GUJARAT TECHNOLOGICAL UNIVERSITY
B. E. SEMESTER: V
FOOD PROCESSING TECHNOLOGY

Subject Name: **Food Refrigeration & Air Conditioning**
Subject Code: **151403**

Teaching Scheme				Evaluation Scheme		
Theory	**Tutorial**	**Practical**	**Total**	**University Exam (Theory) (E)**	**Mid Sem Exam (Theory) (M)**	**Practical (I)**
4	0	2	6	70	30	50

Sr. No.	Course Content	No.of Lectures
1.	**Refrigerants:** Classification & Designation of refrigerants, Desirable properties of an ideal refrigerant, Properties & uses of common refrigerants like R-12, R-22, R 134-A, NH_3, Comparison of refrigerants, Non CFC refrigerants, Green house effect.	06
2.	**Simple Vapour Compression System:** Vapour compression cycle, Functions of parts of vapour compression system, Representation of vapour compression cycle on (T-S) and (P-H) diagram, Factors affecting the performance of vapour compression system, Mathematical analysis of vapour compression refrigeration.	07
3.	**Vapour Absorption System:** Simple vapour absorption cycle, Functions of parts of vapour absorption system, Electrolux refrigerator construction and working, Temperature concentration diagram and enthalpy concentration diagram for ammonia and lithium bromide absorption system, Cascade system of refrigeration: Introduction and working.	08
4.	**Refrigeration Components and Controls:** Compressor: Hermetic sealed compressor, Open type compressor, Screw compressor, Centrifugal compressor, Condensers: Air-cooled, Water-cooled, Evaporative, Cooling tower and spray pond, Evaporators: Flooded type, Dry expansion, Bare tube, Plate surface, Finned tube, Refrigeration controls: Thermostatic expansion valve, Capillary tube, Solenoid valves.	08

5.	**Air-Conditioning Components:** Air-conditioning components: Filters, Fans, Air washer, Radiator and convector, Air- conditioning controls: Manual, Automatic and semiautomatic control system, Automatic humidity control, Air movement system, Automatic temperature control, Limit switches, Time switches.	07
6.	**Air Distribution:** Air handling unit, Room air distribution, Requirements of good room air distribution, draft, Types of supply air outlets, Duct system, Air-distribution system, Duct design guidelines.	06
7.	**Design:** Design of cold storage, Storage requirements of plant and animal produce, Distinction between refrigeration, chilling and freezing, Keeping quality and special storage requirements, Quick instant freezing.	06

Reference Books:

1. Refrigeration and Air-conditioning by C.P. Arora., TMH
2. Refrigeration and Air-conditioning by Manohar Prasad. New Age pub.
3. Air-conditioning Engineering by Jone WP and Arnold E.
4. Principles of Refrigeration by Dossat RJ., John Wiely
5. Fundamentals of Food Process Engg by Romeo T. Toledo., CBS Publishers.
6. Commercial Cooling of Fruits and Vegetables by Thompson Univ. of California
7. ASHRAE Fundamentals, 1997, 2001.