

BTEC First Certificate and Diploma in Engineering

Available from September 2006

advancing learning, changing lives

Firsts

Features

- ◆ QCA accredited NOF Level 2 work-related qualifications
- ◆ Mapped to QCA's guidelines on work-related learning at Key Stage 4: [more details](#)
- ◆ Available in schools for pre-16 learners and further education colleges for post-16 learners
- ◆ BTEC First Certificate equivalent to 2 GCSEs grades A*-C
- ◆ BTEC First Diploma equivalent to 4 GCSEs grades A*-C

Advantages

- ◆ Prepares learners to enter employment in the engineering sector or to progress to further education vocational qualifications
- ◆ Provides education and training specifically in the areas of electronics, maintenance and manufacturing which is directly relevant to the changing needs of employees, employers and the professions
- ◆ Motivates learners via applied learning and assessment
- ◆ BTEC qualifications are recognised by employers and education institutions
- ◆ Provides a good progression route to more advanced qualifications eg BTEC Nationals
- ◆ Esteem of working in a sector of choice

Benefits

- ◆ Publicly funded on DfES Section 96 and Section 97
- ◆ Listed on the DfES Achievement and Attainment Tables
- ◆ Allows flexible delivery for teachers
- ◆ Availability of detailed support material for new centres

Centres must have approval from Edexcel to offer these qualifications.

For information on how to get approval, please call Edexcel Customer Services on 0870 240 9800 or alternatively see the following link: <http://www.edexcel.org.uk/sfc/forms/approval/>

QAN Number: Certificate: 100/5670/1; Diploma: 100/5671/3

Current accreditation from: 1 September 2006 to 31 August 2009

Current certification end date: 31 August 2011

For accreditation information, please visit the National Database of Accredited Qualifications by clicking here: [Certificate](#) and [Diploma](#).

Structure

BTEC First Diploma in Engineering	BTEC First Certificate in Engineering
Four core units	Two core units
<ul style="list-style-type: none"> • Working Practices in Engineering (30 GLH) • Using and Interpreting Engineering Information (30 GLH) • Applied Electrical and Mechanical Science for Technicians (30 GLH) • Mathematics for Engineering Technicians (30 GLH) 	<ul style="list-style-type: none"> • Working Practices in Engineering (30 GLH) • Using and Interpreting Engineering Information (30 GLH)
Specialist units (select units to a value of at least 120 GLH from Group A)	Specialist units
<p>Group A</p> <ul style="list-style-type: none"> • Engineering Maintenance Procedures and Planning (30 GLH) • Preparing and Controlling Engineering Manufacturing Operations (30 GLH) • Electronic Devices and Communication Applications • Selecting Engineering Materials (30 GLH) • Engineering Assembly Techniques (30 GLH) • Using Computer Aided Drawing Techniques in Engineering • Mechanical Maintenance Fundamentals • Electrical Maintenance Fundamentals • Electronic Maintenance Fundamentals • Selecting and Using Secondary Machining Techniques to Remove Material • Programming CNC Machines • Application of Welding Processes • Fabrication Techniques and Sheet Metal Work (30 GLH) • Engineering Marking Out (30 GLH) • Electronic Circuit Construction and Testing <p>Group B</p> <ul style="list-style-type: none"> • Telecommunications Technology • Application of Digital Networks • Casting and Moulding Processes • Using Specialist Secondary Machining Techniques (30 GLH) • Personal Computer Hardware and Software Installation • Production Planning Techniques (30 GLH) • Fluid Power Maintenance Fundamentals • Installing and Maintaining Home Entertainment Systems • Application of Quality Control and Measurement in Engineering 	<ul style="list-style-type: none"> • Applied Electrical and Mechanical Science for Technicians (30 GLH) • Mathematics for Engineering Technicians (30 GLH) • Engineering Maintenance Procedures and Planning (30 GLH) • Preparing and Controlling Engineering Manufacturing Operations (30 GLH) • Electronic Devices and Communication Applications • Selecting Engineering Materials (30 GLH) • Using Computer Aided Drawing Techniques in Engineering • Selecting and Using Secondary Machining Techniques to Remove Material • Programming CNC Machines • Electronic Circuit Construction and Testing

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| <ul style="list-style-type: none">• Mobile Communications Technology (30 GLH)• Applying Continuous Improvement and Problem Solving Techniques• Workplace Organisation and Standard Operating Procedures | |
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Unit Combinations

For the **BTEC First Certificate** the learner is required to complete both core units and enough specialist units from the list provided for a combined total of 180 guided learning hours (GLH) to complete the qualification.

For the **BTEC First Diploma** the learner is required to complete the four core units and enough specialist units from the list provided for a combined total of 360 guided learning hours (GLH) to complete the qualification.

Specification and Guides

- Specification (BF017262)

These materials can be ordered from:
Edexcel Publications
Adamsway
Mansfield, Notts. NG18 4FN
Tel: 01623 467 467
Email: publications@linneydirect.com

An electronic version of the specification is available on the Edexcel website. To access please see: <http://www.edexcel.org.uk/quals/first/eng/btec-fc-sep-2006/btec-fc-eng/>

DfES Achievement and Attainment Tables

For more information and to view these please [click here](#)

Student Progression

BTEC First Diplomas and Certificates offer direct progression on to BTEC National programmes. On completion of a BTEC National, students can progress to a BTEC Higher National or BTEC Foundation Degree programme.

A BTEC First also prepares students for employment in their chosen career.

Units

Core Units

Unit 1: Working Practices in Engineering (30 GLH)

The aim of this unit is to deal with the essential working practices of engineering to ensure that learners appreciate potential hazards.

Unit 2: Using and Interpreting Engineering Information (30 GLH)

Will enable learners to understand how to make effective use of textual, numeric and graphical information when working with engineering drawings, technical manuals, reference tables, specifications, charts or electronic displays, in accordance with approved procedures.

Unit 3: Applied Electrical and Mechanical Science for Technicians (30 GLH)

Learners will build on their experience of responding creatively to briefs gained in their chosen specialist units.

Unit 4: Mathematics for Engineering Technicians (30 GLH)

Will provide the learner with the underpinning knowledge and skills to solve problems that are faced by engineers that require the use of mathematical formulae and equations.

Specialist Units

Unit 5: Engineering Maintenance Procedures and Planning (30 GLH)

Learners will be introduced to the features of engineering systems that determine their reliability, safety and maintainability.

Unit 6: Preparing and Controlling Engineering Manufacturing Operations (30 GLH)

Provides learners with a broad understanding of the skills required when preparing and controlling a manufacturing operation in a particular set of circumstances.

Unit 7: Electronic Devices and Communication Applications (60 GLH)

Develops learners' knowledge and understanding of the core topics embracing electrical, electronics and communications technology, thus enabling progression to further study in the areas of electronics and communications engineering.

Unit 8: Selecting Engineering Materials (30 GLH)

This unit aims to provide the learner with an understanding of a range of common materials encountered in engineering, their properties, uses and availability.

Unit 9: Engineering Assembly Techniques (30 GLH)

Learners' will be provided with the necessary skills and knowledge to use tools to carry out a range of relevant assembly methods and techniques on engineering equipment.

Unit 10: Using Computer Aided Drawing Techniques in Engineering (60 GLH)

Provide the learner with an introduction to CAD and to enable learners to produce engineering drawings to given industry standards.

Unit 11: Mechanical Maintenance Fundamentals (60 GLH)

This unit aims is to provide an understanding of the fundamentals of mechanical maintenance and to provide learners with the knowledge and skills required for carrying out mechanical maintenance activities.

Unit 12: Electrical Maintenance Fundamentals (60 GLH)

Demonstrates the aspects of electrical engineering that a maintenance engineer is likely to be involved in.

Unit 13: Electronic Maintenance Fundamentals (60 GLH)

Demonstrates the aspects of electronic engineering that a maintenance engineer is likely to be involved in.

Unit 14: Selecting and Using Secondary Machining Techniques to Remove Material (60 GLH)

Provides a detailed understanding of manufacturing processes that are mainly associated with generating and forming of shapes through machining techniques.

Unit 15: Programming CNC Machines (60 GLH)

This unit will provide the learner with an introduction to CNC part programming, and to enable them to interpret part programs in terms of storage, transferability and flexibility

Unit 16: Application of Welding Processes (60 GLH)

Those with little or no previous welding experience will have the opportunity to gain knowledge and understanding of the processes used throughout the industry earners will gain experience in the production and development of digital graphics for use in games.

Unit17: Fabrication Techniques and Sheet Metal Work (30 GLH)

This would be appropriate for learners engaged in either fabrication or manufacturing engineering. The techniques learnt at each stage are transferable across a range of production systems.

Unit 18: Engineering Marking Out (30 GLH)

The aim of this unit is to provide the understanding and the skills for the measurement and marking out of components in preparation for machining operations.

Unit 19: Electronic Circuit Construction and Testing (60 GLH)

Learners will be introduced to some of the skills and related theory required when using simple circuits and working as an electronics technician

Unit 20: Telecommunications Technology (60 GLH)

Will provide a clear introduction to the concepts and technology involved in telecommunication networks.

Unit 21: Application of Digital Networks (60 GLH)

Learners will gain the practical skills needed to recognise the network hardware building blocks and the software roles and features required to make the communication system function.

Unit 22: Casting and Moulding Processes (60 GLH)

This unit aims to provide the learner with a broad understanding of casting and moulding processes.

Unit 23: Using Specialist Secondary Machining Techniques (30 GLH)

Provides a detailed understanding in less traditional manufacturing processes that are mainly associated with generating and forming of shapes through machining techniques.

Unit 24: Personal Computer Hardware and Software Installation (60 GLH)

The aim of this unit is to provide learners with the underpinning knowledge and understanding of the fundamental assembly and configuration of personal computers.

Unit 25: Production Planning Techniques (30 GLH)

Learners' will develop confidence in understanding the factors that affect the selection of appropriate processes for manufacturing organisations.

Unit 26: Fluid Power Maintenance Fundamentals (60 GLH)

Learners will gain knowledge and understanding of fluid power circuit components and systems maintenance employed in modern industry.

Unit 27: Installing and Maintaining Home Entertainment Systems (60 GLH)

This is aimed at those who wish to increase their knowledge of the practical aspects of home entertainment systems including radio, television and audiovisual (AV) systems.

Unit 28: Application of Quality Control and Measurement in Engineering (60 GLH)

Provides a broad understanding of the techniques associated with quality control and measurement.

Unit 29: Mobile Communications Technology (30 GLH)

This shows the learner the different (and often competing) wireless technologies which are currently available, the mobile devices which benefit them and how these can be used to offer solutions that would have previously been impossible or unthinkable.

Unit 30: Applying Continuous Improvement and Problem Solving Techniques (60 GLH)

This unit covers the background, main concepts and techniques of continuous improvement (Kaizen) and problem solving in the lean manufacturing environment.

Unit 31: Workplace Organisation and Standard Operating Procedures (60 GLH)

Workplace organisation and the 5S / 5Cs methodology, visual management techniques and standard operating procedures are covered in this unit.

*** GLH = guided learning hours**

A notional measure of the substance of a qualification. It includes an estimate of time that might be allocated to direct teaching, instruction and assessment, together with other structured learning time such as directed assignments or supported individual study. It excludes learner-initiated private study.

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