | <b>Theory Topics</b>                                                                                                         |
| 1 <sup>ST</sup>                                           | 18/01/2024                                                                                                                                    | 1                             | <b>3.0 Additive Manufacturing Process:</b><br>3.1 Introduction, Need for Additive Manufacturing                              |
|                                                           | 19/01/2024                                                                                                                                    | 1                             | 3.2 Fundamentals of Additive Manufacturing                                                                                   |
|                                                           | 20/01/2024                                                                                                                                    | 1                             | 3.2 AM Process Chains                                                                                                        |
| 2 <sup>ND</sup>                                           | 25/01/2024                                                                                                                                    | 1                             | 3.3 Advantages and Limitations of AM, Commonly used Terms                                                                    |
| 3 <sup>RD</sup>                                           | 29/01/2024                                                                                                                                    | 1                             | 3.4 Classification of AM process,                                                                                            |
|                                                           | 01/02/2024                                                                                                                                    | 1                             | 3.4 Fundamental Automated Processes, Distinction between AM and CNC, other related technologies.                             |
|                                                           | 02/02/2024                                                                                                                                    | 1                             | 3.5 Application –Application in Design, Aerospace Industry, Automotive Industry, Jewelry Industry, Arts and Architecture. RP |



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|                 |            |   |                                                                              |
|-----------------|------------|---|------------------------------------------------------------------------------|
|                 |            |   | Medical and Bioengineering Applications                                      |
|                 | 03/02/2024 | 1 | 3.6 Web Based Rapid Prototyping Systems                                      |
| 4 <sup>TH</sup> | 05/02/2024 | 1 | 3.7 Concept of Flexible manufacturing process                                |
|                 | 08/02/2024 | 1 | 3.7 concurrent engineering, production tools like capstan and turret lathes, |
|                 | 09/02/2024 | 1 | 3.7 rapid prototyping processes<br>Monthly Class test-I                      |
|                 | 10/02/2024 | 1 | <b>4.0 Special Purpose Machines (SPM):</b><br>4.1 Concept                    |
|                 | 12/02/2024 | 1 | 4.1 General elements of SPM                                                  |
| 5 <sup>TH</sup> | 15/02/2024 | 1 | 4.1 Productivity improvement by SPM,                                         |
|                 | 16/02/2024 | 1 | 4.1 Principles of SPM design.                                                |
|                 | 17/02/2024 | 1 | <b>5.0 Maintenance of Machine Tools:</b><br>5.1 Types of maintenance,        |
|                 | 19/02/2024 | 1 | 5.1 Repair cycle analysis,                                                   |
| 6 <sup>TH</sup> | 22/02/2024 | 1 | 5.1 Repair complexity                                                        |
|                 | 23/02/2024 | 1 | 5.1 Maintenance manuals Maintenance records, Housekeeping.                   |
|                 | 24/02/2024 | 1 | 5.1 Introduction to Total Productive Maintenance (TPM)                       |
|                 | 26/02/2024 |   | <b>2.0 Plastic Processing:</b><br>2.1 Processing of plastics.                |
| 7 <sup>TH</sup> | 29/02/2024 | 1 | 2.2 Moulding processes: Injection moulding,                                  |

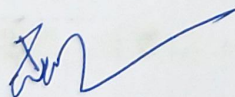


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| 8 <sup>TH</sup>  | 01/03/2024 | 1 | 2.2 Compression moulding                                                                                                                                                           |
|                  | 02/03/2024 | 1 | 2.2 Transfer moulding                                                                                                                                                              |
|                  | 04/03/2024 | 1 | 2.3 Extruding                                                                                                                                                                      |
|                  | 07/03/2024 | 1 | 2.3 Casting                                                                                                                                                                        |
|                  | 09/03/2024 | 1 | 2.3 Calendering<br>2.4 Fabrication methods<br>-Sheet forming,                                                                                                                      |
| 9 <sup>TH</sup>  | 11/03/2024 | 1 | 2.4 Blow moulding<br>2.4 Laminating plastics (sheets, rods & tubes),<br>2.4 Reinforcing<br>2.5 Applications of Plastics.                                                           |
|                  | 14/03/2024 | 1 | <b>1.0 Modern Machining Processes:</b><br>1.1 Introduction – comparison with traditional machining.<br>1.2 Ultrasonic Machining: principle, Description of equipment, applications |
|                  | 15/03/2024 | 1 | 1.3 Electric Discharge Machining: Principle, Description of equipment,<br>1.3 Dielectric fluid, tools (electrodes), Process parameters, Output characteristics, applications.      |
|                  | 16/03/2024 | 1 | 1.4 Wire cut EDM: Principle, Description of equipment, controlling parameters; applications                                                                                        |
|                  | 18/03/2024 | 1 | 1.4 Wire cut EDM: Principle, Description of equipment, controlling parameters; applications<br>1.5 Abrasive Jet Machining: principle,                                              |
| 10 <sup>TH</sup> |            |   |                                                                                                                                                                                    |

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|                  |            |   | description of equipment,<br>Material removal rate, application                                                                                                                                                                                                                                    |
|                  | 21/03/2024 | 1 | 1.6 Electro-Chemical<br>Machining: principle, description of<br>equipment, Material removal rate,<br>application. 1.7 Plasma Arc Machining<br>– principle, description of equipment                                                                                                                |
|                  | 22/03/2024 | 1 | 1.7 Material removal rate,<br>Process parameters, performance<br>characterization, Applications. 1.8 Electron Beam Machining Description<br>of equipment, controlling<br>parameters; applications 1.8 Material removal rate,<br>Process parameters, performance<br>characterization, Applications. |
|                  | 23/03/2024 | 1 | Revision                                                                                                                                                                                                                                                                                           |
| 11 <sup>TH</sup> | 28/03/2024 | 1 | <b>Monthly Class Test-II</b>                                                                                                                                                                                                                                                                       |
|                  | 30/03/2024 | 1 | Revision                                                                                                                                                                                                                                                                                           |
|                  | 02/04/2024 | 1 | Revision                                                                                                                                                                                                                                                                                           |
| 12 <sup>TH</sup> | 04/04/2024 | 1 | Previous Year Questions Discussion                                                                                                                                                                                                                                                                 |
|                  | 05/04/2024 | 1 | Previous Year Questions Discussion                                                                                                                                                                                                                                                                 |
|                  | 06/04/2024 | 1 | Revision                                                                                                                                                                                                                                                                                           |
|                  | 08/04/2024 | 1 | Revision                                                                                                                                                                                                                                                                                           |
| 13 <sup>TH</sup> | 12/04/2024 | 1 | Revision                                                                                                                                                                                                                                                                                           |
|                  | 13/04/2024 | 1 | Previous Year Questions Discussion                                                                                                                                                                                                                                                                 |
|                  | 15/04/2024 | 1 | Previous Year Questions Discussion                                                                                                                                                                                                                                                                 |
| 14 <sup>TH</sup> | 18/04/2024 | 1 | Revision                                                                                                                                                                                                                                                                                           |
|                  | 19/04/2024 | 1 | Revision                                                                                                                                                                                                                                                                                           |



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|                  | 20/04/2024 | 1 | Revision |
| 15 <sup>TH</sup> | 22/04/2024 | 1 | Revision |
|                  | 25/04/2024 | 1 | Revision |
|                  | 26/04/2024 | 1 | Revision |

