FOUNDORY TECHNOLOGY
(Elective – I)

Course Code: 13ME1131

Prerequisite: Metallurgy and Engineering materials

Course Educational Objectives:
To make the student to
- Understand the basic concepts of design and manufacture of simple patterns.
- Understand solidification processes and casting techniques
- Know the various casting defects and detection methods

Course Outcomes:
The student will be able to
- Design and manufacture simple patterns
- Acquire the ability to work in industrial workplaces or in self-employment in the field of foundry technology.
- Conduct research in the area of foundry operations.

UNIT-I (10 Lectures)

INTRODUCTION:
Introduction to moulding and casting processes - steps involved advantages, limitations, application of casting process. Patterns - types, applications, pattern allowances-pattern materials, colour coding as per BIS, pattern making, core and core making, core boxes, core prints, core blowers, core shooters.

Sand mould making: Moulding and core sands, ingredients, properties, types of sands, sand selection - machine moulding, types of machines, applications.
UNIT-II (13 Lectures)

CASTING PROCESSES:
Sand preparation and sand reclamation-sand control tests. Sand casting process, types of moulding processes - plaster mould casting, die casting process - die casting methods. centrifugal casting, continuous casting, shell moulding, CO2 moulding - investment casting, full mould process.

UNIT-III (13 Lectures)

MELTING, POURING AND TESTING:

UNIT-IV (10 Lectures)

GATING, FEEDING AND MECHANIZATION:
Elements of gating system, functions, types and design of gating systems, gating ratio, risers, functions, types and designs, methods controlling solidification, solidification time calculations, foundry mechanization.

UNIT-V (14 Lectures)

FOUNDRY PRACTICE ON FERROUS AND NON FERROUS METALS:
Production of iron castings - Steel foundry practice - Copper alloy foundry practice - Aluminium alloy foundry practice - Magnesium alloy foundry practice - Zinc alloy foundry practice.

Foundry metallurgy: Heat treatment of castings, inspection, testing and quality control in foundries, salvage in defective castings, foundry mechanization.

Foundry environment, health and safety: Dust problems in foundries, preventive maintenance in foundries, returning a sick foundry to profitability.
TEXT BOOKS:

REFERENCES: