PMT3I104 Materials Processing

Module I (16 hours)

Introduction to metal casting, Moulding methods, materials and processes, with special reference to patterns, sand and binders. Solidification of short & long freezing range alloy castings, Gating and Risering of castings. Melting practices for ferrous and non-ferrous alloys-Cupola, rotary furnace, induction furnace, crucible furnace melting. Casting defects and remedy. Special casting processes.

Module II (13 hours)

Introduction to metal joining processes. Theory and classification of welding processes. Metallurgical principles involved in welding of carbon and alloy steels and important nonferrous alloys. Welding defects and their remedies.

Module III (13 hours)

Basic processes in Powder Metallurgy, Characteristics of powders. Compaction in rigid dies. Sintering of metal powders. Application of powder metallurgy products-their relative advantages.

Books for reference:

1. *Casting by J. Campbell , Butterworth - Haneman, London, 1993*
2. *Solidification Processing by M.C. Flemings, McGraw Hills, 1974.*
3. *Principles of Metal Casting by Heine, Loper, Rosenthal,.*
4. *Welding by Little, TMH.*
5. *Welding by A.C. Davies, Cambridge University Press.*
6. *Metallurgy of Welding, Brazing and Soldering by J.F.Lancaster.*
7. *Metallurgy of Welding by Sefarin, John Wiley.*
8. *Welding Hand Book, Vol-I &II.*
9. *Introduction to Powder Metallurgy by F.V.Lenel*
10. *Powder Metallurgy Science by R.M.German*
11. *Treaties on Powder Metallurgy by Goetzel, Vol-I&II*
12. *Powder Metallurgy by R.Lsande & C.R.S.Shakespere*
13. *Powder Metallurgy by A.K.Sinha, Dhanpat Rai*
14. *Powder Metallurgy, ASM Metals Handbook Vol-7*