

# AMSF-14 MANUFACTURING PROCESS

## UNIT-1 ENGINEERING MATERIALS

- 1.1 Classification,
- 1.2 Properties - mechanical, thermal, chemical and technological.
- 1.3 Iron and Steel-Processes and Classifications.
- 1.4 Non-ferrous metals, processes, properties and use.
- 1.5 Heat treatment of steels-purposes and methods.
- 1.6 Processes annealing, normalizing, hardening, tempering.

## UNIT-2 WELDING

- 2.1 Introduction, weld ability,
- 2.2 Types of welding- Gas welding, Arc welding - submerged arc, TIG, MIG.
- 2.3 Resistance welding, solid state welding,
- 2.4 Electron beam welding,
- 2.5 Laser beam welding. Oxygen cutting.
- 2.6 Heat affected zones,
- 2.7 Weld defects, Inspection of welded joints.

## UNIT-3 METAL CASTING

- 3.1 Pattern- pattern materials, types of patterns, pattern allowance,
- 3.2 Moulding sands properties and classification.
- 3.3 Core and core sands. Moulding process.
- 3.4 Special casting methods- die casting, centrifugal casting,
- 3.5 Investment casting, slush casting.
- 3.6 Casting defects and inspection.

## UNIT-4 METAL FORMING

- 4.1 Mechanical working of metals.
- 4.2 Hot working, cold working.
- 4.3 Methods and process of rolling, forging, and extrusion.
- 4.4 Machining: - Metal cutting,
- 4.5 Orthogonal and Oblique cutting,
- 4.6 Cutting tool materials.
- 4.7 Classification of machine tools - lathe, shaper, milling machine, drilling machine and grinding machine.
- 4.8 Advanced machining methods- ECM, EDM, USM, AJM.

## References Books:

1. S.Kalpakjian and S.R.Schmid, Manufacturing Engineering and Technology, Pearson Education Asia Sharma, a Text Book of Production Technology, S. Chand & Co, New Delhi.