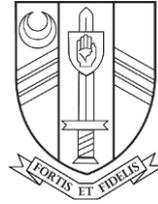


# ENGINEERING

## CAMBRIDGE NATIONAL



### The main aims of the course are

The UK is regarded as a world leader in engineering, which covers a wide range of exciting and rapidly developing areas such as renewable energy, space, low carbon, aerospace, automotive, agri-food and bioscience. People with engineering skills are always in demand. Between 2010 and 2020, engineering companies are projected to have 2.74 million job openings. Study of this qualification as part of Key Stage 4 learning will help students to make more informed choices for further learning either generally or in this sector.

### It will involve studying the following areas as part of the course:

- development of key engineering practical and technical skills, such as research, observation, measurement, making, using computer-aided design (CAD) and disassembly
- knowledge of key engineering sectors (e.g. manufacturing, engineering design) and the interrelation of each in industry
- knowledge of the stages involved in planning and implementing an engineering project
- knowledge and skills involved in the investigation of solutions to engineering problems in response to a given brief

### The scheme of assessment is:

#### **R109: Engineering materials, processes and production (60 marks, 1 hours external examination taken in May/June of Year 10)**

Students develop their understanding of a wide range of engineering materials and how their properties and characteristics impact on a design specification. They also examine different production processes and their applications.

#### **R110: Preparing and planning for manufacture (60 marks, 15 hour internal assignment)**

Students plan and apply appropriate processes to make pre-production product using hand-held tools, measuring and marking equipment safely. They then carry out a range of manually controlled machining operations and perform quality control checks to review their finished pre-production product.

#### **R111: Computer aided manufacturing (60 marks, 15 hour internal assignment)**

Students explore the role of computer applications in the design and manufacture of engineered products by creating computer-aided design (CAD) drawings to produce a batch of computer numerical control (CNC) manufactured examples of a product. They investigate methods used to compare items manufactured by manually controlled and CNC production, and develop their understanding of how computer control is used to produce engineered products in high-volume.

#### **R112: Quality control of engineered products (60 marks, 15 hour internal assignment)**

Students develop their knowledge and understanding of the techniques and procedures used, including 'lean processes' to ensure the quality of engineered products. They produce and implement a detailed set of procedures for the quality control of engineered products in a 'real world' situation involving high-volume manufacture of products.

### Course requirements are:

All students will be expected to work in a safe and purposeful manner and will be required to contribute to the cost of practical materials. Students must have a sound grasp of the fundamental skills of maths and be able to use a computer independently; access to a PC at home would be beneficial.

You can obtain further information from Mr J. Brister.