

## **AU/IP/ME-302 Production Process**

### **Unit I**

Metrology: Standards of Measurements, Linear and angular instruments; slip gauges, comparators, sine bar, angle gauges, clinometers, tape gauge, screw thread measurements limit gauging, Gauge design; fits and tolerance. Rolling: General description of machines and process; Rolling of structural sections plates and sheets; construction of mills; hot and cold rolling techniques

### **Unit II**

Metal cutting : Principles of metal cutting, tool geometry ,Tool life plots , Mach inability, Tool wear , Cutting force analysis ,Cutting tool materials & Cutting fluids ,Economics of metal machining .

### **Unit III**

Pattern Making: Pattern and pattern making, pattern allowances; pattern design considerations, core, core boxes, types of patterns.

Foundry: molding and core sands and their properties molding machines, centrifugal casting, die casting shell molding; cupola description and operation. Lost wax molding; continuous casting.

**Unit IV** Forging: Theory and application of forging processes description; principle of toleration of drop and horizontal forging machines; General principle of designs.

Press working: Description and operation of processes, process of shearing, punching, piercing, blanking, trimming, perfecting, notching, lancing, embossing, coining, bending, forging and drawing press, tool dies, auxiliary equipment, safety devices, stock feeders, scrap cutters, forces, pressure and power requirements, requirements of stock material.

### **Unit V**

Welding: Gas welding, Electric arc welding, A.C. and D.C. welding machines and their characteristics. Flux, Electrodes, Pressure welding, electric resistance welding spot, seam and built welding, submerged arc welding; thermit and TIG & MIG Welding, Brazing Gas cutting Spinning: Introduction of spinning.

### **References:**

1. Anderson and Tetro; Shop Theory;TMH
2. Kaushik JP; Manufacturing Processes; PHI
3. Bawa; Manufacturing Processes; TMH
4. Rao PN; Manufacturing Tech- Foundry, forming welding; TMH
5. Rao PN; Manufacturing Tech- Metal cutting and machine tools; TMH
6. Chapman; Workshop Technology :
7. Begeman; Manufacturing Process : John Wiley
8. Raghuvanshi; Workshop Technology ;; Dhanpat Rai.
9. Ravi B; Metal Casting- CAD analysis; PHI.
10. Hajra Choudhary; Workshop Technology:, Vol I
11. Pandya & Singh;Production Engineering Science:.