

4th Semester	RMM4C002	Material Processing	L-T-P 3-0-0	3 CREDITS
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Module-I (8 hours)

Introduction to metal casting, Moulding methods, materials and processes, with special reference to patterns, sand and binders. Gating and Riser of castings.

Module-II (9 hours)

Solidification of short & long freezing range alloy castings, Melting practices for ferrous and non-ferrous alloys-Cupola, rotary furnace, induction furnace, crucible furnace melting.

Module-III (8 hours)

Casting defects and remedy. Special casting processes.

Module-IV (10 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-V (10 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:

- Principles of Metal Casting by Heine, Loper, Rosenthal
- Solidification Processing by M.C. Flemings, McGraw Hills, 1974.
- Welding by Little, TMH.
- Introduction to Powder Metallurgy by F.V.Lenel
- Casting by J. Campbell , Butterworth - Haneman, London, 1993
- Welding by A.C. Davies, Cambridge University Press.
- Metallurgy of Welding, Brazing and Soldering by J.F.Lancaster.
- Metallurgy of Welding by Sefarin, John Wiley.
- Welding Hand Book, Vol-I &II.
- Powder Metallurgy Science by R.M.German
- Treatise on Powder Metallurgy by Goetzal, Vol-I&II
- Powder Metallurgy by R.Lsande & C.R.S.Shakespere
- Powder Metallurgy by A.K.Sinha, Dhanpat Rai
- Powder Metallurgy, ASM Metals Handbook Vol-7