

The impact of engineering in our academy is developing and broadening the young minds of our students. We deliver life skills, engineering skills, health and safety, team work, facilitated learning, confidence, workshop skills, Computer Aided Design and Computer Aided Manufacture, management skills, working independently. We have fantastic facilities with engineering machinery that mirrors industry. The core skills of English, Maths and Sciences are applied to engineering problem solving, designing and building.

### **Powerful Knowledge in Engineering**

Engineering is an essential key component of industry locally, nationally and globally. With the delivery of our engineering courses, the current Labour Market trends and the development of our careers provision, we are using engineering to help the students gain important skills and choose their desired pathway. The skills learned in engineering support many industry and employment types vocationally and academically.

### **The engineering course will help the students:**

- Understand and explore a range job roles within the many types of engineering to develop a range of transferable skills.
- demonstrate effective and safe workshop skills by planning, preparing and using a variety of industrial equipment, techniques and materials.
- develop knowledge and understanding of problem solving, research and design
- understand the needs of clients and how to design or improve products
- understand the economic, environmental, ethical, and socio-cultural influences working in engineering can include and promote
- develop CAD (Computer Aided Design) and CAM (Computer Aided Manufacture) skills that are transferable throughout industry
- Discover pathways to college and university courses related to engineering

### **Curriculum features KS3**

#### **Year 7**

- Learning how to produce a risk assessment
- Developing wood working skills in a workshop
- Introduced to using design and production skills
- Using a variety of tools and equipment to mark measure and work with accuracy

#### **Year 8**

- Health and safety hazard identification and control measures
- Woodwork, marking out and working with accuracy
- Design and presentation
- Electronics building circuit boards and components to make a speaker set up with soldering
- CAD and CAM designing and making a phone holder with 2D Design and a Lase Cutter

#### **Year 9**

- Engineering health and safety
- Following engineering drawings to build a product
- Designing products
- Metal properties and working with different metals for different projects
- Using workshop tools, equipment and machinery
- Evaluation

## Curriculum features KS4

Students build on prior knowledge to:

**Demonstrate** effective and **safe** working skills in our workshop environment. The students write risk assessments and are continuously monitoring health and safety.

**Develop** knowledge and understanding of the tools, equipment and machinery in the workshop including:

- Pillar Drills
- Lathes
- Guillotine
- Battery Drills
- Milling machine

**Understand** the relationship between designing a product and how to make it. The students research material types and choose specific materials for specific jobs related to their properties. SMART materials, Composite Materials, metals, wood, fabric, plastics and electronics are used for developing and making.

**Demonstrate** design skills on a computer and by hand. Sketching, developing and analysing products is an important part of engineering.

**Understand** and explore the Engineering industry, the job roles and the different types of employment and training available to them.

## Why study Engineering?

27% of registered enterprises are engineering which generate £156.1 billion a year to the uk.

Can lead to careers in:

- Design
- General Engineering
- Electrical Engineering
- British Aerospace
- The Forces
- British Space Industry
- Renewable Sector
- Environmental Sustainability
- Construction
- Civil Engineering

Useful websites:

<https://www.heta.co.uk/>

<http://www.ceata.co.uk/>

<https://www.raf.mod.uk/>

<https://www.bbceng.info/>