UTKALMANI GOPABANDHU INSTITUTE OF ENGINEERING LESSON PLAN

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| **Discipline:****Mechanical** | **Semester: 3RD** | **Name of the Teaching faculty: MONALISHA SWAIN** |
| **Subject: Advanced Manufacturing Processes(Th-2)** | **No of Days/ Week class alloted: 4** | **Semester from Date: 14. 02 . 2023 To Date: 25.05.2023****No of weeks: 15** |
| Week | Class | Topics |
| 1st | 1st | Introduction  |
| 2nd | 1. Modern Machining Processes:

1.1 Introduction – comparison with traditional machining |
| 3rd | 1.2 Ultrasonic Machining: principle, Description of equipment, applications. |
| 4th | 1.2 Ultrasonic Machining: principle, Description of equipment, applications. |
| 2nd | 1st | 1.3 Electric Discharge Machining: Principle, Description of equipment, Dielectric fluid, tools (electrodes), Process parameters, Output characteristics, applications. |
| 2nd | 1.3 Electric Discharge Machining: Principle, Description of equipment, Dielectric fluid, tools (electrodes), Process parameters, Output characteristics, applications. |
| 3rd | 1.3 Electric Discharge Machining: Principle, Description of equipment, Dielectric fluid, tools (electrodes), Process parameters, Output characteristics, applications. |
| 4th | 1.4 Wire cut EDM: Principle, Description of equipment, controlling parameters; applications. |
| 3rd | 1st | 1.5 Abrasive Jet Machining: principle, description of equipment, Material removal rate, application. |
| 2nd | 1.5 Abrasive Jet Machining: principle, description of equipment, Material removal rate, application. |
| 3rd | 1.6 Laser Beam Machining: principle, description of equipment, Material removal rate, application |
| 4th | 1.6 Laser Beam Machining: principle, description of equipment, Material removal rate, application |
| 4th | 1st | 1.7 Electro Chemical Machining: principle, description of equipment, Material removal rate, application. |
| 2nd | 1.7 Electro Chemical Machining: principle, description of equipment, Material removal rate, application. |
| 3rd | 1.8 Plasma Arc Machining – principle, description of equipment, Material removal rate, Process parameters, performance characterization, Applications. |
| 4th | 1.8 Plasma Arc Machining – principle, description of equipment, Material removal rate, Process parameters, performance characterization, Applications |
| 5th | 1st | 1.9 Electron Beam Machining - principle, description of equipment, Material removal rate, Process parameters, performance characterization, Applications. |
| 2nd | 1.8 Electron Beam Machining - principle, description of equipment, Material removal rate, Process parameters, performance characterization, Applications. |

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| 3rd | 2.0 Plastic Processing: 2.1 Processing of plastics..;;. Reinforcing.  |
| 4th | 2.1 Processing of plastics. |
| 6th | 1st | 2.2 Moulding processes: Injection moulding, |
| 2nd | 2.2 Moulding processes: Injection moulding, |
| 3rd | Compression moulding |
| 4th | Compression moulding |
| 7th | 1st | Transfer moulding |
| 2nd | Transfer moulding |
| 3rd | 2.3 Extruding |
| 4th | 2.3 Extruding |
| 8th | 1st | Casting |
| 2nd | Calendering |
| 3rd | 2.4 Fabrication methods-Sheet forming,  |
| 4th | Blow moulding, |
| 9th | 1st | Laminating plastics (sheets, rods & tubes), |
| 2nd | 2.5 Applications of Plastics. |
| 3rd | 3.0 Additive Manufacturing Process: 3.1 Introduction, Need for Additive Manufacturing  |
| 4th | 3.2 Fundamentals of Additive Manufacturing |
| 10th | 1st | AM Process Chain |
| 2nd | 3.3 Advantages and Limitations of AM, Commonly used Terms |
| 3rd | 3.4 Classification of AM process, Fundamental Automated Processes, |
| 4th | Distinction between AM and CNC, other related technologies |
| 11th | 1st | 3.5 Application –Application in Design, Aerospace Industry, |
| 2nd | Automotive Industry, Jewelry Industry, Arts and Architecture |
| 3rd | RP Medical and Bioengineering Applications |
| 4th | 3.6 Web Based Rapid Prototyping Systems. |
| 12th | 1st | 3.7 Concept of Flexible manufacturing process, |
| 2nd | concurrent engineering |

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|  | 3rd | Production tools like capstan and turret lathes, rapid prototyping processes |
| 4th |  |
| 13th | 1st | 4.0 Special Purpose Machines (SPM): 4.1 Concept, General elements of SPM,  |
| 2nd | Productivity improvement by SPM |
| 3rd | Principles of SPM design |
| 4th | 5.0 Maintenance of Machine Tools: 5.1 Types of maintenance |
| 14th | 1st | 5.1 Types of maintenance |
| 2nd | Repair cycle analysis |
| 3rd | Repair complexity |
| 4th | Maintenance manual |
| 15th | 1st | Maintenance records, Housekeeping |
| 2nd | . Introduction to Total Productive Maintenance (TPM). |
| 3rd | Revision |
| 4th | Internal -2 |