3rd Semester	RPR3C001	Manufacturing Technology - I	L-T-P 3-0-0	3 CREDITS

MODULE – I (09 Hrs.)

Manufacturing process: Definition, Manufacturing process vs. manufacturing system, Classification of manufacturing process, selection of materials and processes.
Sand Casting : Pattern – materials, allowances, types, molding types, molding procedure, molding and properties, testing of molding sand, cores, core materials, properties of core making. Melting and founding of cast iron, degasification, design of casting and risering, pouring and feeding of casting, casting defects and inspection.

MODULE – II (10 Hrs.)

Fusion welding processes: Introduction, oxy-fuel gas welding, arc welding processes-I (consumable electrode): principle, equipment, power sources, principle of metal transfer, Electrodes, Submerged arc welding, Gas Metal Arc Welding, arc welding processes-II (non-consumable electrode): Gas Tungsten Arc Welding, Plasma Arc Welding, Defects in welding, Gas and arc cutting.
Brazing, Soldering, Adhesive Bonding, Mechanical fastening and joining plastics.

MODULE - III (09 Hrs.)

Solid state welding process: Introduction, Ultrasonic welding, Friction welding, Resistance welding, Explosion welding.
Other welding processes: Thermit welding, Electron beam welding, Laser beam welding
Metallurgy of welding: Welding design and process selection: Introduction, welded joint, weld quality, weldabilty, testing of welded joint.

MODULE - IV (10 Hrs.)

Hot and cold working of metals, Classification, Advantages, Limitations and applications of Extrusion, Forging and Rolling , Wire Drawing, Classification, Advantages, Limitations and applications, Sheet Metal Working: Deep drawing process.

MODULE – V (07 Hrs.)

Special casting: Melting of steels and non-ferrous metals and alloys, solidification, shell mould casting, investment casting, Permanent mould casting, Die casting, and centrifugal casting, continuous casting, squeeze casting, etc.

Books:

- Manufacturing Technology: Foundry, Forming and Welding by P.N. Rao, TMH.
- Manufacturing Science by A. Ghosh and A.K. Mallick, Wiley Eastern
- Principles of manufacturing Materials and processes, by James S. Campbell, TMH.
- Welding Metallurgy by G.E. Linnert, AWS.
- Production Engineering Sciences by P.C. Pandey and C.K. Singh, Standard Publishers Ltd.
- Manufacturing Engineering and Technology, 4th Edition- S.Kalpakjian and S.R. Scimid, Pearson Education.
- Manufacturing Process, J.P. Kaishish, PHI.