



Technology Curriculum

Design and technology is a foundation subject within the framework of the National Curriculum and is delivered in specialist areas. One of these specialist areas consist of the Resistant Materials workshop.

Key stage 3:

Our Key Stage 3 consists of Year 7 and Year 8, with students having 1 hour of Resistant Materials Technology a fortnight. They are assessed regularly through teacher assessment and are awarded a Grade at the end of each design and make project. Students will be given home learning regularly.

As part of their work with resistant materials, students will be taught how to design and make using a range of tools and techniques.

Year 7:

The Charles Rennie Mackintosh project.

This project introduces the students to the workshop with Health and Safety being an important focus for everyone in the workshop. Students then study the classification of timbers along with their properties and stock sizes. They then research Charles Rennie Mackintosh and his influence on design and architecture over the years. Students write a detailed specification and produce designs to fulfil this using a range of presentation techniques.

Then the tools come out. Students will be taught the correct selection and use of tools and equipment to produce their design. The joining of wood using temporary and permanent fixing methods and wood joints, in this case the lap joint. Once assembled the box will be embellished with a Mackintosh inspired motif and appropriate colours applied. Students will be taught how to evaluate their work and how it can be improved in the future, continually improving on the last piece of work.

Year 8:

Wind turbine

Students will have the opportunity to explore how renewable energy will be produced. Students will build and test a wind turbine.

Key stage 4

Year 9:

BTEC level 1-2 Tech Award in Engineering

Students will use this year as a foundation to build on skills. Students will use this year to look at component 1: Exploring Engineering Sectors and Design Applications. There are 3 components that will be covered in total over the 3 years:

Component 1: Exploring Engineering Sectors and Design Applications.

Component 2: Investigating an Engineering Project

Component 3: Responding to an Engineering Brief



What does the qualification cover?

The Award gives learners the opportunity to develop sector-specific knowledge and skills in a practical learning environment. The main focus is on four areas of equal importance, which cover the:

- development of key engineering practical and technical skills, such as research, observation, measurement, making, using computer-aided design (CAD) and disassembly
- knowledge of key engineering sectors (mechanical, electrical/electronic and engineering design) and the interrelation of each in industry
- knowledge of the stages involved in planning and implementing an engineering project
- knowledge and skills involved in the investigation of solutions to engineering problems in response to a given brief.

What can the qualification lead to?

Study of the qualification as part of Key Stage 4 learning will help learners to make more informed choices for further learning either generally or in this sector. The choices that a learner can make post-16 will depend on their overall level of attainment and their performance in the qualification.

Learners who generally achieve at Level 2 across their Key Stage 4 learning might consider progression to:

- A Levels as preparation for entry into higher education in a range of subjects
- study of a vocational qualification at Level 3, such as a BTEC National in Engineering, which prepares learners to enter employment or apprenticeships, or to move on to higher education by studying a degree in an engineering area.

Year 10+11:

BTEC Firsts Engineering

Between 2010 and 2020, engineering companies are projected to have 2.74 million job openings across a diverse range of disciplines. The engineering sector has a crucial role to play in delivering growth and allowing companies to compete in a rapidly growing global market.

As a result, there are many exciting career opportunities, including mechanical or electrical engineering, technical design, estimating or quality control, across many sectors such as universities, automotive, renewable energy, aerospace, creative industries, utilities, agri-food and bioscience.

BTEC Firsts in Engineering provide a practical, real-world approach to learning and develop specific knowledge and skills learners need to work successfully in the engineering industry, such as:

- Discovering the world of engineering and how it impacts on our world today
- Communication skills to articulate and discuss new ideas or work as a team to solve problems
- Health and safety in the workplace and the appropriate procedures and legislation
- How mathematics and science is essential to engineering success.
- Learners will also be able to present their work in a variety of ways, including:
 - Presentations
 - Demonstrations
 - Producing models and prototypes.



Employment opportunities after study.

assembly line worker	CNC machine tool technician
electrical design engineer	health and safety advisor
machine installation technician	machine operator
maintenance technician	mechanical design engineer
packaging and warehouse operative	production planning engineer
test and quality assurance technician	waste materials and recycling operative

Some of these jobs are routine and repetitive. Others are much more exciting, and they require engineering skills and expertise, which you will learn about on this course. Some of the people doing jobs shown in this table will have started their career in engineering just like you - they may have taken a BTEC First and then perhaps progressed through BTEC Nationals and Higher Nationals (HNCs).