



# ENGINEERING - BTEC NATIONAL EXTENDED CERTIFICATE

## Examination Board

- Pearson BTEC

## **Extended Certificate – 60 Credits (360 Guided Learning Hours)**

The Extended Certificate is the equivalent of 1 A Level and is made up of 4 Units which include the 'mandatory' Units 1, 2 and 3. Two Units are studied in Year 12 and two in Year 13

Students will be assessed through an exam for Unit 1, supervised practical task for unit 3 and assignments for the remaining Units. This course has been designed in consultation with industry leaders to ensure the content and tasks are relevant, practical and meet the needs of employers in the Engineering sector.

## **Year 12 units are as follows:**

### ***Unit 1: Engineering Principles (Mandatory 120 GLH External Exam)***

On completion of this unit a student should be able to:

- Recall basic engineering principles and mathematical methods and formulae
- Perform mathematical procedures to solve engineering problems
- Demonstrate an understanding of electrical, electronic and mechanical principles to solve engineering problems
- Analyse information and systems to solve engineering problems
- Integrate and apply electrical, electronic and mechanical principles to develop an engineering solution

### ***Unit 2: Delivery of Engineering Processes Safely as a Team (Mandatory 60 GLH Coursework)***

On completion of this unit a student should be able to:

- Examine common engineering processes to create products or deliver services safely and effectively as a team.
- Develop two-dimensional (2D) computer-aided drawings that can be used in engineering processes.
- Carry out engineering processes safely to manufacture a product or to deliver a service effectively as a team.

## **Year 13 units are as follows:**

### ***Unit 3: Engineering Product Design and Manufacture (Mandatory 120 GLH External Exam)***

On completion of this unit a student should be able to:

- Demonstrate knowledge and understanding of engineering products and design
- Apply knowledge and understanding of engineering methodologies, processes, features and procedures to iterative design
- Analyse data and information and make connections between engineering concepts, processes, features, procedures, materials, standards and regulatory requirements
- Evaluate engineering product design ideas, manufacturing processes and other design choices



- Develop and communicate reasoned design solutions with appropriate justification

**Unit 41: Manufacturing Secondary Machining Processes**  
(60 GLH Coursework)

On completion of this unit a student should:

- Examine the technology and characteristics of secondary machining processes that are widely used in industry
- Set up traditional secondary processing machines to manufacture a component safely
- Carry out traditional secondary machining processes to manufacture a component safely
- Review the processes used to machine a component and reflect on personal performance

**Useful websites / reading materials:**

<http://qualifications.pearson.com/en/qualifications/btec-nationals/engineering-2016.html>

**BTEC Level 3 Engineering course textbook:**

<https://www.pearsonschoolsandfecolleges.co.uk/fe-vocational/subjects/engineering-fe-vocational/btec-nationals-in-engineering>

**Recommended study**

- 2-4 hours homework / additional study per week. During which time, specific assignment work will be set by staff for students to complete in silent study and free/study periods or at home. Students will be provided with a full assessment calendar with handout and deadlines for all units.