Curriculum Intent Statement

Design and Technology – KS4 Engineering

*“Strive for perfection in everything you do. Take the best that exists and make it better. When it does not exist, design it.” - Sir Henry Royce*

Intent Overview

Engineering is a subject that involves taking our scientific understanding of the natural world and using it to invent, design, and build things to solve problems and achieve practical goals. The course offered at Stocksbridge high school aims to encourage pupils to think independently and creatively while providing continual development, refinement and mastering of the skills and knowledge pupils have been introduced to and explored at KS3 level. It also introduces new knowledge to students that they can apply to further study either academically or if enrolled in an apprenticeship scheme.

In 1842 Samuel Fox took over a cotton mill and developed into a steelwork since then Stocksbridge, and local areas have cultivated a rich history of engineering and manufacturing nationally and globally. As an educational provider and department, we believe it is vitally important that these roots are protected and therefore inspire all pupils regardless of background and gender, to unlock their engineering potential.

Course intent

The course is divided into three mandatory units. Unit 1 and unit 2 are internally moderated pieces of coursework set around a working brief, while unit 3 is an externally moderated exam. The purpose of unit 1 is for learners to analyse engineered products to propose design solutions to meet requirements. Pupils will learn how to think critically, analysing products and product features, how they work and how products meet specific needs. Additionally, Pupils will learn how to improve design communication, take ideas from different products to produce a design specification for a product using iterative design concepts and evaluate design proposals. The work allows debate, discussion, creativity, and independent thinking when working on setting time constraints tightly.

Unit 2 focuses on learners using skills developed while studying design and technology subjects (engineering) to produce an engineered product. Pupils will learn how to interpret different types of engineering information to plan and make products. Pupils will also start to refine and master the skills needed to work safely with a range of engineering processes, equipment, and tools.

It is with these skills; pupils can then understand why a range of engineering processes are fit for purpose.

Unit 3 requires learners to use their knowledge and understanding of engineering processes and material properties to solve problems. Pupils will learn about historical factors that have influenced engineers in the past and how these factors have led to ideas that have addressed issues of the present. Materials properties, engineering processes and mathematical principles that engineers use are also topics of study. It is in this unit pupils will draw upon the knowledge of all units of work to solve problems and refine drawing skills to communicate engineering solutions.

Career pathways

Architect, Aerospace Engineer, Agricultural Engineer, Automotive Engineer, Biomedical Engineer, Chemical Engineer, Civil Engineer, structural engineer, Project manager, Estimator and many more.