ENGINEERING

Year 10

What are the aims and intentions of this curriculum?

The aim of our Key Stage 4 Curriculum will allow students to explore engineering skills through the design process, learn about the role of designers in the production of engineered products, and begin to understand how and why they use their knowledge. When students enter industries as engineers the curriculum will allow them to understand vital aspects of engineering practice. Students will be able to develop a range of skills, whilst solving problems and produce/present varied ideas.

Term	Topics	Knowledge and key terms	Skills developed	Assessment
Summer 2	Exploring engineering sectors and design applications	Students will study about various key terms for example, products, services, engineered products, Interconnection, hazards, sectors, fuselage etc;	Students will develop the skills to gather all their findings into a small folder, which will help to organise and present your evidence. Students will develop skills to carry out discussions and compare their ideas with a partner/group member.	Research different engineering sectors. Identify links between sectors. Make detailed notes on each sector.
Autumn 1	Exploring engineering sectors and design applications	Students will learn about various keys terms for example, annual turnover, customised parts, in –house, outsourced, patent, marketplace, fabrication etc;	Students will develop the skills to gather all their findings into a small folder, which will help to organise and present your evidence. Students will develop skills to carry out discussions and compare their ideas with a partner/group member.	Identify two of the major components/assemblies of the engineered product manufactured.
Autumn 2	Exploring engineering sectors and design applications	Students will learn about various key terms for example, troubleshooting, composite materials, virtual reality, ancillary equipment, commissioning etc;	Students will develop the skills to gather all their findings into a small folder, which will help to organise and present your evidence. Students will develop the skills to conduct research, discussions, practical tasks, whilst working as a part of a team with common objectives.	Carry out internet research to find out how many people each organisation employs and the various specialist skills needed to operate effectively.

Spring 1	Exploring engineering sectors and design applications	Students will learn about various key terms for example, handover, control valves, setpoints, NVQ, chartered engineer, skill set etc;	Students will be motivated because of career progression opportunities for example through apprentice programmes in engineering industries. Students will also develop job roles like, unskilled, skilled, technical or managerial.	Research a large engineering company and list various job roles to be discussed with a partner.
Spring 2	Investigating an engineering project	Students will think of an engineered product with many different component parts- for example, a skateboard. Students will become familiar with key terms like: ferrous and non-ferrous metals, thermosetting polymers and complex brackets.	Students will develop skills to hammer malleable materials like copper into various shapes. Students should be able to organise materials into different types, properties, composition and their relevant uses.	See how many individual metals you can identify within a product. Consider what alternative engineered products each metal could be used for.
Summer 1	Investigating an engineering project	Students will be made aware that non-ferrous metals are widely used in engineering throughout the electrical, aerospace and jewellery trades. Teacher and students will also discuss, why an engineered product made from a malleable material would be preferable to one that is not.	Students should be aware of the process used to convert waste materials into other usable materials. An example is polymer pellets heated and formed into products.	Complete a table with various thermosetting polymers (for example: phenol-formaldehyde, polyimides and polyurethane), then state their properties, forms and examples of usage.