

Engineering

Our core purpose at KS4 is to provide an engaging, practical and ambitious engineering curriculum that develops students' knowledge, confidence and practical skills. Students learn how engineering is used to design, manufacture and improve products that have an impact on everyday life, industry and society.

We follow the WJEC Level 1/2 Vocational Award in Engineering (Technical Award). The qualification develops students' knowledge and understanding of the engineering sector alongside opportunities to develop associated practical skills. It covers manufacturing engineering products, designing engineering products and solving engineering problems.

Engineering gives students the opportunity to learn through a combination of theory, drawing and design, CAD, practical workshop activities, problem solving and evaluation. Students are encouraged to work accurately, safely and creatively, while developing the communication, mathematical and technical skills needed for further study and employment in engineering and related industries.



The course is designed to help students understand not only how engineered products are made, but also why particular materials, processes, designs and engineering solutions are selected. Students build independence over time and are prepared for progression into Level 3 engineering, apprenticeships, further technical study and engineering-related employment

The Engineering topics covered within the vocational scheme of work are as follows and are differentiated to meet the needs of the students, whilst ensuring that every child is challenged and stretched and can meet their full potential:

Year 10

ENGINEERING FOUNDATIONS

- Engineering sectors
- Careers
- Health & Safety
- Tools & equipment
- Measuring & marking out

ENGINEERING MATERIALS

- Material types
- Material properties
- Material selection
- Sustainability

TECHNICAL DRAWING

- Working drawings
- Dimensions
- Tolerances
- Drawing conventions
- Specifications

MANUFACTURING

- Cutting
- Drilling
- Shaping
- Forming
- Joining
- Finishing

UNIT 1

- Interpret
- Plan
- Adapt
- Manufacture
- Quality control
- Test
- Evaluate
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ENGINEERING DESIGN

- Research
- Product analysis
- Function
- Design briefs
- Specifications
- Design development

CAD & COMMUNICATION

- 2D CAD
- 3D modelling
- Technical drawings
- Communicating design solutions

ENGINEERING PRINCIPLES

- Materials
- Material testing
- Manufacturing processes
- Calculations
- Engineering technologies

ENGINEERING IN SOCIETY

- Engineering achievements
- Impact of engineering
- Sustainability
- Modern technologies

UNIT 3

- Engineering problems
- Applied knowledge
- Calculations
- Materials
- Processes
- Problem solving
- Examination preparation

Learning through Experiences in Engineering

To enhance the provision of Engineering beyond the curriculum, our students benefit from the following experiences:

- University of Liverpool – School of Engineering outreach & Materials Innovation Factory

- Primary Engineer Leaders Award
- Smallpeice Trust Engineering Challenges
- BAE Systems STEM
- Women in Engineering and engineering diversity events
- Merseyrail and the wider rail industry
- IMechE Design Challenge
- External speakers for specific Engineering careers