

Statement of Intent – Design Technology / Engineering

The impact of Design Technology and Engineering in our academy is developing and broadening the young minds of our students. We deliver life skills, engineering skills, health and safety, teamwork, facilitated learning, confidence, workshop skills, Computer Aided Design and Computer Aided Manufacture, management skills, and independent work skills. We have good 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 Design Technology / 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 use engineering to help students gain important skills and choose their desired pathway. The skills learned in engineering support many industry and employment types vocationally and academically.

The DT / Engineering course will help the students:

- Understand and explore a range of 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 2022-2023

Year 7

- Health and safety hazard identification and control measures
- Learning how to produce a risk assessment
- Develop marking out and wood working skills in a workshop.
- Introduced to using design and production skills, basic tools, drawing methods including engineering drawings.
- Using a variety of tools and equipment to mark, measure and work with accuracy.

Year 8

- Health and safety hazard identification, control measures and quality checks
- Improve woodwork, marking out and working with accuracy skills.
- Increase design and presentation skills, basic tools and understanding of engineering drawings and terminology including subtractive and additive manufacturing.
- Using a variety of tools and equipment to mark, measure and work with accuracy.

Year 9

- DT & Engineering health and safety hazard identification, control measures and quality checks
- Following engineering drawings to build a product, analyse, evaluate, and suggest modifications and adaptations.
- Designing products for a customer, including research and design brief
- Material properties and working with different materials for different projects.
- Use of a wide range of workshop tools, equipment and machinery

In addition: Y8 2023-2024:

- Electronics - building circuit boards and components on TinkerCAD, simple electronic torch
- CAD and CAM designing and making with TinkerCAD, Laser Cutter, 3D printer.

In addition: Y9 2023-2024:

- Electronics - building more complicated circuit boards and utilising alternative components on TinkerCAD, soldering and evaluating for environmental benefits.
- CAD and CAM designing and making with TinkerCAD, Laser Cutter, 3D printer.

Curriculum features Engineering KS4 : 2023-2024

Students build on prior knowledge to:

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

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

- Pillar Drills
- Lathe
- Guillotine
- Forge
- Vertical Miller
- Laser cutter

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 designing, developing and making.

Demonstrate design skills on a computer and by hand. Sketching, developing and analysing products and drawings 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/>