

# GUJARAT TECHNOLOGICAL UNIVERSITY

## B.E. SEMESTER : V

### MANUFACTURING ENGINEERING

Subject Name: **FOUNDRY AND WELDING TECHNOLOGY**

Sr. No.	Course Contents
1.	<b>CASTING PROCESS</b> Introduction to casting – pattern – materials allowances – coding – types – moulds – mould making, sand – properties, types and testing of sands – core making – type of cores – single box, two box and 3 box moulding processes, runner, riser and gate.
2.	<b>WELDING PROCESSES</b> Introduction to soldering, brazing and welding types of joining – plane of welding – edge preparation – filler material – flux – shielding gases – fusion welding – gas welding – gas flame types – Manual arc welding – arc theory – power supply – braze welding – Thermit welding – Resistance welding – spot, seam, projection, percussion & flash.
3.	<b>SPECIAL CASTING PROCESSES</b> Pressure die casting – Centrifugal – continuous – investment – shell moulding – squeeze – electro slag casting – CO <sub>2</sub> moulding – Plaster mould castings – Antioch process – Slush casting.
4.	<b>SPECIAL WELDING PROCESSES</b> Atomic H <sub>2</sub> arc welding – Shielded gas arc welding GMAW & GTAW – Submerged arc welding – Electro slag welding – friction welding – explosive welding – Underwater welding – Diffusion bonding – EBW – LBW – PAW – Stud welding – welding of dissimilar materials – Friction stir welding.
5.	<b>TESTING OF CASTINGS &amp; WELDMENTS</b> Causes and remedies for casting defects – welding defects – Destructive testing – NDT – Dye penetrant – magnetic particle – X-ray, ultrasonic cell – studies in testing of joints & castings.

#### Text Books:

1. Welding Engineering & Technology R.S.Parmer – Khanna Publishers
2. Principle of metal casting – Heime, Looper and Rosenthal – Tata McGraw Hill

#### References:

1. Principle of Foundry Technology – P.L.John Tata McGraw Hill
2. Modern Welding Technology – B.Curry – Prentice Hall
3. Welding Principle & applications – Larry Jeff in Delmar
4. Foundry Engineering – Taylor HF Fleming, M.C. & Wiley Eastern Ltd.