

6th SEMESTER-(2021-22)

**SUBJECT-ADVANCED MANUFACTURING PROCESS
BRANCH-MECHANICAL ENGINEERING.
NAME- GOBIND CH. BARIK**

**TOTAL PERIODS-60
THEORY-4P/WEEK**

| Sl No. | week | Day | Topics to be covered |
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| 1 | 1st | 1st day | Introduction to modern manufacturing process |
| | | 2nd day | comparison with traditional machining |
| | | 3rd day | Ultrasonic Machining: principle, Description of equipment, applications. |
| | | 4th day | Advantages, disadvantages and area of application of USM. |
| 2 | 2nd | 1st day | Electric Discharge Machining: Principle, Description of equipment, Dielectric fluid. |
| | | 2nd day | Tools(electrodes), Process parameters, Output characteristics, applications. |
| | | 3rd day | Wire cut EDM: Principle, Description of equipment, controlling parameters |
| | | 4th day | Advantages, disadvantages and area of application of wire cut EDM. |
| 3 | 3rd | 1st day | Abrasive Jet Machining: principle, description of equipment, Material removal rate. |
| | | 2nd day | Advantages, disadvantages and area of application of abrasive jet machining. |
| | | 3rd day | Laser Beam Machining: principle, description of equipment, Material removal rate. |
| | | 4th day | Advantages, disadvantages and area of application of laser beam machining. |
| 4 | 4th | 1st day | Electro Chemical Machining: principle, description of equipment, Material removal rate. |
| | | 2nd day | Advantages, disadvantages and area of application of electro chemical machining. |
| | | 3rd day | Plasma Arc Machining – principle, description of equipment, Material removal rate. |
| | | 4th day | Process parameters, performance characterization, Application. |
| 5 | 5th | 1st day | Electron Beam Machining - principle, description of equipment, Material removal rate. |
| | | 2nd day | Working process of Electron beam machining. |
| | | 3rd day | Material removal rate. |
| | | 4th day | Process parameters, performance characterization, Applications. |
| 6 | 6th | 1st day | Processing of plastics. |
| | | 2nd day | Moulding processes: Injection moulding. |

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| | | 3rd day | Compression moulding, transfer moulding. |
| | | 4th day | Extruding |
| 7 | 7th | 1st day | Casting |
| | | 2nd day | Calendering |
| | | 3rd day | Fabrication methods-Sheet forming, Blow moulding. |
| | | 4th day | Laminating plastics (sheets,rods,tubes) |
| 8 | 8th | 1st day | Reinforcing |
| | | 2nd day | Applications of Plastics. |
| | | 3rd day | Introduction, Need for Additive Manufacturing. |
| | | 4th day | Fundamentals of Additive Manufacturing. |
| 9 | 9th | 1st day | AM processing chain. |
| | | 2nd day | Advantages of AM, Commonly used Terms |
| | | 3rd day | Limitations of additive manufacturing. |
| | | 4th day | Classification of AM process |
| 10 | 10th | 1st day | Fundamental Automated Processes. |
| | | 2nd day | Distinction between AM and CNC, other related technologies. |
| | | 3rd day | Application–Application in Design, Aerospace Industry, Automotive Industry, Jewelry Industry, Arts and Architecture. |
| | | 4th day | RP Medical and Bioengineering Applications. |
| 11 | 11th | 1st day | Web Based Rapid Prototyping Systems. |
| | | 2nd day | Concept of Flexible manufacturing process. |
| | | 3rd day | concurrent engineering. |
| | | 4th day | Use of FMS in production tools like capstan and turret lathes. |
| 12 | 12th | 1st day | Rapid prototyping processes. |
| | | 2nd day | Concept of special purpose machining. |
| | | 3rd day | 3D printing |
| | | 4th day | Productivity improvement by SPM. |

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| 13 | 13th | 1st day | Principles of SPM design. |
| | | 2nd day | Importance of special purpose machining. |
| | | 3rd day | Advantages and disadvantages. |
| | | 4th day | Area of application. |
| 14 | 14th | 1st day | Types of maintenance. |
| | | 2nd day | Description of weekly, daily and yearly maintenance. |
| | | 3rd day | Need of maintenance and Repair cycle analysis, |
| | | 4th day | Repair complexity. |
| 15 | 15th | 1st day | Maintenance manual. |
| | | 2nd day | Maintenance records, Housekeeping. |
| | | 3rd day | Introduction to Total Productive Maintenance (TPM). |
| | | 4th day | Need of productive maintenance. |