

Materials Engineering (EMS)

Core technical qualification

AQA Higher Project Qualification (HPQ) Level 2

What will you be learning?

- This qualification allows learners to develop a working knowledge of the material properties and characteristics of woods, metals and polymers.
- The subject content sets out the knowledge, understanding and skills required to use these materials in an imaginative way and will equip learners with an understanding of commercial practice and careers in related industries.
- Learners will also develop valuable transferable skills such as teamwork and communication.
- The majority of the subject content will be delivered through the practical application of this knowledge and understanding.

Methods of assessment

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The Higher Project Qualification allows students to discover the joys of independent learning, take responsibility for their own study and develop new manufacturing and study skills. Throughout year 11 they will manage their own manufacturing focussed project to meet the need of a client of their choice. Students will undertake research work, and design and develop their product before manufacturing and evaluation. Assessment will focus on each student's production log, design record, a written report and a formal presentation to peers and invited guests.

Manufacturing Portfolio

The manufacturing portfolio is designed to complement the HPQ course and give students a broad skill base in different material areas. Building on KS3 D&T skills pupils will have the opportunity to work in woods, metals and plastics and experience machining skills, welding and brazing, joinery skills and the many methods of forming plastics. Study areas will also include Computer Aided Design (CAD) and applications of Computer Aided Manufacturing (CAM) such as laser cutting and rapid prototyping. Students will learn personal safe workshop practice, health and safety requirements and risk assessment procedures. These experiences will be logged in a personal skill portfolio that can be taken to future employers or used in course interviews as a record of skills learnt and to demonstrate confidence in workshop practice.

What are lessons like?

- Learning will be a varied mix of practical activities that develop manufacturing skills and focussed tasks that help to prepare pupils for the world of work.
- The day model is designed to simulate a working day where pupils will work on individual and group tasks.
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- Study areas will also include Computer Aided Design (CAD) and applications of CAM such as laser cutting and rapid prototyping.
- Throughout these topics students will learn personal safe workshop practice, health and safety requirements and risk assessment procedures.
- A key part of the course will be to support career development through the production of CVs, development of employability skills and to foster career links.
- Trips and visits will be regularly scheduled to offer pupils experience of manufacturing processes, roles in industry and to develop employability skills such as teamwork, decision making and creative thinking.

How will we work with employers and the community?

We believe that students benefit greatly from the expertise of specialist manufacturers who are able to give a real life experience that the school workshop cannot provide. In the past students have developed their communication and team building skills through Derwentwater Marina, seen advanced bike engineering at Hope Technology and built drystone walls in a community environment project. Students have also run successful enterprise projects and raised money for national and local charities.

Our professional partners range from bespoke craftspeople to high level international engineering companies to give students a feel for the many aspects of materials manufacturing.

Where can this pathway lead?

This course is ideally suited to pupils who want to take up an apprenticeship after GCSEs but other options include Product Design A-level or Level 1/2 BTEC Engineering.