

# ENGINEERING

**QUALIFICATION:** BTEC LEVEL 3 NATIONAL EXTENDED CERTIFICATE  
(1 A LEVEL)

The Engineering sector continues to suffer from a skills gap and needs to keep up with rapidly developing technologies. This BTEC qualification in Engineering has been designed to give pupils the knowledge and specific skills needed to meet the needs of modern mechanical engineering industries.

Many of the units have strong links to the knowledge and evidence requirements of the National Occupational Standards and relevant NVQs at Level 3 and will provide learners with opportunities for progression within and into employment. The qualifications have also been designed so that learners can progress into Higher Education, for example to BTEC Higher Nationals and undergraduate engineering degree qualifications.

BTEC Nationals have always required applied learning that brings together knowledge and understanding with practical and technical skills. This is achieved through learners performing vocational tasks that encourage the development of appropriate vocational behaviours and transferable skills. Transferable skills are those such as communication, teamwork, research and analysis, which are valued in both higher education and the workplace.

## ENTRY REQUIREMENTS:

Grade 5 in GCSE Maths.

## HOW COURSE IS ASSESSED:

Over 2 years, 4 units are studied, 3 are mandatory (units 1,2,3) and unit 10 which is the optional unit we have chosen, all of which relate to the engineering sector. Learners are assessed using a variety of styles to help them develop a broad range of transferable skills. Learners could be given opportunities to:

- write up the findings of their own research
- use case studies to explore complex or unfamiliar situations
- carry out projects for which they have choice over the direction and outcomes
- demonstrate practical and technical skills using appropriate processes, devices, components, equipment, materials, and consumables.

Each assignment will take a vocational scenario and you will evidence your work in the form of presentations, technical drawing and computer aided design portfolio, witness and observational statements and written technical reports.

## WHERE NEXT?

This is an exciting course that opens up opportunities in later life for access to University, Apprenticeships and Employment.

## JOB OPPORTUNITIES:

Construction, Aerospace, Mechanical, Automotive Electrical, Environmental, Product Design/3D Design, Engineering (Civil/Structural), Architecture.

## COURSE CONTENT:

All units are delivered with a view to enhance your skills in application, analysis and evaluation.

### **Unit 1: Engineering Principles: Mathematics (external examination marked by Pearson)**

This unit will develop your mathematical and physical scientific knowledge and understanding to enable you to solve problems set in an engineering context. You will explore and apply the algebraic and trigonometric mathematical methods required to solve engineering problems.

### **Unit 2: Delivery of Engineering Processes Safely as a Team (coursework assignments set and marked internally)**

In this unit, you will examine common engineering processes and relevant regulations, including health and safety legislation, how individual/team performance can be affected by human factors. Principles of engineering drawing, and develop two-dimensional (2D) computer-aided drawing skills while producing orthographic projections and circuit diagrams. Finally, you 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.

### **Unit 3: Engineering Product Design and Manufacture (research/case study/design and manufacturing external examination marked by Pearson)**

This unit will develop your analytical knowledge and understanding of the design process to enable you to solve client problems set in an engineering context, developing and evaluating your design solutions.

### **Unit 10: Computer Aided Design in Engineering (coursework assignments set and marked internally)**

In this unit, you will explore Autodesk Fusion 360 CAD package and develop two-dimensional (2D) and three dimensional (3D) computer-aided drawing skills while producing orthographic projections, technical engineering drawings and rendered drawings of engineered products.