

Engineering

Subject Leader: Mr J Fulson

Email: jfulson@taptonschoool.co.uk

Curriculum Intent:

Through a combination of traditional and technological approaches, the Engineering programme will enable students to solve problems by learning from their mistakes when creating electronic and mechanical products and systems.

	Core Knowledge	Procedural Knowledge
Autumn Term 1	Topics: <ul style="list-style-type: none"> • Mechanical Engineering principles. • Mechanical Systems. • Metalworking processes and tools. • Lathe and Milling machine operation. • Computer Aided Design. • Quality Control. • Selection of materials. • Extracting information from Engineering Drawings. • Health and Safety and risk assessment. • Sustainable design 	Students will: <ul style="list-style-type: none"> • Follow Engineering drawings to plan making a Can Crusher. • Risk Assess. • Plan for making. • Have practical lessons on manufacturing the Torch and Can Crusher. • Explain why materials have been chosen.
Autumn Term 2	Topic: <ul style="list-style-type: none"> • Mechanical Engineering principles. • Mechanical Systems. • Metalworking processes and tools. • Lathe and Milling machine operation. • Computer Aided Design. • Quality Control. • Selection of materials. • Extracting information from Engineering Drawings. • Health and Safety and risk assessment. • Sustainable design 	Students will: <ul style="list-style-type: none"> • Risk Assess.. • Have practical lessons on manufacturing the Torch and Can Crusher. • Explain why materials have been chosen.
Spring Term 1	Topic: <ul style="list-style-type: none"> • Mechanical Engineering principles. • Mechanical Systems. • Metalworking processes and tools. • Lathe and Milling machine operation. • Computer Aided Design. • Quality Control. • Selection of materials. • Extracting information from Engineering Drawings. • Health and Safety and risk assessment. • Sustainable design 	Students will: <ul style="list-style-type: none"> • Have practical lessons on manufacturing the Torch and Can Crusher. • Explain why materials have been chosen. • Evaluate the completed product including if it meets tolerances.

Spring Term 2	Topic: <ul style="list-style-type: none"> • Metalworking processes and tools. • Lathe and Milling machine operation. • Computer Aided Design and manufacture. • Selection of materials. • Extracting information from Engineering Drawings. Health and Safety and risk assessment. 	Students will: <ul style="list-style-type: none"> • Follow Engineering drawings for an Aluminium Torch or design and make a torch from scratch if they have opted for Design Engineering in Y10. • Risk Assess. • Plan for making. • Have practical lessons on manufacturing the Torch.
Summer Term 1	Topic: <ul style="list-style-type: none"> • Lathe and Milling machine operation. • Computer Aided Design and manufacture. • Quality Control. • Extracting information from Engineering Drawings. Health and Safety and risk assessment. 	Students will: <ul style="list-style-type: none"> • Follow Engineering drawings for an Aluminium Torch or design and make a torch from scratch if they have opted for Design Engineering in Y10. • Risk Assess. • Plan for making. • Have practical lessons on manufacturing the Torch. • Solder.
Summer term 2	Topic: <ul style="list-style-type: none"> • Lathe and Milling machine operation. • Computer Aided Design and manufacture. • Quality Control. • Extracting information from Engineering Drawings. Health and Safety and risk assessment. • Evaluating a finished product. 	Students will: <ul style="list-style-type: none"> • Risk Assess. • Plan for making. • Have practical lessons on manufacturing the Torch. • Program their torch. Evaluate the completed product including if it meets tolerances.

Homework:

Homework is set on Class Charts for every six hours taught. Homework will comprise a presentation on how technology has affected culture and revision for tests.

Assessment:

Formative verbal and other feedback. Exploration grade (research). Create grade (making). Evaluation grade. Principles grade through a multiple-choice test. Presentation skills and content grade.

Links to Personal Development:

Iterative design. Dexterity and soldering skills. Coding. Self-evaluation of work. Presentation skills.

How is my knowledge developed further at GCSE?

Vocational Engineering

- Practical skills are developed.
- Ability to use Computer Aided Design is developed.
- Knowledge and understanding of materials, processes and components are developed.
- This is a good preparation for an apprenticeship.

Design Engineering

- Design and making of electronic circuitry (including relevant theory) is developed.
- Design and making of mechanical devices (including relevant theory) is developed.
- Deeper knowledge and understanding of materials, processes sustainable design is furthered.
- This is a good preparation for an Engineering A-Level.