

PCHS Curriculum Information

Course Title: BTEC Level 3 National Extended Certificate in Engineering	Exam Board: Pearson Edexcel	Specification Code: 601/7584/9
How will students be assessed? Equivalent in size to one A Level. There are 4 units of which 3 are mandatory and 2 are externally assessed.		
The four units are Unit 1 Engineering Principles. Value = $\frac{1}{3}$ of total qualification Unit 2 Delivery of Engineering Processes Safely as a Team. Value = $\frac{1}{6}$ of total qualification Unit 3 Engineering Product Design and Manufacture. Value = $\frac{1}{3}$ of total qualification Unit 10 Computer aided design in Engineering. Value = $\frac{1}{6}$ of total qualification		
Units 1 and 3 are externally assessed in the form of a written exam which students must pass to complete the award. Unit 1 and Unit 3 exams will both be sat in June of year 12 and both can be re-sat in the following January if needed.		
Exam content:		
Unit 1 The unit will be assessed through one paper of 80 marks lasting two hours that will be set and marked by Pearson. Learners will be assessed through a number of short- and long-answer problem-solving questions. Learners will need to explore and relate to the engineering contexts and data presented. Assessment will focus on learners' ability to solve problems that require individual and combined application of mathematical techniques, and electrical, electronic and mechanical principles to solve engineering problems.		
Unit 3 In this unit, students will examine what triggers changes in the design of engineering products and the typical challenges that engineers face, such as designing safety risks. Students will learn how material properties and manufacturing processes impact on the design of an engineering product. Finally, they will use an iterative process to develop a design for an engineering product by interpreting a brief, producing initial ideas and then communicating and justifying your suggested solution. They will draw on and apply knowledge and understanding from Unit 1: Engineering Principles and Unit 2: Delivery of Engineering Processes Safely as a Team, for example by using calculations to demonstrate a reduction in mass, by sketching using orthographic projection drawing methods or by justifying an engineering process as its use reduces the carbon footprint of a product.		
None examined (assignment submission) content		
Unit 2 In this unit, students will examine common engineering processes, including health and safety legislation, regulations that apply to these processes and how individual and team performance can be affected by human factors. Students will learn the principles of another important process, engineering drawing, and develop two-dimensional (2D)		

computer-aided drawing skills while producing orthographic projections and circuit diagrams. Finally, students will work as a team member and team leader to apply a range of practical engineering processes to manufacture a batch of an engineered product or to safely deliver a batch of an engineering service.

Unit 10:

In this unit students will use CAD software and hardware to produce 2D and 3D drawings. Students will acquire the skills to produce models of products, editing and modifying these, and exploring materials and their properties. Students will output a portfolio of drawings, for example orthogonal, 3D shaded or solid model, and detail view drawings, to an international standard.

KEY CONTENT

Half Term 1 & 2

Unit 1 Engineering Principles: Mr Purvis 3x lessons per fortnight

Algebraic mathematical methods
Static engineering systems
Dynamic engineering systems

Unit 2 Delivery of Engineering Processes Safely as a Team

: Ms Peace x 2 lessons per fortnight

Disassembly of an engineered product identifying 3 key manufacturing processes within the product.

Critically analyze the processes identified including details of the process in terms of manufacturing requirements, Health and safety considerations, human factors to be considered by the manufacturer, and their effects on the manufacturing process.

Develop a detailed report and accompanying presentation of the results of the investigation. Presented as a group.

Unit 3: Engineering product design and manufacture: Mr Linnell x 4 lessons per fortnight

Demonstrate knowledge and understanding of engineering products and design
Apply knowledge and understanding of engineering methodologies, processes, features and procedures to iterative design

Half Term 3 & 4

Unit 1 Engineering Principles: Mr Purvis 3x lessons per fortnight

Algebraic mathematical methods
Static engineering systems
Dynamic engineering systems

Unit 2 Delivery of Engineering Processes Safely as a Team

: Ms Peace x 2 lessons per fortnight

Develop a portfolio of 2d designs for an improved version of the disassembled product from L01. This will involve creating:

3rd Angle orthographic drawing

Sectional views of the design

Detailed assembly drawings

Manufacturing detail drawing including materials list.

Present portfolio of evidence for assessment.

Unit 3: Engineering product design and manufacture: Mr Linnell x 4 lessons per fortnight

Demonstrate knowledge and understanding of engineering products and design

Apply knowledge and understanding of engineering methodologies, processes, features and procedures to iterative design

Half Term 5 & 6**Unit 1 Engineering Principles: Mr Purvis 3x lessons per fortnight**

Past papers and testing

Unit 2 Delivery of Engineering Processes Safely as a Team

: Ms Peace x 2 lessons per fortnight

Plan the effective production of a batch of components from the detailed 2d drawings.

Agree roles within the team to produce the components to the agreed time plan.

Work as part of a manufacturing team to produce the batch of products from the detailed designs.

Quality assure the component parts and the assembled product.

Assignment paperwork produced, refined and submitted

Unit 3: Engineering product design and manufacture: Mr Linnell x 4 lessons per fortnight

Past papers and testing