



SAMRAT ASHOK TECHNOLOGICAL INSTITUTE

(Engineering College), VIDISHA M.P.

(An Autonomous Institute Affiliated to RGPV Bhopal)

Mechanical Engineering Department

| | | | | | | | | | |
|------------------------|---------------|-----------------|----------------|-----------------|-------------------------------|---------------|---|---|---------------|
| Semester/Year | | I | Program | | B.Tech. | | | | |
| Subject Category | Manufacturing | Subject Code: | MEA-105 | Subject Name: | Manufacturing Practice | | | | |
| Maximum Marks Allotted | | | | | | Contact Hours | | | Total Credits |
| Theory | | | Practical | | Total Marks | L | T | P | |
| End Sem | Mid-Sem | Quiz+Assignment | End Sem | Lab-Work + Quiz | | | | | |
| 60 | 20 | 10+10 | 30 | 10+10 | 150 | 3 | 0 | 2 | 4 |

Prerequisites:(Only for open electives)

Course Objective:

This Subjects deals with the Basic Knowledge related to production such as casting, welding, joining etc. After completing this subjects students are able to analyze the difference between various manufacturing techniques and solve the basic problem related to the subjects.

Course Outcomes:

After completion of the course, students would be able to -

1. Identify the issue that arises in making pattern, moulding process and there Design
2. Acquire the Knowledge and application of forging, press working, and to evaluate the power requirements
3. Understand the Welding Process, Defects in Welding and their remedies.
4. Understand the Metal Cutting force Analysis and Economics of Material Cutting
5. Understand the strength of measurement, linear and Angular Instruments

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

Contents:

| UNITs | Descriptions | Hrs | CO's |
|-------|--|-----|------|
| I | <p>Pattern Making: Pattern and pattern making, types of patterns, Pattern materials, pattern allowances, pattern design considerations, core, core boxes.</p> <p>Moulding and Foundry: moulding sand, core sands and their properties, gating, runners, risers, solidification, defects and elimination, moulding machines, centrifugal casting, die casting, shell moulding, Lost wax moulding; Injection moulding, continuous casting, cupola description and operation</p> | 8 | 1 |
| II | <p>Forging: Theory and application of forging processes, operations, principle of drop and horizontal forging machines, forging defects, general principle of forging design.</p> <p>Press working: press tool operations, process of shearing, punching, piercing, blanking, trimming , embossing, coining, bending, forming and drawing press, tool dies, force, pressure and power requirements</p> | 8 | 2 |
| III | <p>Welding: Gas welding method, flames, gas cutting, Electric arc welding, A.C. and D.C. welding machines and their characteristics. TIG & MIG Welding , Pressure welding, electric resistance welding i.e. spot, seam and butt welding; Thermit Welding, welding defects and their remedies; brazing and soldering, Introduction of additive manufacturing, Introduction of spinning.</p> | 8 | 3 |
| IV | <p>Metal cutting: Principles of metal cutting, tool geometry, Tool life plots , Machinability, Tool wear, Cutting force analysis, Cutting tool materials & Cutting fluids, Economics of metal machining</p> | 8 | 4 |

| | | | |
|---|---|---|---|
| V | Metrology: Standards of Measurements, Linear and angular instruments; slip gauges, sine bar, angle gauges, screw thread measurements, limit gauges, limit fits and tolerances. Introduction to surface roughness measurement, comparators, and coordinate measuring machine; | 8 | 5 |
| Guest Lectures (if any) | | | |
| Total Hours: 40 | | | |
| List of experiments: | | | |
| <ol style="list-style-type: none"> 1. To Prepare a T- Half lap joint in carpentry shop. 2. To Prepare a Dovetail joint in carpentry shop. 3. To Prepare A Model of Single door window frame in carpentry shop. 4. To Prepare Chisel from given mild steel rod in black smithy shop. 5. To Prepare Butt Joint by Electric Arc Welding Process. 6. To Prepare Lap Joint by Electric Arc Welding Process. 7. Demonstration of Gas Welding. 8. To Fabrication of Table frame in welding shop. 9. To Prepare Sand Mould single piece pattern in Foundry Shop. 10. To Prepare Sand Mould Two-piece pattern in Foundry Shop. 11. To Prepare V Joint in Fitting shop. 12. Assembly of Simple Engine/Machine in Fitting Shop | | | |
| Reference Books- | | | |
| <ol style="list-style-type: none"> 1. Kaushik JP; Manufacturing Processes; PHI 2. Bawa; Manufacturing Processes; TMH 3. Rao PN; Manufacturing Tech- Vol 1 and 2; TMH 4. Schey JA; Introduction to mfg processes; McGraw Hill 5. Chapman; Workshop Technology 6. Begeman; Manufacturing Process : John Wiley 7. Raghuvanshi; Workshop Technology ;DhanpatRai. 8. HajraChoudhary; Workshop Technology:, Vol I | | | |

9. Pandya & Singh; Production Engineering Science.

10. Production Engineering by P.C. Sharma

Modes of Evaluation and Rubric

There will be continuous evaluation for during the semester for 40 sessional marks and 60 semester End term Marks. The practical marks are 50, out of which 30 marks will be awarded for viva voce and 20 marks for lab work. Out of 40 sessional marks, 20 shall be awarded for Mid semester, 20 marks to be awarded for day to day performance and Quiz/Assignments. For the 60 Marks, there will be a semester – End examination as per the norms of AICTE.

Recommendation by Board of studies on

Date:

Approval by Academic council on

Date:

Compiled and designed by

Checked and approved by