



REFRIGERATION AND AIR-CONDITIONING

PROF. RAVI KUMAR

Department of Mechanical and Industrial Engineering
IIT Roorkee

INTENDED AUDIENCE : UG & PG students of Mechanical & Civil Eng. and Architecture students

INDUSTRIES APPLICABLE TO : All HVAC Industries

COURSE OUTLINE :

This course provides a simple understanding of Refrigeration and Air-conditioning fundamentals. Ideally suited to those with a little or no knowledge of the subject. The course consists of different refrigeration cycles and understanding of psychrometry and psychrometric processes used for the purpose of air-conditioning. Further, the comfort air-conditioning and indoor environment health are also addressed in this course.

ABOUT INSTRUCTOR :

Prof. Ravi Kumar is a Professor in the Department of Mechanical & Industrial Engineering, Indian Institute of Technology Roorkee. He has been teaching thermal engineering courses in the Department and is actively involved in the research related with Solar Energy. He is a member of ASME, ASHRAE and IIFIIR.

COURSE PLAN :

Week-1 : Recapitulation of Thermodynamics, Introduction to Refrigeration, Air Refrigeration Cycle, Aircraft Refrigeration Cycles.

Week-2 : Aircraft Refrigeration Cycles, Vapour Compression Cycle, P-h Charts, Actual Vapour Compression Cycle

Week-3 : Actual Vapour Compression Cycle, Compound Compression with Inter-cooling, Multiple Evaporator and Cascade System, Problem Solving

Week-4 : Refrigerants, Vapour Absorption Systems.

Week-5 : Introduction to Air-conditioning, Properties of Moist Air, Psychrometric Chart, Psychrometric Processes.

Week-6 : Psychrometric Processes, Infiltration Design Conditions, Cooling Load.

Week-7 : Cooling Load, Air Distribution System, Problem Solving, Air-Conditioning Systems

Week-8 : Human Physiology, Thermal Comfort, Indoor Environmental Health, Problem Solving