

Year 11 Engineering Design Option

Year 11 Engineering Design focuses on completion of the coursework from Year 10, and developing examination knowledge for the exam in January 2023, and a resit in May / June 2023 if needed. Students will be completing the R108 coursework unit (Mobile phone) started in Year 10 and then complete the final unit - R106, which is a product analysis unit requiring students to disassemble a drill powered water pump and analyse the components and function of the product. Year 11 are the last group to be following this Engineering Design specification, the current Year 10 are following the new 2022 specification. The current Year 11 Engineering Design specification is set out below:

- R107 – Coursework unit – **Designing** – 25% of subject (completed in Year 10)
- R108 – Coursework unit – **Manufacture** – 25% of subject (started in Year 10 – deadline – Oct half term 2022)
- R106 – Coursework unit – **Analysis** – 25% of subject (to be completed by Easter 2023)
- R105 – **Examination unit** – 25% of subject (first exam in Jan 2023 & resist in May/June 2023)

Coursework Unit (R108) Mobile Phone Holder



R108 Coursework unit description:

Using a specification and engineering drawings for a mobile phone holder (provided), students are required to interpret the specification points, write a production plan, then use their plan to manufacture the phone holder, and then evaluate their product and performance.

The coursework is divided into different sections:

LO1 – students will interpret the specification & engineering drawings to produce a plan of production for the phone holder in the form of charts, tables, identifying stages of making and resources required. **(15/60 marks)**

LO2 – Students will demonstrate their knowledge and understanding of using tools, equipment and materials safely, assessing hazards and taking precautions when using tools and machines, demonstrating safe working practices during the making of the phone holder. **(15/60 marks)**

LO3 – Students will be required to produce a quality phone holder, demonstrating a thorough knowledge of design, planning and making, using resources effectively and efficiently. **(18/60 marks)**

LO4 – Students will evaluate and identify how well their phone holder meets the specification, and identify and recommend improvements. **(12/60 marks)**

Coursework Unit (R106)

Product Analysis

Drill powered water pump



Making existing products

Product description

Critical evaluation

Table 1: Comparison of products

Product	Material	Manufacturing process	Assembly	Disassembly	Maintenance
Product 1
Product 2

R106 Coursework unit description:

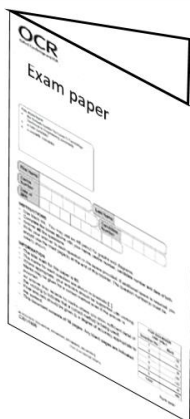
Students will be asked to disassemble and analyse a drill powered water pump.

LO1 – Students will investigate and describe how production methods and manufacturing processes impact on product/component design. They will describe how product end of life considerations can influence product/component design and demonstrate knowledge of the importance of conformity to legislation and standards. (12/60 marks)

LO2 – Students will describe the strengths and weaknesses of drill powered water pumps and provide a summary of research. (18/60 marks)

LO3 – Students will disassemble a drill powered water pump using hand tools, conduct an analysis of key features and functions, and record their findings. Students will then carry out an analysis of the drill powered water pump to demonstrate understanding of components, assembly methods, materials, production methods and maintenance. (30/60 marks)

External examination Content



Exam in **January 2023** & a resit in **June 2023** (if needed)

The exam accounts for 25% of the course

1hr duration

Description: In preparation for the examination in January, students will learn the content listed below:

Requirements of a design specification, User needs,

- Aesthetics
- Ergonomics
- Anthropometrics -
- Product safety

Product requirements,

- Function –
- Performance -
- Target group/intended users –
- Working environment
- Lifecycle

Ease of manufacture

- Standard components -
- Pre-manufactured components
- Design for disassembly
- Manufacturing processes
- Materials
-

Scale of production

Prototyping ■ one off – batch – mass production

Durability and reliability - Product safety - Sustainability - Maintenance

Regulations and safeguards

- Copyright
- Patents
- Registered designs
- Trademarks
- British Standards
- European Conformity (EC)

Wider influences on new products

- Market pull / technological push
- Life Cycle Analysis (LCA)