

GUJARAT TECHNOLOGICAL UNIVERSITY

Diploma in Fabrication Technology

Semester : 4

Subject Name: Fabrication Technology - 2

Sr. No.	Course Content
1.	INTRODUCTION TO PROCESS EQUIPMENTS 1.1 Need, scope & importance of process equipment in industries. 1.2 Classification and application of process equipment 1.3 List of Process equipment Industries in Gujarat 1.4 Profile of Process equipment Fabrication Engineer 1.5 Schematic diagram of heat exchanger & pressure vessel labeling of it elements with their specific function 1.6 Fabrication terminology
2.	MATERIAL OF CONSTRUCTION 2.1 Material used in process equipment and its properties 2.2 Factors affecting selection of materials 2.3 Commercial forms of metal (BIS no, cross section & application) 2.4 Material test certificate with typical example (MTC) 2.5 Third party inspection agencies.(TPI)
3.	FABRICATION PROCEDURE OF ELEMENTS OF PROCESS EQUIPMENTS 3.1 Fabrication of shell 3.2 Roll forming methods-classification, equipment, used, procedure, defect in shell rolling 3.3 Fit-up and set-up of long seam and circ. seam 3.4 Fabrication of dish end 3.5 Dish end forming method 3.6 Fabrication of nozzle 3.7 Fabrication of supports 3.8 Fabrication of internals and external parts & components (tube bundle, tube sheet, baffles, tie rod, spacer etc.) 3.9 Internal and external fittings like clits, tray, tray supports, flange manufacturing. 3.10 Fabrication of miscellaneous parts like lifting, lug, run in run out plates, PTC, RF pads
4.	FABRICATION CALCULATIONS 4.1 Units systems and their conversions 4.2 Surface area, volume, weight, calculations of various shapes and cross sections of process equipment 4.3 Weld metal calculation 4.4 Shell plate size calculation 4.5 Ovality and shell plate calculation 4.6 Dished and blank diameter calculation 4.7 Calculation related to process equipment parts & component

5.	MARKING PROCEDURE OF ELEMENTS OF PROCESS EQUIPMENTS 5.1 Marking and measuring tools, equipments and instruments, accessories used in fabrication shop 5.2 Template marking for shell, dish end and edge preparation 5.3 Sequence of marking dish end 5.4 Trimming line and reference line marking 5.5 Elevation and orientation marking 5.6 Limpet coil marking 5.7 Tan line marking 5.8 Flange marking and tube sheet marking 5.9 Roll Forming methods – Classification, equipment, used, procedure, defect in shell rolling 5.10 Fabrication of Shell, dish and spinning 5.11 Fit-up and Set-up of long seam and circular seam, shell to shell and Shell to D/E.
6.	FABRICATION TOLERANCE 6.1 Definition and concept and importance 6.2 Types / classification as per codes and standards 6.3 Typical fabrication product tolerance example
7.	CUTTING METHODS 7.1 Equipment, process variable, advantages & limitation and application of • Mechanical • Thermal • Special methods of cutting • Air arc gauging
8.	FABRICATION AIDS / JIGS & FIXTURES 8.1 Tank rotator 8.2 Spider and its fabrication 8.3 Pulling & lifting equipments 8.4 Jigs & fixture- principle, advantages, limitations, comparison and Application
9.	SAFETY 9.1 Safety in cutting 9.2 Safety in material handling. 9.3 Safety norms and standards (OHSAS/EHS)

Reference Books:

Sr.No.	BOOK NAME	AUTHOR
1.	Process Equipment Design	M.V.Joshi
2.	Chemical Equipment Design	B.C. Bhattacharya
3.	ASME SEC V III	
4.	TEMA Code	
5.	Chemical Engineering Hand Book	Parry's Hand Book
6.	Westerman Table	Hermaan Juez
7.	Pressure vessels the ASME code Simplified	
8.	Welder Fitter Guide	John P. Stewart D.B.Tarapurwala
9.	Design Data Handbook	Compiled By PSG College Of Technology
10.	Introduction To Chemical Engineering	BAD GR Tata Mcgrawhill
11.	Welders Guide Hand Book	Jems E.Brumbaugh Published By D.B.Tarapurwala