Gautam Buddha University, Greater Noida

School of Engineering (Mechanical Engineering)

Degree	Course Name	Course Code	Marks:100
M. Tech. in Thermal Engg.	Advanced Refrigeration and Air-conditioning	MET 504	SM+MT+ET 25+25+50
Semester	**Credits**	**L-T-P**	**Exam.**
II	4	3-1-0	3 **Hours**

Unit – I

Review of Refrigeration Systems and Refrigerants: Air refrigeration; Vapour compression; Vapour absorption; Thermodynamic properties of refrigerants; Ozone Depletion Potential and Global Warming of refrigerants; Future refrigerants.

(08 Hours)

Unit – II

Review of Air Conditioning: Psychrometric properties and process in air conditioning; Comfort design conditions; Cooling load calculations and applied Psychrometrics; Examples. **(06 Hours)**

Unit – III

Non Conventional Refrigeration Systems: Steam jet refrigeration system; Vortex tube; Magnetic refrigeration system; Pulse tube refrigeration; Cryogenics: Principle of liquefaction of gases; Dry ice manufacturing. **(06 Hours)**

Unit – IV

Ice Manufacturing and Food Preservation: Principle of ice production; Different systems of ice manufacturing; Treatment of water; Brines; Freezing tanks; Ice cans; Food preservation: Factors; Causes; Methods; Freezing methods; Cold storage; Ice rinks. **(07 Hours)**

Unit – V

Commercial and Industrial Air Conditioning: Houses and offices; Hotels and Restaurants; Departmental stores; Theatres and Auditorium; Hospitals; Textile industry. **(09 Hours)**

Unit – VI

Transport Air Conditioning: Introduction; Automobile air conditioning; Railway air-conditioning; Marine air-conditioning; Aircraft air-conditioning; Example and case study. **(09 Hours)**

Recommended Books:

1. Refrigeration and Air Conditioning; Stoecker and Zones; McGraw Hill; 2nd Ed.; 1983.
2. Refrigeration and Air Conditioning; Domkundwar and Arora; Dhanpat Rai and Sons; 8th Ed.; 2014.
3. Refrigeration and Air Conditioning; Manohar Prasad; New Age International; 2nd Ed.; 2003.
4. Refrigeration and Air Conditioning; P.L. Balaney; Khanna Publications; 13th Ed.; 2005.
5. Refrigeration and Air Conditioning; C. P. Arora; Tata McGraw Hill; 2nd Ed.; 2000.
6. Principles of Refrigeration; R.J. Dossat; Pearson educations; 4th Ed.; 2009.