

MANUFACTURING PROCESSES LAB

Course Code	23ME3451	Year	II	Semester	II
Course Category	Professional Core	Offering Branch	ME	Course Type	Lab
Credits	1.5	L-T-P	0-0-3	Prerequisites	Nil
Continuous Internal Evaluation	30	Semester End Evaluation	70	Total Marks	100

Course Objective: Acquire practical knowledge on Metal Casting, Welding, Press Working and Processing of Plastics.

Course Outcomes:

COs	Statements	Blooms Level
CO1	Demonstrate various processes used for casting, joining, sheet metal and plastic processing	L2
CO2	Analyze the properties of moulding sands, prepare pattern for various applications	L2
CO3	Fabricate different types of components using various manufacturing techniques.	L5
CO4	Analyze different moulding methods of manufacturing plastics components	L3
CO5	Develop weldments using resistance and TIG welding.	L6
CO6	Explain different types of 3d Printing techniques.	L2

List of Experiments

1. Design and making of pattern
 - i. Single piece pattern
 - ii. Split pattern
2. Sand properties testing
 - i. Sieve analysis (dry sand)
 - ii. Clay content test
 - iii. Moisture content test
 - iv. Strength test (Compression test & Shear test)
 - v. Permeability test

3. Injection Molding
4. Blow Molding
5. Study of deep drawing and extrusion operations
6. To make weldments using TIG/MIG welding
7. To weld using Spot welding machine
8. To join using Brazing and Soldering
9. To make simple parts on a 3D printing machine
10. Demonstration of metal casting.

Virtual Lab:

1. To study and observe various stages of casting through demonstration of casting process. (<https://virtual-labs.github.io/exp-sand-casting-process-dei/theory.html>)
2. To weld and cut metals using an oxyacetylene welding setup. (<https://virtual-labs.github.io/exp-gas-cutting-processes-iitkgp/index.html>).
3. To simulate Fused deposition modelling process (FDM) (<https://3dpdei.vlabs.ac.in/exp/simulation-modelling-process>)
4. <https://altair.com/inspire-mold/>
5. <https://virtual-labs.github.io/exp-simulation-cartesian-system-dei/theory.html>