

FC 105 : BASIC MECHANICAL ENGINEERING

Credits = 5 (L = 4, P = 2)

1. Introduction and scope : Basic materials of manufacture, their properties and applications.
2. Measuring and gauging : Basic measuring instruments and gauges.
3. Metal bench work and wood-working: tools, processes and their applications : Wood-working machines.
4. Principles and applications of conventional manufacturing processes : foundry, special casting, welding, rolling, forging, extrusion, wire drawing, sheet metal working, metal machining. Introduction to non-conventional manufacturing processes. Surface treatment and finishing processes.
5. Plastics : properties, applications and processes.
6. Engineering drives; fundamentals of belt, rope and chain drives; gears and gear trains; reciprocating and intermittent drives; bearing, clutches and brakes.
7. Internal combustion engines : Classification; working of petrol and diesel engines; performance characteristics.
8. Steam generators : Fire-tube, water-tube and package boilers; boiler mountings and accessories.
9. Introduction to steam and gas turbines, condensers, air compressors and vacuum pumps.
10. Introduction to refrigeration and air-conditioning systems.

REFERENCE BOOKS :

1. *J S Campbell*
Principles of Manufacturing Materials and Processes
Tata McGraw-Hill
2. *J Anderson & E E Tatro*
Shop Theory
Tata McGraw-Hill

3. *H Gerling*
All About Machine Tools
Wiley Eastern
4. *W A J Chapman*
Workshop Technology, vols I & II
ELBS
5. *Joel Rayner*
Basic Engineering Thermodynamics
ELBS
6. *N C Pandya and C S Shah*
Elements of Heat Engines
Charotar Publishing House
7. *T S Rajan*
Basic Mechanical Engineering (Text book)
Wiley Eastern Ltd., New Delhi