

CHHATISGARH INSTITUTE OF TECHNOLOGY JASHPUR

(छत्तीसगढ़ इंस्टीट्यूट ऑफ टेक्नोलॉजी जशपुर)

Vill. - Jhargaon, Post- Gholeng, Dist- Jashpur (Chhattisgarh) – 496338

Website- www.gpjashpur.ac.in

Email: govtpolyjashpur@gmail.com

LESSON PLAN SESSION JAN-JULY 2026

SUBJECT: **Manufacturing Process**
SUBJECT CODE- 2037472(037)

SEMESTER: 4th

BRANCH: - **MECHANICAL ENGINEERING**

| UNIT NUMBER | NAME OF THE TOPIC | NO OF CLASS REQUIRED | REMARK |
|---|---|----------------------|--------|
| UNIT 01: Introduction to Manufacturing Processes | 1.1 Classification of basic manufacturing process based on chip-less and chip- removal processes, Primary and Secondary manufacturing processes, Various generating & forming processes, | 02 | |
| | 1.2 Factors which influence selection of manufacturing process for a particular application. | 02 | |
| | 1.3 Recall mechanical properties of metals. | 02 | |
| Unit 02: Metal Casting | 2.1 Definition and Need. | 01 | |
| | 2.2&2.3 Pattern: types, materials, pattern allowances, color code, applications. Cores: Need, types, materials | 04 | |
| | 2.4 Moulds: Molding sand: Types, properties, binders, additives, mixing, Molding equipments & tools Type of moulds, mould making, applications | 02 | |
| | 2.5&2.6 Melting of metal: Pit furnace, Cupola, Induction furnace. Metal pouring: Gates and Risers. | 04 | |
| | 2.7 Casting Processes: Dry sand mould casting, Shell mould casting, Investment casting, Die casting, Centrifugal casting. | 06 | |
| | 2.8 Casting defects: Blow, scar, blister, gas holes, pin holes, porosity, drop, inclusion, dross, dirt, wash, buckle, scab, rat tail, penetration, swell, misrun, cold shut, hot tear, shrinkage cavity, mould shift, core shift and | 01 | |
| | 2.9&2.10 Inspection of castings: Visual inspection, pressure test, magnetic particle inspection, dye penetration inspection, Radiographic inspection, ultrasonic inspection. Safety precautions in metal casting. | 01 | |
| Unit 03: Metal Forming and Press working | 3.1 Cold and Hot working of metals, effect on metal properties, advantages & limitations. | 03 | |
| | 3.2&3.3 Forming processes, types, working principle, tools and equipment, applications of: Rolling, Forging, Drawing, Deep drawing, Extrusion. Safety precautions. | 04 | |
| | 3.4 Press working: Emphasis that press working is not forming process, Punching, Blanking, Notching, Lancing, Slitting, Nibbling, Trimming | 03 | |

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| Unit 04: Metal Joining | 4.1 Classification, recall gas and arc welding processes. | 02 | |
| | 4.2 Working principle, equipment, sketch, process parameters, applications of: (i) MIG, TIG, Flux coated arc and submerged arc (ii) Resistance welding – Butt, Seam, Spot, Projection and Percussion. (iii) Thermit welding. (iv) Forged welding | 06 | |
| | 4.3, 4.4&4.5 Effects of welding heat. Weld defect and their causes. Safety precaution in welding. | 02 | |
| Unit 05: Plastic Molding and Powder Metallurgy | 5.1&5.2 Plastic Molding: Concept, working principle, equipment and applications of Compression molding Safety precaution | 04 | |
| | 5.3 Powder Metallurgy: Introduction, advantages and disadvantages, Powder metallurgy processes: Powder making, blending, compacting, sintering, infiltration and impregnation, Applications | 05 | |
| | 5.4 Safety Precautions | 01 | |
| Total Class Required | | 55 | |

Lecturer Name & Sign: -

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