



MANIPAL UNIVERSITY JAIPUR

School of Automobile Mechanical and Mechatronics Engineering

Department of Mechanical Engineering

Course Hand-out

REFRIGERATION AND AIR CONDITIONING | ME 1706 | 3 Credits | 3 0 0 3

Session: July 18 – Dec 18 | Faculty: Mr. Mayank Modak/B.Tech VII Semester

COURSE OUTCOMES: At the end of the course, students will be able to

[ME1706.1] Apply different laws and basic concept of refrigeration and air conditioning processes in daily life engineering applications for industrial employability.

[ME1706.2] Analyse the concept of vapour compression cycle systems and its application in air conditioning.

[ME1706.3] Analyse the concept of vapour absorption systems and its application in air conditioning.

[ME 1706.4] Analyse the various classes of refrigerants its compatibilities and selection methodology and concept of gas refrigeration cycle.

A. Syllabus

Basic refrigeration cycles: reverse Carnot cycle, effect of temperatures, Air refrigeration cycles, Bell - coleman cycle, Air refrigeration cycles for aircrafts; Theoretical vapour compression cycle: Compound vapour compression refrigeration system, Multi-evaporator and cascade systems, Ammonia Absorption refrigeration, Lithium Bromide Absorption system, Absorption versus compression systems, Refrigerants by class, CFC, HFC and HCFC refrigerant blends, comparison of thermodynamic properties of refrigerants, steam jet refrigeration; Air Conditioning: psychrometric properties and charts, psychrometric of air-conditioning process, summer and winter air conditioning, calculation of heating and cooling loads, design of air conditioning systems, air-duct design, cold storage system.

B. Text Books:

- i. S.C.Arora and S.Domkondwar, *A Course in Refrigeration and Air conditioning*, Danpath Rai, New Delhi, 1996.
- ii. Cook Norman, *Refrigeration and Air conditioning*, Macmillan London, 1989.
- iii. W.F.Stocker, *Refrigeration and Air conditioning*, Tata McGraw Hill, 1985.

References:

- i. Prasad Manohar, *Refrigeration and Air conditioning*, New Age International, 2007

