



University of Central Lancashire

Training 2000

Level 4 Higher National Certificate

Electrical and Electronic Engineering HNC

Manufacturing Engineering HNC


Mechatronics HNC

Level 5 Higher National Diploma

HND in General Engineering

Delivering high level, industry-led training courses is what we do. As an engineering provider of advanced technical and academic skills, we work closely with employers to nurture and develop the employees they need for the future.

www.training2000.co.uk | 01254 54659 | info@t2000.co.uk



Level 4 Higher National Certificate information

The BTEC Level 4 HNC Qualification in Operations Engineering is a higher level programme aimed at developing a greater understanding and technical capability of engineering processes.

We provide employees with more than just a qualification. We develop both their industry skills and knowledge for immediate application in the workplace which maximises return on investment.

Duration

2 years - one day per week

Where will I study?

Training 2000 Blackburn

Course cost

£2500 per academic year

Entry requirements

Ideally you will have completed a Level 3 qualification in engineering or equivalent.

HNC pathways:

1. Electrical and Electronic Engineering
2. Manufacturing Engineering
3. Mechatronics Engineering

Our HNC/HND includes:

- Face-to-face tutorials
- Flexible day delivery to minimise effect on employer
- Opportunities to develop workplace projects within employers

What you'll learn (all pathways)

Engineering Design

The aim of this unit is to introduce students to the methodical steps that engineers use in creating functional products and processes as an individual or part of a design team; from a design brief to the work, and the stages involved in identifying and justifying a solution to a given engineering need.

Engineering Mathematics

The aim of this unit is to develop students' skills in the mathematical principles and theories that underpin the engineering curriculum. Students will be introduced to mathematical methods and statistical techniques in order to analyse and solve problems within an engineering and manufacturing context.

Managing a Professional Engineering Project

This unit introduces students to the techniques and best practices required to successfully create and manage an engineering/manufacturing project designed to identify a solution to an engineering need. While carrying out this project students will consider the role and function of engineering in our society, the professional duties and responsibilities expected of engineers together with the behaviours that accompany their actions.

Mechatronics

Among the topics included in this unit are: consideration of component compatibility, constraints on size and cost, control devices used, British and/or European standards relevant to application, sensor types and interfacing, simulation and modelling software functions, system function and operation, advantages and disadvantages of software simulation, component data sheets, systems drawings, flowcharts, wiring and schematic diagrams.

Mechanical Principles

The aim of this unit is to introduce students to the essential mechanical principles associated with engineering applications. Topics included in this unit are: behavioural characteristics of static, dynamic and oscillating engineering systems including shear forces, bending moments, torsion, linear and angular acceleration, conservation of energy and vibrating systems; and the movement and transfer of energy by considering parameters of mechanical power transmission systems.

Production Engineering for Manufacture

This unit introduces students to the production process for key material types; the various types of machinery used to manufacture products and the different ways of organising production systems to optimise the production process; consideration of how to measure the effectiveness of a production system within the overall context of the manufacturing system; and an examination of how production engineering contributes to ensuring safe and reliable operation of manufacturing.

Quality and Process Improvement

This unit introduces students to the importance of quality assurance processes in a manufacturing or service environment and the principles and theories that underpin them. Topics included in this unit are: tools and techniques used to support quality control, attributes and variables, testing processes, costing modules, the importance of qualifying the costs related to quality, international standards for management (ISO 9000, 14000, 18000), European Foundation for Quality Management (EFQM), principles, tools and techniques of Total Quality Management (TQM) and implementation of Six Sigma.

Digital Principles

The unit introduces digital principles and the two main branches of digital electronics, combinational and sequential. Thus, the student gains familiarity in the fundamental elements of digital circuits, notably different types of logic gates and bistables. The techniques by which such circuits are analysed, introduced, and applied, including Truth Tables, Boolean Algebra, Karnaugh Maps, and Timing Diagrams. The theory of digital electronics has little use unless the circuits can be built - at low cost, high circuit density, and in large quantity. Thus, the key digital technologies are introduced. These include the conventional TTL (Transistor-Transistor Logic) and CMOS (Complementary Metal Oxide Semiconductor). Importantly, the unit moves on to programmable logic, including the Field Programmable Gate Array (FPGA). Finally, some standard digital subsystems, which become important elements of major systems such as microprocessors, are introduced and evaluated.

What you'll learn pathway units

1. Electrical and Electronic Engineering pathway

Automation, Robotics and Programmable Logic Controllers (PLCs)

Electrical and Electronic Principles

2. Manufacturing Engineering pathway

Automation, Robotics and Programmable Logic Controllers (PLCs)

Computer Aided Design and Manufacture (CAD/CAM)

3. Mechatronics pathway

Electrical and Electronic Principles

Mechatronic Systems in Manufacturing

Please visit www.training2000.co.uk/apprenticeships/engineering for more information of each unit and to book your place.

How you'll be assessed?

All units are internally assessed. Each unit within the qualification has specified pass assessment and grading criteria, in addition to this there are generic merit and distinction grading descriptors that describe performance over and above a pass grade. These allow grades of pass, merit or distinction to be awarded for all units.

Level 5 Higher National Diploma in General Engineering

Duration

1 year - one day per week

Where will I study?

Training 2000 Blackburn

Course cost

£2500

Entry requirements

Our one year top up from HNC to HND is obtained by studying a further six units at Level 5.

What you'll learn - HND units:

Professional Engineering Management

The aim of this unit is to provide students with the professional standards for engineers and to guide them on how to develop the range of employability skills needed by professional engineers.

Further Mathematics

The unit will prepare students to analyse and model engineering situations using mathematical techniques.

Research Project

This unit introduces students to the skills necessary to deliver a complex, independently conducted research project that fits within an engineering context.

Advanced Mechanical Principles

The aim of this unit is to provide students with advanced knowledge of the mechanical theories associated with engineering applications.

Further Thermodynamics

The aim of this unit is to develop further students' skills in applied thermodynamics by investigating the relationships between theory and practice.

Sustainability

The aim of this unit is to provide students with a wide range of knowledge and understanding of the issues and topics associated with sustainability and low carbon engineering.

These units could be subject to change

How you'll be assessed?

All units are internally assessed. Each unit within the qualification has specified pass assessment and grading criteria, in addition to this there are generic merit and distinction grading descriptors that describe performance over and above a pass grade. These allow grades of pass, merit or distinction to be awarded for all units.

Interested? Book your place now

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Proud to be part of the



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