



### RAC Product Design Mechanical Engineering

**Instructor Name:** Mr. Bhupinder Godara

**Institute:** IIT Delhi Alumnus

**Department:** Mechanical Engineering

**Course Intro:** : This course will lead to an understanding of refrigeration and air-conditioning products, the components within these products, familiarity with selection parameters for the components and an appreciation of environmental impact of design choices. The course includes a case study to illustrate the process of design leading to a successful product in market.

**Pre Requisites:** : Applied Thermodynamics and Basic Heat and Mass Transfer.

**Core/Elective:** : Elective

**UG/PG:** : Both

**Industry Support** : Refrigeration and Air Conditioning Industries such as Carrier, Trane, LG, Samsung, Voltas, Blue star, Emerson, Danfoss etc.

**Reference** : Refrigeration and air conditioning, C.P. Arora. Refrigeration and Air-conditioning, R.C. Arora. Refrigeration and air conditioning, W.F. Stoecker and WP Jones. ASHRAE Handbooks. Fundamentals, HVAC Systems & Equipment, refrigeration and HVAC Applications

**About Instructor:** Bhupinder Godara graduated in Mechanical Engineering from IIT Delhi in 1987. He completed his M.Tech in Thermal Engineering in 1989 from IITD and has Industry experience of over 25 years in leading Refrigeration and AC companies like Carrier, Danfoss & Fedders Lloyd. He has managed several design programs from concept to market and the products designed successfully continue to meet customer needs in diverse applications like Railway Coaches, Residences, Commercial and Telecom.



### COURSE PLAN

SL.NO	Week	Module Name
1	1	Introduction to the design process in general and for Ref. & AC in particular. Applied Thermodynamics as a design tool. Refrigerants and their properties, energy efficiency and environmental considerations, Practical aspects
2	2	Ref. system Components & their types :- compressors, condensers, evaporators, expansion devices. Working principle of the components and unique features
3	3	Selection of components for an intended design. Balancing the diversity of design objectives and optimization. Appreciation of the diverting in operating parameters in real applications and incorporation of controls and safety components
4	4	Product design - New product launch “ Performance testing, reliability, safety, Case studies etc.