GUJARAT TECHNOLOGICAL UNIVERSITY
M.E Semester: 2
Mechanical Engineering (Thermal Engineering)

Subject Name: DESIGN OF HEAT EXCHANGE EQUIPMENTS

Sr. No.	Course Content
1.	Review of heat transfer principles & convection correlation.
2.	Introduction to heat exchangers and classification.
3.	Basic design methodologies, Net Transferable Units method and Logarithmic Mean Temperature Deference method
4.	Design of double pipe heat exchangers
5.	Shell & tube type heat exchangers, nomenclature, J-factors, conventional design methods, bell, and Delware method.
6.	Compact heat exchangers, J-factors, design method Condensers classification and design methods for surface condensers
7.	Evaporators – Classification and design methods
8.	Plate type – Heat exchangers
9.	Regenerators
10.	Furnace design

List of Experiments:

1. Study of fundamentals of Fluid Flow and Heat Transfer associated with heat exchangers.
2. Design of heat exchange equipment by using method of LMTD.
3. Design of heat exchange equipment by using method of ε – NTU.
4. Design and analysis of Parallel flow and Counter flow heat exchanger.
5. Design and analysis of Shell and tube type heat exchanger.
6. Design and analysis of Plate type heat exchanger.
7. Design of evaporator and condenser for refrigeration system.
8. Design of cooling and air conditioning circuit.
9. Design and analysis of regenerative type heat exchanger for low temperature applications.

10. Case study on design of heat exchanger for process industry.

Reference Books:

1. Saunders, E.A.D., “Heat Exchangers – Selection Design and Construction”, Longmann Scientific and Technical, N.Y., 2001.
2. Kays, V.A. and London, A.L., “Compact Heat Exchangers” , McGraw Hill, 2002.
3. Holger Martin, “Heat Exchangers” Hemisphere Publ. Corp. , Washington, 2001.
4. Kuppan, T., “Heat Exchanger Design Handbook”, Macel Dekker, Inc., N.Y. , 2000
5. Seikan Ishigai, “Steam Power Engineering, Thermal and Hydraulic Design Principles”, Cambridge Univ. Press, 2001.