



Fundamentals of Refrigeration & Air Conditioning Technology

**New Evening Course - One evening a week over 20 weeks - Limited Availability
Commencing Tuesday 29th September 2009 - DUBLIN**

Course Overview

Anyone who wants to develop their understanding of refrigeration and air-conditioning (RAC) technology is faced with the same problem. Most training programmes assume previous knowledge and don't spend sufficient time addressing the basic principles.

This introductory course seeks to address this problem. It assumes no previous knowledge of refrigeration and air conditioning technology. It will give learners a basic but solid understanding of the fundamentals of refrigeration, the main system types and components, the range of applications, including air conditioning and heat pumps, the use of controls, and the key provisions and impact of recent legislation on the sector.

Who Should Attend

There are no entry pre-requisites. We ask only that learners are fully committed to completing the programme, have a good attitude to learning, and a genuine interest in RAC technology. The course is particularly well suited to learners who are:

- working in the RAC sector with no previous training on RAC fundamentals, e.g., sales and support staff, new employees, technical staff with other trade backgrounds; or
- considering further education (e.g., an apprenticeship) or a career in the RAC sector; or
- responsible for purchasing refrigeration, air conditioning or heat pump systems.

Course Benefits

- ◇ Improve your understanding of RAC systems and the underlying theory
- ◇ Test your existing knowledge and skills and your aptitude for a career in RAC
- ◇ See the theory applied to live RAC systems in a dedicated RAC workshop
- ◇ Gain a solid base knowledge of RAC technology with a view to exploring further learning opportunities
- ◇ Get better value from RAC product training provided by suppliers

Course Training Provider

The training will be provided by John Murphy. John is an experienced industry practitioner, a professional trainer and a lecturer in DIT where he teaches on Phase 4 and Phase 6 of the refrigeration apprenticeship programme.

Course Cost

Network Members €795 per person
Non members €995 per person

Cost includes training, course notes, assessment and final certificate.

Course Venue, Date & Times

Venue: Refrigeration Skillnet Training Centre, Unit 7 Northwest Centre, Northwest Business Park, Blanchardstown, Dublin 15

Start Date: Tue 29th September 2009.

The course will be delivered one evening per week (Tuesdays) over 20 weeks.

Times: Classes from 18:00 to 21:00



Refrigeration SKILLNET

Learning Outcomes

On completion of the course, the learner will be able to:

Unit One: 'Basic Principles'

- ◇ Explain and understand the SI system of units, in particular those relating to the refrigeration industry
- ◇ Understand the dangers of working with refrigerants
- ◇ Understand the difference between latent and sensible heat and their relevance to the refrigeration industry
- ◇ Understand the principles behind the pressure temperature relationship and its relevance to the vapour compression system
- ◇ Describe the basic operation of the vapour compression system
- ◇ Identify and explain the purpose of the major components in a vapour compression system

Unit Two: 'Components'

- ◇ Understand the operation of a variety of compressors including reciprocating, scroll, rotary, screw and centrifugal.
- ◇ Explain the operation of a variety expansion devices including capillary tubes, thermostatic expansion valves, fixed orifice expansion devices and electronic expansion valves
- ◇ Describe the operation of a refrigeration condensers, including water cooled, air cooled and evaporative
- ◇ Understand the operation of a variety of evaporators included forced draught, static and liquid.
- ◇ Understand the importance of superheat and sub cooling
- ◇ Describe a variety of ancillary components fitted to a variety of vapour compression systems
- ◇ Describe the difference between the major refrigerants used in vapour compression systems

Unit Three: 'Controls'

- ◇ Understand the hazards of working on electrical systems
- ◇ Describe the principles behind single and three phase electricity
- ◇ Understand the principles of refrigeration control systems
- ◇ Describe the operation of the principle electro-mechanical controls on a vapour compression system

- ◇ Describe the principles and advantages of electronic control systems
- ◇ Distinguish between open loop and closed loop control systems
- ◇ Understand the operation of the main operational and control system components
- ◇ Interpret a schematic electrical control system diagram
- ◇ Understand the principles behind the main electrical fault finding equipment
- ◇ Understand three phase and single phase motor principles
- ◇ Understand the principles and advantages behind variable speed drive systems

Unit Four: 'Air conditioning and heat pump systems'

- ◇ Describe the principles behind air conditioning load calculations
- ◇ Understand the principle behind reverse cycle heat pumps
- ◇ Understand the principles behind ground source heat pumps
- ◇ Describe the operation of Air Handling units
- ◇ Understand how to interpret the condition of air using a psychrometric chart
- ◇ Understand air distribution and filtration systems
- ◇ Understand the problems associated with sick building syndrome and legionnaire disease

Unit Five: 'Liquid overfeed and service processes'

- ◇ Understand the differences behind liquid overfeed systems and DX systems
- ◇ Describe the properties of ammonias a refrigerant
- ◇ Understand oil return and cooling systems on liquid overfeed vapour compression systems
- ◇ Use a pressure enthalpy chart as a service tool
- ◇ Describe the symptoms of the main problems associated with the principle refrigeration components
- ◇ Understand the regulatory requirements of working with CFC, HCFC and HFC refrigerants (ODS and F Gas)
- ◇ Describe a variety of methods of leak detection and pressure testing

Course Booking

Completed course booking forms should be returned immediately together with a cheque or bank draft made payable to Refrigeration Skillnet. If you want to check on availability before you book, please call or send an email. In general, places on the course will be offered on a first-come-first-serve basis. However, we reserve the right to bias our booking policy in favour of a wide representation of our members. Reservations will only be accepted for learners who have fully paid in advance. Please refer to the booking terms and conditions on the course enrolment form before you submit your application.

EVENING COURSE BOOKING FORM

Refrigeration Skillnet

Company Name:

Contact person (in case we have any queries):

Address:.....

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Telephone: Fax: E-mail:

Please reserve course places for the following participants:

First Name	Surname	Course (including date)	Course Fee
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TOTAL (EURO)

To reserve course places, please complete this form and return it by post, together with payment, to:

Refrigeration Skillnet
PO Box 389
Dungarvan
Co Waterford

Phone: 086 815 4769 / 058 44211
Fax: 0818 411004
E-mail: refskill@eircom.net
Web: www.refrigerationskillnet.ie

Booking Terms & Conditions

Payment by cheque or bank draft only. No credit terms available. Cheques / drafts to be made out to Refrigeration Skillnet.

Places are limited so early booking is advised. To check on availability before sending in a booking form, contact the network office.

Claims in respect of any cancellation received in writing seven days prior to commencement of the course will be met in full. All cancellations thereafter will be payable in full. Substitutions may be made at any time.

It will not be possible to issue partial refunds to participants who partially complete the course. Applicants are advised to make certain in advance of the course that the course is suitable to their needs and that they can attend throughout.

We reserve the right to change the venue of the courses and/or tutor from that described in the promotional literature should the need arise.

We reserve the right at our absolute discretion and without further liability to cancel the course in which case payment will be refunded.