



BCM00 Introduction to Building Controls and HVAC (available on request)

One day course

BCIA Members £270 + VAT

Non-members £350 + VAT

Overview

This introductory course is designed for those who do not require the full technical detail of the building controls courses (BCM01-BCM06), or who are new to this area of the industry. The course provides full coverage of day-to-day involvement in building controls and HVAC, but at a level that does not focus on the technical detail. The course is designed for facilities managers and estates managers, as well as electricians and other building services trades personnel who wish to become more informed in this sphere of work.

Course content

- What is a control system?
- Types of control heating systems.
- Primary heating plant.
- Distribution of heating.
- Basic control of heating.
- Hot water service.
- Centralised HWS.
- Ventilation and air conditioning.
- Fresh air, heating & cooling with air systems.
- Basic control of air systems.
- Relative humidity and the psychrometric chart.
- The concept of humidity.
- Basic use of the psychrometric chart.
- Basic humidity control.
- Primary air plant.
- The air handling unit.
- Multi zone system.

BCM01 Fundamentals of HVAC and Building Technology

Two day course

BCIA members £440 + VAT

Non-members £600 + VAT

Overview

This assessed course gives an overview of the systems and technologies used in the heating, ventilating and air conditioning industry. Building control and building management systems are also covered. This course is designed for those already involved in building controls that need to have a knowledge and understanding of the terminology, technologies and systems used, whether they are managers, designers or installation engineers.

Objectives

At the end of this course, delegates will understand:

- The physical fundamentals associated with buildings usage.
- The most important requirements of the building enclosure and building services installation.
- The principles of HVAC, and the psychrometric chart.
- The functional principles of the most important HVAC systems and their main components.
- The fundamentals of measurement and controls.
- The purpose and basic variations of hydraulic circuits.
- The basic refrigeration cycle.

Course Content

- Introduction to building technology.
- Physical principles.
- Introduction to ventilation and air conditioning.
- Introduction to measuring and control technology.
- Introduction to fundamental hydraulic circuits.
- Refrigeration technology.
- End of course assessment.

BCM02 Measuring & Control Technology

Two day course

BCIA members £440 + VAT

Non-members £600 + VAT

Overview

This assessed course gives an overview of the systems and technologies used in the heating, ventilating and air conditioning industry. Building control and building management systems are also covered. This course is designed for engineers and technicians who have some knowledge and field experience with a minimum period of one year within the industry. It is also recommended that candidates complete Fundamentals of HVAC & Building Technology (BCM01) first.

Objectives

At the end of this course, delegates will understand:

- The basics of measuring technology.
- Dynamic response, time delays and time constants.
- Tolerance and measuring errors.
- Measured variables in HVAC.
- The placement and installation of sensors.
- Measuring concept and planning.
- Controllers, classification, PID and mode of operation.
- Control loop, gain, stability, characteristics.

Course Content

- Measuring technology.
- Fundamentals of measurement.
- Measured variables in HVAC.
- Transmission action.
- The different types of controllers and control loops.
- Locating and mounting sensors.
- Measuring concept / planning.
- Control technology.
- Introduction to control technology.
- The controlled system.
- The different types of controllers and control loops.
- Digital Direct Control (DDC).
- End of course assessment.

BCM03 Hydraulics in Building Systems

Two day course

BCIA members £440 + VAT

Non-members £600 + VAT

Overview

Involving the main water circuits and systems used within the building services controls environment, this course includes the necessary mechanical knowledge needed to understand applications and covers all aspects of valve sizing and control. The course is designed for engineers and technicians who have some knowledge and a recommended minimum of one year field experience within the industry. It is also recommended that candidates complete Fundamentals of HVAC & Building Technology (BCM01) first.

Objectives

At the end of this course, delegates will understand:

- The appropriate valves and actuators for a given hydraulic circuit (also in terms of control).
- The ways to analyse hydraulic plants to find out if problems are caused by hydraulics or control.
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Course Content

- Introduction to hydraulic circuits.
- Hydraulic characteristics of valves and actuators and sizing controlling elements.
- Pressure independent valves.
- Variable speed pumps.
- Sizing of the controlling elements.
- Hydraulic circuit problems.
- Valve sizing.
- Valve sizing practical test.
- End of course assessment.

BCM04 Control Functions in Heating Plant

Two day course

BCIA members £440 + VAT

Non-members £600 + VAT

Overview

This course provides a detailed overview of all types of heating plants and systems together with the associated control applications. This is an advanced course for engineers and technicians who have a good level of knowledge and a recommended minimum of two years' experience within the industry. It is also recommended that candidates complete Fundamentals of HVAC & Building Technology (BCM01) first.

Objectives

At the end of this course, delegates will have advanced knowledge of:

- The structure and modes of operation of the most common control functions used in heating plants.
- The functioning of typical plants.
- The advantages and disadvantages of individual solution variants.
- Suitable control concepts.

Course Content

- Control of a heating boiler.
- Control of a multiplant boiler.
- Control and supervision of oil/gas burners.
- Control of DHWS heating plant.
- Control of heat pump plant.
- Control of solar plant.
- Introduction to Building Information Modelling (BIM).
- End of course assessment.

BCM05 Control of Ventilation and Air Conditioning Plant

Two day course

BCIA members £440 + VAT

Non-members £600 + VAT

Overview

Using psychrometric charts and data, this course details the requirements of air conditioning plants and how they can be controlled effectively for resourceful operation and energy efficiency. This course is designed for managers, electricians and engineers who are responsible for the design, installation and commissioning of building control technologies and systems for ventilation and air conditioning. This advanced course builds on the knowledge gained in the BCM01-BCM04 courses.

Objectives

At the end of this course, delegates will have advanced knowledge of:

- The structure and modes of operation of the most common control functions used in ventilation and air conditioning plants.
- The functioning of typical plants.
- The advantages and disadvantages of individual solution variants.
- Suitable control concepts.

Course Content

- AHU component parts including variable speed fans and EC motors.
- Factory packaged controls.
- Temperature control in ventilation plants.
- Humidity control.
- Mixing re-circulated air.
- Control and frost protection of heat recovery equipment.
- Plant concepts for partial air conditioning plants.
- Plant concepts for full air conditioning plants with heat recovery.
- Various control functions.
- Control of air re-treatment.
- End of course assessment.

BCM06 Control of Cooling Systems

Two day course

BCIA members £440 + VAT

Non-members £600 + VAT

Overview

A detailed, technical course relating to refrigeration and psychrometrics, focusing on how the refrigeration process operates, and the relationship with other parts of the cooling system. This is an advanced course for engineers and technicians who have a good level of knowledge and a recommended minimum of two years' experience within the industry. It is also recommended that candidates complete Fundamentals of HVAC & Building Technology (BCM01) first.

Objectives

At the end of this course, delegates will have a general knowledge of:

- The h, log p chart.
- The compression refrigeration cycle.
- The functioning of heat pumps and ice storage plants.
- The absorption process.
- The different solution variants for refrigeration cycles.
- Chiller sequencing, chilled water pumps and cooling towers.

Course Content

- Fundamentals of thermodynamics refrigerants.
- The h, log p chart.
- Mechanical design of compression refrigeration plant.
- The compression refrigeration circuit in the h, log p chart.
- Heat pump technology.
- The absorption cycle.
- Optimising chiller plant.