# MANUFACTURING PROCESS LAB

| Course code | 20ME3452 | Year | II | Semester | II |
|---|---|---|---|---|---|
| Course category | Professional Core | Branch | ME | Course Type | Lab |
| Credits | 1.5 | L-T-P | 0-0-3 | Prerequisites | - |
| Continuous Internal Evaluation | 15 | Semester End Evaluation | 35 | Total Marks | 50 |

**Course Outcomes:** Upon successful completion of the course, the student will be able to

| CO's | Statement: | Blooms Level | Experiments |
|---|---|---|---|
| CO1 | Demonstrate various processes used for casting, joining, sheet metal and plastic processing. | L3 | $E_1$ To $E_{14}$ |
| CO2 | Fabricate weldments using arc, gas, resistance and TIG welding. | L4 | $E_1$ To $E_5$ |
| CO3 | Analyze the properties of moulding sands, prepare pattern and mould cavity using sand casting. | L4 | $E_6$ To $E_9$ |
| CO4 | Experiment formability studies on sheet metal | L4 | $E_{10}$ , $E_{11}$ |
| CO5 | Analyse different moulding methods of manufacturing plastics components. | L4 | $E_{11}$To $E_{14}$ |

**Contribution of Course Outcomes towards achievement of Program Outcomes & Strength of correlations (3-High, 2: Medium, 1: Low)**

| | PO1 | PO2 | PO3 | PO4 | PO5 | PO6 | PO7 | PO8 | PO9 | PO10 | PO11 | PO12 | PSO1 | PSO2 |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| CO1 | 3 | 2 | | 2 | | | | | 3 | 3 | | 2 | 3 | 3 |
| CO2 | 3 | 2 | 2 | 2 | | | | | 3 | 3 | | 2 | 3 | 3 |
| CO3 | 3 | 2 | 2 | 2 | | | | | 3 | 3 | | 2 | 3 | 3 |
| CO4 | 3 | 2 | 2 | 2 | | | | | 3 | 3 | | 2 | 3 | 3 |
| CO5 | 3 | 2 | 2 | 2 | | | | | 3 | 3 | | 2 | 3 | 3 |

| Contents | MappedCO |
|---|---|
| 1. Fabricate the butt joint on the given work pieces using metal arc welding.<br>2. Fabricate the Lap joint on the given work pieces using metal arc welding.<br>3. Fabricate butt joint on the given work pieces using gas welding.<br>4. Fabricate butt joint on the given work pieces using TIG welding.<br>5. Join metal plates on the given work pieces using resistance spot welding. | **CO1, CO2** |
| 6. Determine the grain fineness number of the given moulding sand.<br>7. Preparation of Pattern for sand casting of at least two products<br>(i) Single Piece (ii) Split Piece<br>8. Preparation of mould cavity on sand casting using single and split piece pattern. | **CO1, CO3** |
| 9. Perform formability studies on sheet metals.<br>(i) Blanking and Piercing (ii) Bending | **CO1, CO4** |

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| 10. Develop plastic components using<br>(i) Injection Moulding (Any Two Products) (ii) Blow Moulding. | **CO1, CO5** |

**Learning Resources:**

**Text Books**

1) Manufacturing Technology: Foundry, Forming, Welding, Volume-1, By P.N.Rao, McGraw Hill Education(India Pvt Limited), 5th Edition
2) Manufacturing Processes for Engineering Materials by Serope Kalpakjian, Steven R.Schmid, Pearson Education India 4e