

**Start Date: 19 April 2010**

The Edexcel Higher National Certificate/Diploma in Electrical/Electronic Engineering is suitable for those who wish to be employed at higher technician grade in the electrical and electronics industries. It will give you a broad-based knowledge and skills across a wide range of electrical and electronic topics with the necessary supporting principles and mathematics. Higher National Certificates and Diplomas are valued highly by employers. Your first year of study is equivalent to the first year of a degree and you will obtain the Certificate level. During the second year you will obtain a Diploma which is equivalent to the second year of a UK degree.

## **Entry Requirements**

You will need to hold the equivalent of a UK level 3 qualification and have an interest or experience in the Electrical/Electronic Engineering industry. You will need to demonstrate strong Mathematical skills to gain a place on the programme. You will also need to meet the English entry requirement of IELTS 5.5 or demonstrate you have the equivalent ability in English. We will assess your English as part of the application process. If you do not meet the English entry requirements, please also apply for the Pre-sessional Intensive English programme. The English programme information sheet will give you further details as you may be eligible to join the 6 week Pre-sessional programme commencing on 22 February 2010.

## **Course Content/Module descriptions**

### **Mechanical**

#### **Business Management Techniques**

This unit aims to develop your knowledge and understanding of the functions, structures and inter-relationships of an engineering business. It then enables you to develop and apply the skills of costing, financial planning and control associated with engineered products or services. Finally, this is brought together with the development of the fundamental concepts of project planning and scheduling that can be applied within an engineering organisation.

### **Engineering Science**

This unit aims to investigate a number of major scientific principles that underpin the design and operation of engineering systems. It is broad based and covers both mechanical and electrical principles. It is intended to give an overview that will provide the basis for further study in specialist areas of engineering.

### **Analytical Methods for Engineers**

This unit aims to provide the fundamental analytical knowledge and techniques needed to successfully complete the core units of the HNC/D. It is also intended as a base for further study of analytical methods and mathematics needed for the more advanced option units. This unit is designed to enable you to use fundamental algebra, trigonometry, calculus, statistics and probability, for the analysis, modelling and solution of realistic engineering problems.

### **Engineering Design**

This unit aims to give you the opportunity to experience the process of carrying out a design project. It will enable you to appreciate that design involves synthesising parameters which will affect the design solution.

### **Project**

This unit aims to develop your ability to use the knowledge and skills you develop on your engineering programme to complete a realistic work project. The unit aims to integrate the skills and knowledge developed in other units of the course within a major piece of work that reflects the type of performance expected.

### **Materials Engineering**

This unit aims to provide you with the necessary background knowledge and understanding of properties, selection, processing and use of materials.

### **Project Management**

This unit aims to provide knowledge of project management principles, methodologies, tools and techniques that may be used in any industry. Organisational and human resource factors are also included. You will develop an understanding of what constitutes a project and the role of a project manager. You will be able to analyse and plan the activities needed to carry out the project, including how to set up a project, how to control and execute a project, and how to carry out project reviews. You will also understand how the project fits into the company or other organisational environments.

### **Quality Assurance Management**

The aim of this unit is to raise awareness and familiarise you with the principles and applications of quality management. You will examine the basic principles of Total Quality Management (TQM) and develop an understanding of the key factors that underpin quality assurance techniques. The unit also introduces you to the application of Quality Control (QC) techniques.

### **Mechanical Principles**

This unit covers an extended range of mechanical principles which underpin the design and operation of mechanical engineering systems. It includes strengths of materials and mechanics of machines. The aim of the unit is to provide a firm foundation for work in engineering design and a basis for more advanced study.

### **CADCAM**

The aim of this unit is to provide a practical understanding of computer-aided machining (CAM) systems.

Outcome 1 focuses on the hardware and software of CAM systems.

Outcomes 2 and 3 deal with manual and computer-assisted part programming, giving you the opportunity to derive and prove part programs for engineered components.

Outcome 4 is concerned with quality control in CAM systems, particularly the various levels of inspection and the capture, transmission and analysis of quality control data.

### **Electronic**

#### **Business Management Techniques**

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### **Engineering Science**

This unit aims to investigate a number of major scientific principles that underpin the design and operation of engineering systems. It is broad based and covers both mechanical and electrical principles. It is intended to give an overview that will provide the basis for further study in specialist areas of engineering.

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### **Electrical and Electronic Principles**

This unit covers the electrical principles that students in many branches of electrical and electronic engineering need to understand. It builds on the elements of ac theory in Engineering Science. It also provides the basis for further study in more specialist areas of electrical principles.

### **Utilisation of Electrical Energy**

The aim of this unit is to develop your understanding of the underlying technology involved in the utilisation of electrical energy in some of the more important areas of electrical engineering. It also contributes to a firm foundation of knowledge for work in engineering design, and forms a basis for more advanced studies in this area.

### **Electronics**

This unit covers the electrical principles that learners in many branches of electrical and electronic engineering need to understand. It builds on the elements of ac theory in Engineering Science. It also provides the basis for further study in more specialist areas of electrical principles.

### **Micro Processor Systems**

The aim of this unit is to provide you with an understanding of microprocessor-based systems and their use in instrumentation/control/communication systems. They will study the practical aspects of device selection and the interfacing of external peripheral devices. The development cycle of specify, design, build, program, test and evaluate will be covered.

### **Digital and Analogue Devices and Circuits**

This unit covers the electrical principles that learners in many branches of electrical and electronic engineering need to understand. It builds on the elements of ac theory in Engineering Science. It also provides the basis for further study in more specialist areas of electrical principles.

### **How will I be assessed?**

You will be continuously assessed through coursework assignments in each subject module which will determine your final grade on completion of your course.

### **What can I do next?**

The HNC/D will support you in applying for jobs in the electronic engineering field and related careers. Upon successful completion of the HNC/D you will be able to progress to top up over one or two years, depending on whether a work placement is part of the programme.

### **Additional Costs**

College libraries stock a range of books related to your course of which you can take out on loan free of charge. You may wish to purchase your own books at a cost of approximately £20-50 per book. You may need an additional £300 throughout your course to buy appropriate clothing for modules or to undertake field trips.

### **Course Fee:**

£5,800 per year