

ENGINEERING – YR10

Units taught:

In year 10 students begin to work with practical Engineering tools and machinery including the metal working lathes.

They also begin to learn the theory elements of the specific content of the Engineering specification, including material properties, 2D & 3D CAD, Maths in Engineering, understanding technical drawings and how to be a Design Engineer through the Unit 1 Coursework module.

Throughout the year students sit a number of in-class mock exams to prepare them for their final exam in year 11. This enables students to recognise their strengths and areas for development long before they sit the exam.

Main skills developed:

Students refine and develop the use of a wide variety of drawing, CAD/CAM and practical skills to support their ability to complete their coursework projects. Students also develop industrial and professional drawing skills such as isometric and orthographic. These are used in Coursework Unit 1 where students learn how to be a Design Engineer and work to a brief, design specification and use evaluation skills.

How parents can help to support their child's learning:

- Encourage students to further their learning with Royal Academy of Engineering, and other engineering initiatives.
- Support students with all homework's set in particular giving guidance with the extended writing tasks.

The following websites can help your child's learning:

www.pinterest.co.uk / www.bbc.co.uk/bitesize / <https://www.raeng.org.uk>

Extra-Curricular opportunities

Students are encouraged to continue working on projects from their lesson in the department after school.

SMSC & British Values:

Students continue to develop their knowledge of different art related traditions through their studies of diverse artists. Through the research process students learn and then discuss how the different beliefs and cultures used by engineers can be incorporated to develop an understanding for how other people are inspired.

Mutual respect and tolerance of those with different faiths/ beliefs creative and design ideas is encouraged. Students develop their self-esteem and self-confidence through producing two coursework modules. Students are encouraged to accept responsibility for their behaviour and to understand how they can contribute positively to one another's ideas (carried out during peer assessment tasks).

Self-assessment is also encouraged to develop self-awareness in order to develop engineering practical and design skills.

Career Links:

Design Engineer, Automotive Engineer, Mechanical Engineer, Civil Engineer, Stress Analysis, Designer, Architect, Entrepreneur, Aerospace Engineer, Mechanic, Boat designer, Boat builder.

ENGINEERING – YR11

Units taught:

In year 11 students use their practical skills to complete their unit 2 practical coursework, where they work with aluminium and acrylic along with electronic components, to 'Manufacture Engineered Products', to tolerances of less than 1mm. They master aspects of 2D Design, and using the laser cutter to manufacture high quality components to a fine tolerance.

Students also complete their learning of the theory topics which help them sit their exam in June. Throughout the year students continue to sit a series of mock exam papers to prepare them for their final exam.

Main skills developed:

Students master practical skills, in metal work and explore a wider range of materials and processes. They work independently to demonstrate their knowledge and abilities in the longest controlled assessment of the course so far. In coursework unit 2 students develop resilience and independence and learn what it takes to become mechanical engineers.

How parents can help to support their child's learning:

- Encourage students to further their learning with Royal Academy of Engineering, and other engineering initiatives.
- Support students with all homework's set in particular giving guidance with the extended writing tasks.

The following websites can help your child's learning:

www.bbc.co.uk/bitesize / <https://www.raeng.org.uk>

Extra-Curricular opportunities

Students are encouraged to continue working on projects from their lesson in the department after school. They are exposed to industrial links and discover the roles that engineers play in the world today.

SMSC & British Values:

Students study environmental issues facing Engineers today, and are encouraged to think of strategies and solutions to problems for people in other cultures around the world. Students develop their confidence and self-esteem through tracking their progress and celebrating successes. Students are encouraged to accept responsibility for their behaviour and to understand how they can contribute positively to one another's ideas through positive peer assessment tasks.

Students are exposed to

Career Links:

Design Engineer, Automotive Engineer, Mechanical Engineer, Civil Engineer, Stress Analysis, Designer, Architect, Entrepreneur, Aerospace Engineer, Mechanic, Boat designer, Boat builder.