Why study Engineering ?

This qualification will enable Ratton students to learn about the process of Engineering Design and understand how it can be used to design effective solutions for a given design brief.

Students will develop the ability to communicate their design ideas through the use of sketches and engineering drawings and computer aided design.

They will also be able to evaluate the design of a product, through the disassembly of existing products or the use of modelling for new designs. These skills will help them progress onto further study in the engineering design and development sector.

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Specification at a glance

Principles of Engineering Design
EP1 – Designing Processes
EP2 – Designing Requirements

Communicating Ideas
EP3 – Communicating Design Outcomes
EP5 – Manual Production of Freehand Sketches
EP6- Manual Production of Engineering Drawings
EP7 – Computer Aided Design
EP9 – Modelling Design Ideas

Design Evaluation, and Modelling
EP4 – Evaluating Design Ideas
EP8 – Product Evaluation

Please click on the link below for more information

Cambridge Nationals - Engineering Design Level 1/2 – J822 - OCR

Assessment

R038: Principles of engineering design (exam at the end of y11)
In this unit, students will learn about the different design strategies and where they are used, as well as the stages that are involved in iterative design, which is currently one of the most widely used design strategies. They will learn about the type of information needed to develop a design brief and specification, and the manufacturing and other considerations that can influence a design.
Students will develop knowledge of the types of drawing used in engineering to communicate designs, as well as the techniques used to evaluate design ideas and outcomes, including modelling methods.

R039: Communicating designs (NEA completed in y10 – non examined assessment)
In this unit, students will learn how to develop their techniques in sketching, and gain industrial skills in engineering drawing using standard conventions that include dimensioning, line types, abbreviations, and representation of mechanical features.
Students will enhance their confidence and capabilities by using computer aided design (CAD), 2D and 3D software, to produce accurate and detailed drawings and models that visually communicate their designs.

R040: Design, evaluation and modelling (NEA completed in y11 – non examined assessment)
In this unit, students will learn how designers can quickly create and test models to develop a working prototype of a design. They will develop their virtual modelling skills using computer aided design (CAD) 3D software, to produce a high-quality model that will be able to simulate their design prototype.
Students will also develop their physical modelling skills using modelling materials or rapid-prototyping processes to produce a physical prototype.

Assessment

R038: Principles of engineering design
Written paper, OCR set and marked
70marks   1 hour 15 mins

R039: Communicating designs
Centre-assessed tasks, OCR moderated
60marks   Approx. 10-12 hours

R040: Design, evaluation and modelling
Centre-assessed tasks, OCR moderated
60marks   Approx. 10-12 hours

Progression

This may be Level 3 vocational qualifications, such as the Cambridge Technical in Engineering, A Levels, such as A Level Design and Technology, or one of the number of Design and Development Technician Apprenticeships.
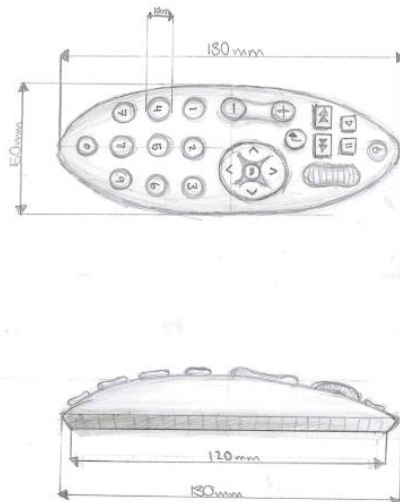It is anticipated that these qualifications will also enable them to progress onto a T Level such as Design and Development for Engineering and Manufacturing, when they are available.
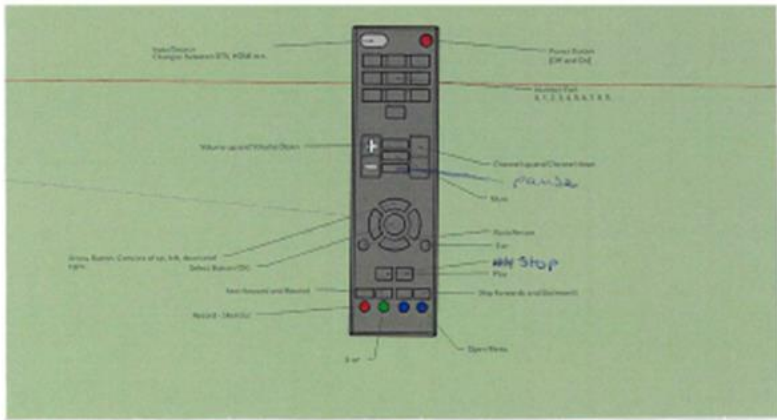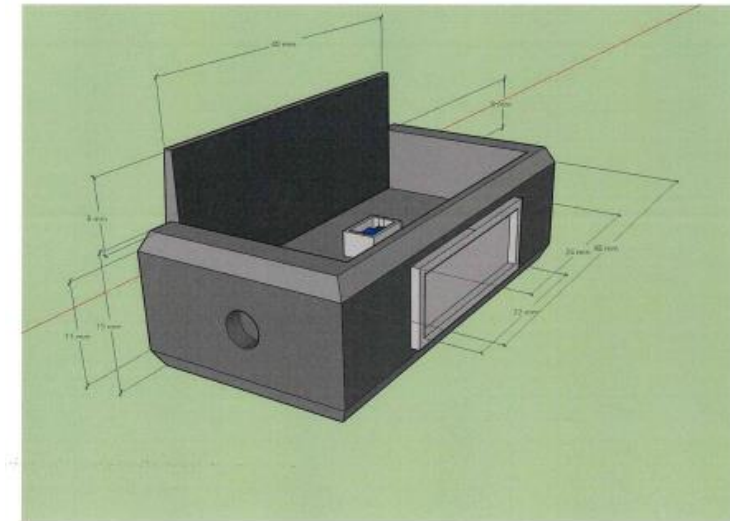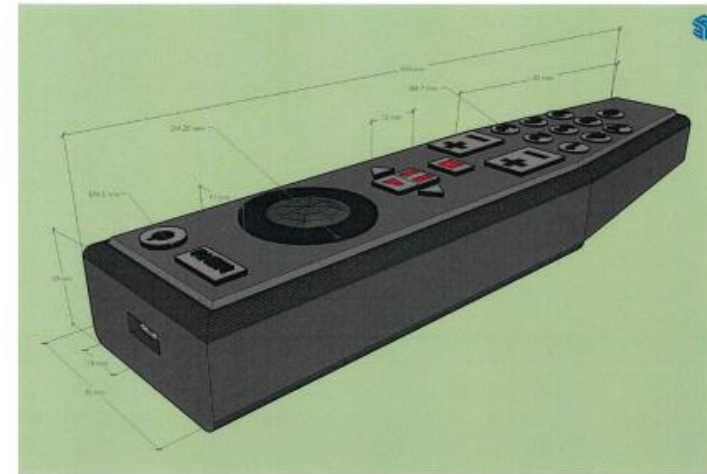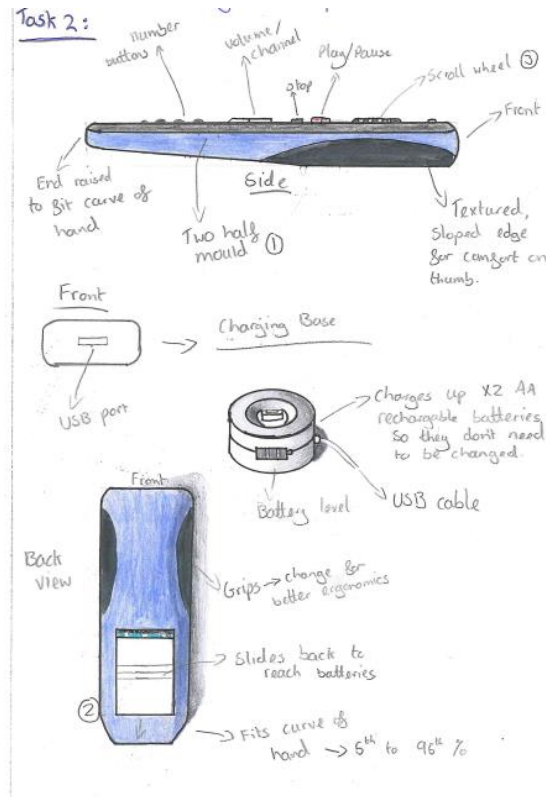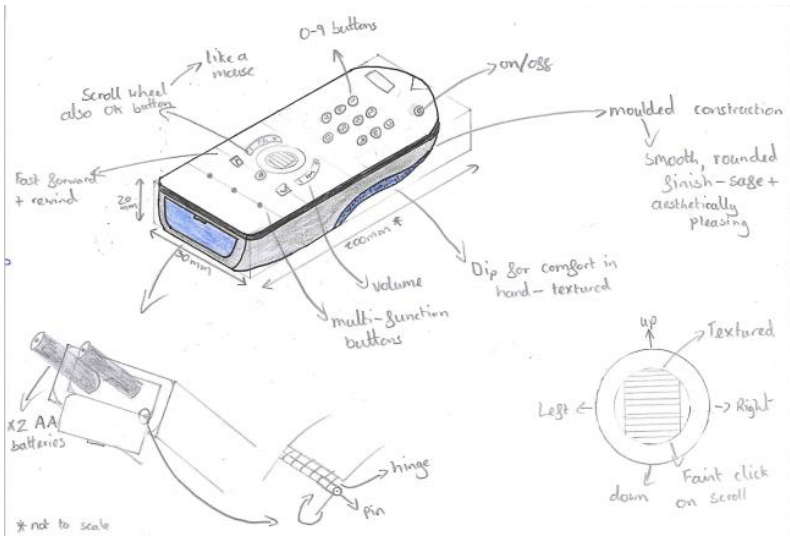
Examples of previous year 10 Student Work
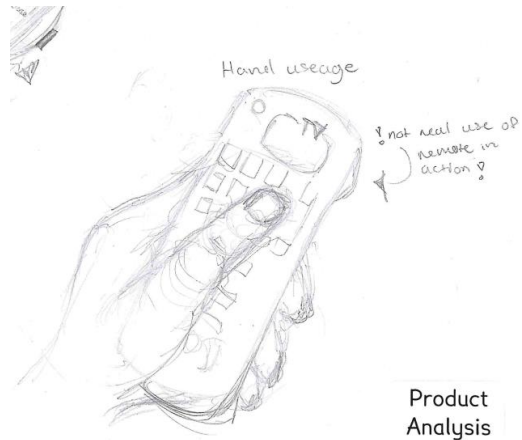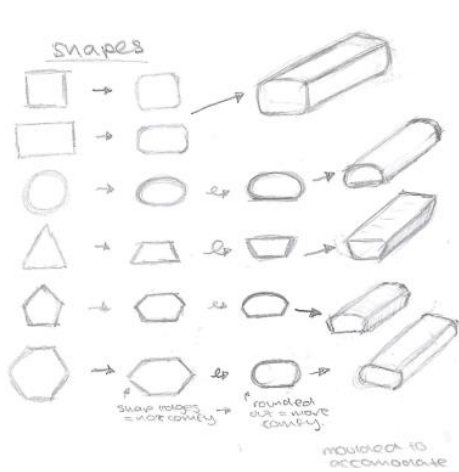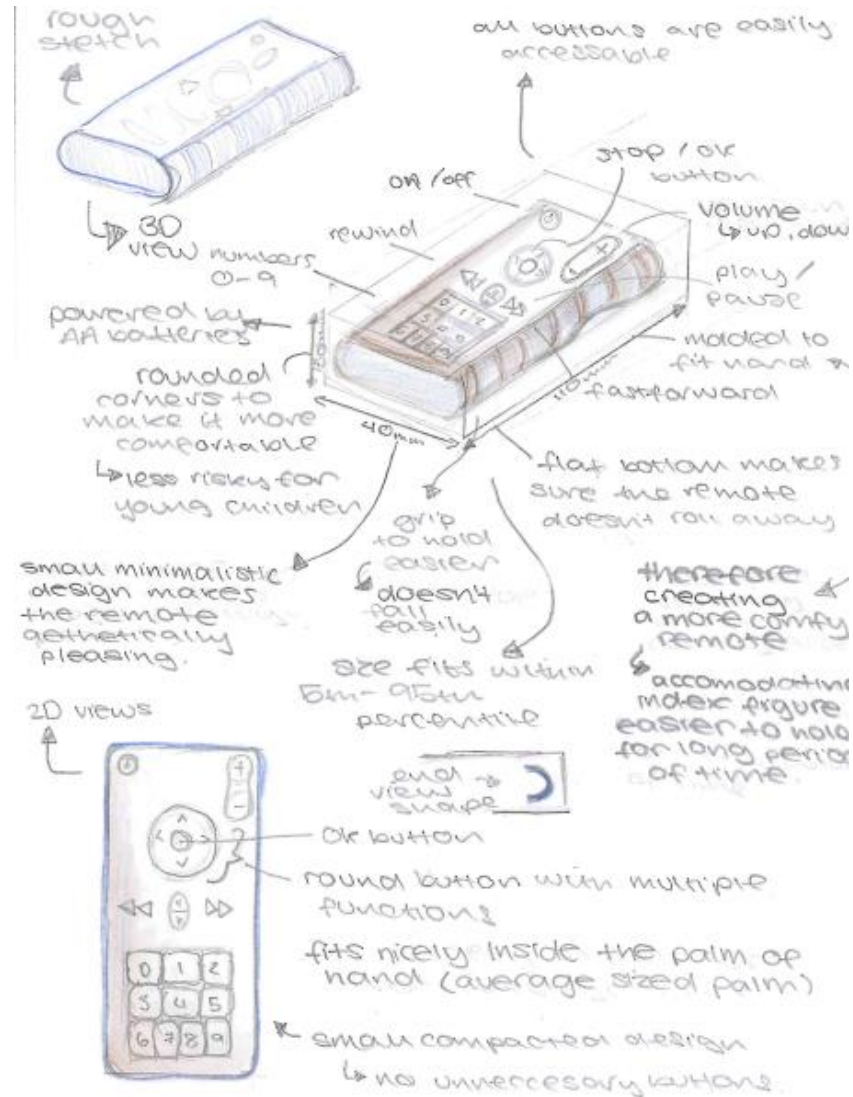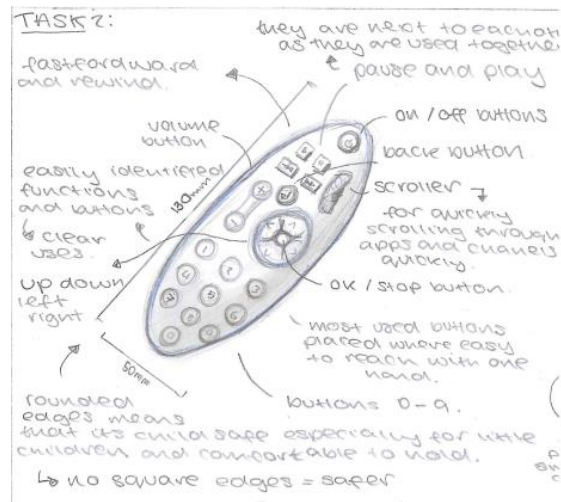
Examples of previous year 10 Student Work

Any questions please email:
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Or
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Design creates culture

Culture shapes values

Values determine the future