

GUJARAT TECHNOLOGICAL UNIVERSITY

M.E Semester: III

Mechanical Engineering (I.C. Engine & Automobile)

Subject Name: **Heat transfer equipments in Automobile**

Sr. No.	Course Content
1.	Types of Heat exchangers; applications; Heat transfer mechanisms; Flow arrangements; Selection of heat exchangers; Basic design concept, Design methods, Heat exchanger design calculations.
2.	Shell and Tube heat exchangers; basic components; shell types; tube bundle types; tubes and tube passes; tube layout, baffle type and geometry; allocation of streams; basic design procedure; shell side heat transfer and pressure drop; Gasketed-Plate heat exchangers and applications; Introduction of air cooled condensers; Evaporators for Refrigeration and air conditioning.
3.	Fouling in heat exchangers; basic considerations, various aspects of fouling; techniques to control fouling; Design of heat exchangers used in automobiles subjected to fouling.
4.	Heat & mass transfer applied to I.C. Engine cooling system; engine energy balance; energy transfer modeling; correlations, analysis of radiations; mass loss.

Reference Books:

1. Heat Exchangers: Selection, Rating & Thermal Desing, Kakac, Sadik & Liu Hongtan, CRC Press.
2. Compact Heat Exchangers, Kays and London, McGraw Hill.
3. Process Design of Equipments, Dawande S.D., Central Techno Publications.
4. Thermal energy storage & regenerators, Schmidt & Willmott.
5. I.C. Engines, Ferguson & Kikpatrick.
6. Heat Exchanger Desing, Fraas A.P. and Ozisik M.N, McGraw Hill.
7. Kern D.Q., Process Heat Transfer, McGraw Hill.
8. Saunders, Heat Exchangers, Selection, Design and Construction.