

## Engineering

Our aim is to provide students with the skills and experience to set them apart from their peers when applying for engineering apprenticeships or further learning. The main focus of engineering is to give the students basic practical skills and opportunities to familiarise themselves with machinery they might normally not use. Students will also have the opportunity to use industry standard CAD (computer aided design) software, along with experience in using CNC machines. Learning is hands on with students completing practical projects that will develop skills such as reading for information, producing working drawings, use of workshop tools and machinery (including the Boxford lathes), health and safety and also using CAD (computer aided design) to design and create parts.

Please note that 2023-2024 will be the last year of Engineering, but may potentially be reintroduced in the future.

## Staffing

**Mrs J Gill** Teacher of Technology and Engineering

## Curriculum

The following topics are studied at KS3.

	<u>Autumn Term</u>	<u>Spring Term</u>	<u>Summer term</u>
<u>Year 9</u>	<p style="text-align: center;"><b>The Hammer</b></p> <p>Students will study 'Engineering as part of the technology carousel. This rotation forms 10 weeks of the Yr 9 curriculum and covers topics such as:</p> <p><b>Working drawings</b> – how to read and annotate a working drawing to be able to make a product to a specified brief</p> <p><b>Production Plans</b> – pupils will be learning about sequencing and how to present a production plan, whilst considering quality control and health &amp; safety</p> <p><b>Machinery</b> – learning the functions of key machinery (including lathes and pillar drill) and a selection of hand tools. Students will use such equipment showing awareness for health &amp; safety and PPE.</p>		

The following units are studied at KS4.

Pupils have **2** lessons per week in year 10 and **3** lessons per week in year 11.

	<u>Autumn Term</u>	<u>Spring Term</u>	<u>Summer term</u>
<u>Year 10</u>	<p><b>Introduction to Engineering Manufacture</b> (Skills building for engineering workshop processes and interpretation of engineering information)</p> <p><b>Engineering Drawings in manufacturing.</b></p> <p><b>Presenting Key information tasks.</b></p> <p><b>Planning manufacturing stages.</b></p> <p><b>Engineering drawings to BS8888.</b></p>	<p><b>Unit 3 Focused Investigation - Mock</b> (Structural Design and Testing techniques)</p> <p><b>Unit 2 Design - Mock</b> (Focus on designing Engineered Solutions using sketching, iterative process, manufacturing specifications and CAD/traditional Engineering drawing skills)</p>	<p><b>Unit 3 focused investigation –</b> (Mechanical &amp; Electronic Design)</p> <p><b>Unit 1 Task (Analysis and Planning)</b> (Learners manufacture an outcome from a given set of engineering drawings and technical data. Focus on extracting engineering information, planning, manufacturing and safety. Evaluation techniques to review manufactured outcomes)</p> <p><b>Learners undertake Unit 1 Task (Analysis &amp; Planning)</b></p>
<u>Year 11</u>	<p><b>Complete Unit 1 (Manufacturing task)</b> (Review functional characteristics of Unit 1 design; Unit 3 Focus on materials and properties of materials in products; calculations and mathematical techniques.</p> <p><b>Introduction to Unit 2 task.</b></p> <p><b>Year 11 Mock Exam</b></p>	<p><b>Learners undertake Unit 2 Task</b> (Delivery of Unit 2 task interspaced with learners looking at methods of presenting information and developing analytical skills.)</p>	<p><b>Focus on Unit 3 examination preparation</b> (Material developments; the impact of the development in electronics; manufacturing processes; risk assessment; engineering drawing standards)</p>

## **Extra-curricular activities and visits**

As well as our exciting curriculum, as a school we like our pupils to get involved in external competitions and challenges. This is a great opportunity for pupils who need to be stretched and challenged but also an opportunity for those with an interest in technology.

Where possible, visits tie in with our curriculum to enhance the teaching and learning experience, but also links with local colleges and universities show students the courses and facilities available to them in the local area upon leaving school. This includes:

**Experience of Workplaces** – with links with local business such as Leyland Trucks, where possible we try to incorporate visits to the workplace which tie in with our units of work. It provides pupils with real life examples of topics such as health and safety, quality control and engineering processes and practices.

**Visits to college/university** – Where possible, we try to allow our pupils to gain experience of engineering related courses which could be pursued upon leaving school. It often provides alternative approaches to teaching and also an insight into alternative machinery and tools which may be used.