# RAC PRODUCT DESIGN

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IIT Delhi

**TYPE OF COURSE** : Rerun | Elective | UG/PG
**COURSE DURATION** : 4 weeks (26-Jul' 21 - 20-Aug' 21)
**EXAM DATE** : 26 Sep 2021

**PRE-REQUISITES :** Applied Thermodynamics and Basic Heat and Mass Transfer.

**INTENDED AUDIENCE :** Students pursuing BE/ME/Ph.D. in Mechanical Engg. and Design Engineers working in Industries.

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

**COURSE OUTLINE :**

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.

**ABOUT INSTRUCTOR :**

Sanjeev Jain is a Professor of Mechanical Engineering at IIT Delhi, India. He worked in industry for a few years before joining IIT Delhi faculty in 1996. His research interest include Solar cooling, Building energy efficiency, natural refrigerants, decentralized energy systems,
recent interest in understanding of mind and cognition.

**COURSE PLAN :**

**Week** 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

**Week** 2**:** Ref. system Components & their types :- compressors, condensers, evaporators, expansion devices. Working principle of the components and unique features

**Week** 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

**Week** 4**:** Product design - New product launch – Performance testing, reliability, safety, Case studies etc.