



BTEC NATIONAL LEVEL 3 EXTENDED CERTIFICATE AND FOUNDATION DIPLOMA IN ENGINEERING

Examination Board

- Edexcel

Extended Certificate – 60 Credits (360 Guided Learning Hours)

The Extended Certificate is the equivalent of one 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 is a recently introduced course and 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.

The Year 12 units are as follows:

Unit 1: Engineering Principles (120 GLH)

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 (60 GLH)

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.

The Year 13 units are as follows:

Unit 3: Engineering Product Design and Manufacture (120 GLH)

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)

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

Foundation Diploma – 90 Credits (540 Guided Learning Hours)

Students can also opt to study the Foundation Diploma course.

The Foundation Diploma is the equivalent of one and a half A Levels and is made up of the same 4 Units from the Extended Certificate course plus an additional three units. One and a half of the additional units are covered in year 12 and the other one and a half are covered in year 13.

Additional Units to be covered for Foundation Diploma:

Unit 4: Quality Principles in Engineering (60 GLH)

On completion of this unit a student should:

- Examine business functions and trade considerations that help engineering organisations thrive
- Explore activity-based costing as a method to control costs and to determine if an engineering product or service is profitable
- Explore how engineering organisations use quality systems and value management to create value.

Unit 10: Computer Aided Design in Engineering (60 GLH)

On completion of this unit a student should:

- Develop a three-dimensional computer-aided model of an engineered product that can be used as part of other engineering processes
- Develop two-dimensional detailed computer-aided drawings of an engineered product that can be used as part of other engineering processes
- Develop a three-dimensional computer-aided model for a thin walled product and a fabricated product that can be used as part of other engineering processes.

Unit 44: Fabrication Manufacturing Processes (60 GLH)

On completion of this unit a student should:

- Examine the processes and technology used in sheet metal fabrication that are widely used in industry
- Carry out the preparation necessary to manufacture a fabricated product safely
- Carry out fabrication processes to manufacture a fabricated product safely
- Review the processes used

Useful websites / reading materials

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

BTEC Level 3 Engineering Student Book is due to be published soon, more details to follow.

Recommended study

- 2-3 hours homework / study per week for both the Extended Certificate and Foundation Diploma course. During which time, specific work will be set by staff.