GUJARAT TECHNOLOGICAL UNIVERSITY

M.E. Mechanical (Production Engg.)

Semester: II

Subject Name: **Advance Welding Technology**
Subject Code: **1722802**

Sr. No.	Course Content
1	Physics of welding arc - characteristics of arc and mode of metal transfer, welding fluxes and coatings - type and classification; electrode codes and their critical evaluation;
2	Welding machine characteristics - conventional and pulsed power sources, inverter type, power sources for resistance welding, weldability - weldability of cast iron, plain carbon and low alloy steels, stainless steels
3	Determination of preheat temperature, use of Schaeffler's diagram, weldability tests, heat flow in welding - significance, theory of heat flow, cooling rate determination, selection of welding parameters based on heat flow analysis,
4	Residual stress and distortion - theory of residual stresses and distortion calculation, welding codes, joint design, analysis of fracture and fatigue of welded joints - fracture, energy consideration, fracture toughness testing and its application to welded joints,
5	Automated welding systems; microprocessor control of arc welding and resistance welding, quality assurance in welding, welding fumes and their effect on the environment
6	**Modern welding processes like:** EBW, LBW, Under water Welding, Ultrasonic welding etc. welding of ceramics, plastics and composites

Reference Books:

1. Dr.R.S.Parmar “Welding processes and technology” Khanna Publishers
2. Welding technology, R. Bittle, TMH
3. American society for metals, metal hand book vol.6
4. Welding process technology-houldcraft PT-cambridge univ.press