

GUJARAT TECHNOLOGICAL UNIVERSITY
M.E. Mechanical (Production Engg.)
Semester: I

Subject Name: **Advance Casting Technology**
Subject Code: **712801**

Sr. No.	Course Content
1	Casting Processes, classification, characteristics of sand casting processes, metal mould casting processes and casting processes using other mould/core materials, Pattern materials, types of patterns, Mould and core making materials and their characteristics.
2	Technology of Selected Casting Processes, clay bonded, oil bonded, synthetic resin bonded, inorganic material bonded mould and core making processes. Sand additives and mould coatings. Metal mould casting processes, centrifugal and continuous casting processes.
3	Casting for heterogeneous materials-FRP, quick casting , full mould casting, evaporative pattern casting
4	Solidification, Gating and Riser design & analysis, Nucleation and grain growth, Solidification of pure metals, short and long freezing range alloys. Rate of solidification, macrostructure and microstructure. Solidification contraction; Fluidity and its measurement. Mould-metal interface reactions.
5	Melting and quality control of various steels and non-ferrous alloys - casting defects - fettling, inspection and testing of castings
6	Design for castability-process friendly design, castability analysis and collaborative engineering

Reference Books:

1. Scrope Kalpakjian,, “Manufacturing processes for Engineering Materials”, Addison, Wesley, 1997.
2. Fundamentals of metal casting technology - P.C. Mukherjee, Oxford and IBH.
3. Mechanical Metallurgy, Dieter, Me Graw Hill, Kogakusha
4. Casting properties of metals and alloys - V. Korolkove.
5. Metal casting-B.Ravi-PHI