

## **PMT6D001 SECONDARY STEEL MAKING (HONOURS)**

### **Module I (12 Hours)**

*Secondary steel making principles and practices:* Objectives and techniques adopted in secondary steel making. Ladle metallurgy: Outline of inert gas stirring: CAS/CAS (OB), Ladle furnace, vacuum degassing of steel and related processes.

### **Module II (14 Hours)**

*Transport phenomena in ladles:* Role of slag and powders in inclusion control: Desulphurization, Dephosphorisation. Modification of inclusion morphologies, production of ultra low carbon, ultra low sulphur, ultra low phosphorus and inclusion free steels.

### **Module III (14 Hours)**

*Tundish metallurgy:* Evaluation of tundish hydrodynamic performances: Solidification phenomena: Conventional, continuous and near net shape casting phenomena. Powder injection systems. Production of alloy steel through post solidification treatments (VAR, ESR); Refractories used in secondary steel making furnaces, their properties and selection criteria. Process selection in secondary steel making.

### **Books for Reference**

1. Ghosh A., *Secondary Steelmaking- principle & Applications*, CRC Press.
2. Ghosh A., *Principles of Secondary Steelmaking Processing and Casting of Liquid Steel*, Oxford & IBH Publication.