PEARSON ALWAYS LEARNING

Purpose Statement

Name of regulated qualification	
QAN: 601/7580/1	**Title: Pearson BTEC Level 3 National Diploma in Engineering (720 GLH)**

Overview

The engineering sector

Engineering is a dynamic sector that offers huge potential for students. Engineering turnover was £1.1 trillion in the year ending March 2012, and the sector accounts for 24.5 per cent of the turnover of all enterprises in the UK. The UK is regarded as a world leader in engineering sectors, including renewable energy, space, low carbon, aerospace, creative industries, utilities, automotive, agri-food and bioscience. Between 2010 and 2020 engineering enterprises are projected to have 2.74 million job openings, including more than 400,000 technician roles (as the predominantly ageing workforce in this area is expected to retire in this period).

Who is this qualification for?

The Pearson BTEC Level 3 National Diploma in Engineering is intended as a Tech Level, equivalent in size to 2 A Levels and, as such is designed to meet the Tech Bacc measure, when studied alongside Level 3 mathematics and the Extended Project Qualification (EPQ). It has been designed as part of a two-year programme, normally in conjunction with one or more qualifications at Level 3. It is aimed at students looking to progress to employment in this sector, and whose aspirations would be supported by taking complementary qualifications alongside.

No prior study of the sector is needed, but students should normally have a range of achievement at Level 2, in GCSEs or equivalent qualifications.

What does the qualification cover?

This qualification has been developed in consultation with employers and professional bodies to confirm that the content is appropriate for those interested in working in the sector. In addition, HE has been consulted to ensure that it also supports progression to higher education.

The content meets the knowledge, understanding and skills that underpin the role of engineering technician.

Everyone taking this qualification will study five mandatory units:

- Engineering Principles
- Delivery of Engineering Processes Safely as a Team
- Engineering Product Design and Manufacture
- Applied Commercial and Quality Principles in Engineering
- A Specialist Engineering Project.

Students choose a further five optional units to support choices in progression to relevant occupational areas, and to a range of sector-related courses in HE. They cover content areas such as:

- calculus
- computer-aided design
- pneumatic and hydraulic systems
- electronic devices and circuits
- computer programming
- 3D printing and rapid prototyping
- programmable logic controllers
- CNC machining
- welding.

All students taking this qualification will be required to engage with sector employers as part of their course, for example through industry practitioners contributing to the delivery and assessment of certain units. In addition, the qualification includes an optional work experience unit so all students can benefit from practical experience of the sector.

What could this qualification lead to?

Will the qualification lead to employment, if so, in which job role and at which level?

The Pearson BTEC Level 3 National Diploma in Engineering has a primary focus of progression to employment in a related occupational area. This qualification prepares students for roles such as:

- semi-skilled fitter
- mechanical/electrical/systems fitter
- fabricator/welder.

Students who have undertaken additional Level 3 qualifications in complementary subjects, such as NVQs, BTEC Certificates and Extended Certificates or A Levels, could progress to a wider range of roles, such as:

- engineering technician
- maintenance technician
- welding technician.

Will the qualification support progression to further learning, if so, what to?

A significant proportion of the job roles in this sector recruit at graduate level, and students may wish to progress to higher education before seeking employment.

In addition to the engineering sector-specific content outlined above, the requirements of the qualification will mean students develop the transferable and higher-order skills that are

highly regarded by both HE and employers. For example, when studying the *Applied Commercial and Quality Principles in Engineering* unit, students will develop an understanding of how key business activities and trade considerations affect engineering organisations, and how these can be used to create a competitive advantage. Students will also understand about quality processes and techniques, and tools to monitor and improve quality, like value stream mapping.

The qualification is intended to carry UCAS points and is recognised by HE providers as contributing to meeting admission requirements for many courses, if taken alongside other qualifications as part of a two-year programme of learning, and it combines well with a large number of subjects. It will support entry to HE courses in a range of disciplines, depending on the subjects taken alongside. However, for students wishing to study an aspect of engineering in HE, opportunities include:

- BSc Hons in Electrical Engineering, if taken alongside an A Level in Mathematics
- BSc (Hons) in Architectural Engineering, if taken alongside a Pearson BTEC Level 3 National Extended Certificate in Construction and the Built Environment or A Levels in Mathematics or Art and Design
- BSc (Hons) in Computer Science, if taken alongside A Levels in IT or Mathematics
- BSc (Hons) in Maths or Physics, if taken alongside A Levels in Mathematics or Physics.

Students should always check the entry requirements for degree programmes at specific HE providers.

If there are larger and/or smaller versions of this qualification, or it is available at different skills levels, why should the student choose this one?

The suite includes the following qualifications.

There are six specialist qualifications in both the **BTEC National Diplomas** and the **BTEC National Extended Diplomas**, which are as follows.

- **Engineering** – is aimed at giving students a wider view of the sector, which can include elements of mechanical, electrical and manufacturing engineering.
- **Electrical/Electronic Engineering** – this specialism allows students to focus on specific elements of electrical and electronic engineering, which can include electronic devices and circuits and power networks.
- **Mechanical Engineering** – this specialism covers a wide range of mechanical elements, including fluid mechanics as well as materials and their behaviours.
- **Computer Engineering** – this subject area specialises in how computers work and how they integrate into the wider picture, as well as cyber security and website design and control.
- **Manufacturing Engineering** – is for students looking to understand how things are made and the equipment, materials and processes used to create products.
- **Aeronautical Engineering** – focuses on the field of aerospace engineering, students will understand the theory of flight and aerodynamics, as well as aircraft maintenance and propulsion systems.

While each of these specialist areas prepares students to continue in this field in either employment or HE, the core of generic engineering content also allows students to progress to other specialisms in the engineering sector.

The **BTEC National Diploma** is equivalent in size to 2 A Levels and is for students planning to work in the engineering sector. Its size means there is time in a study programme to take an additional complementary qualification to support a specialist progression route.

The **BTEC National Extended Diploma** is equivalent in size to 3 A Levels and typically makes up the full two-year, 16–19 study programme. It allows students to focus their studies fully on this sector.

The **Pearson BTEC Level 3 National Extended Certificate in Engineering** is equivalent in size to 1 A Level. It is for students interested in learning about the sector alongside other fields of study, with a view to progressing to a wide range of HE courses, but not necessarily in engineering.

The **Pearson BTEC Level 3 National Foundation Diploma in Engineering** is equivalent in size to 1.5 A Levels. It is for students looking for a one-year course of full-time study, or alongside another area of study that contrasts or complements the Foundation Diploma in Engineering over a two-year, full-time study programme, with a view to progressing to a range of HE courses.

For more detail of the other qualifications listed here, and the different progression opportunities they particularly support, please refer to their statements of purpose.

This qualification is supported by the following organisations

Professional and trade bodies
Royal Aeronautical Society
The Society of Operations Engineers (SOE)

Employers
Rolls Royce
Liebherr Sunderland Works Ltd
GKN Aerospace
Wilson Tool International LTD

Higher education
The University of Manchester
University of Sheffield
University of Exeter
University of Huddersfield
Kingston University
Southampton Solent University
University of the West of England
Harper Adams University