

ENGINEERING DESIGN

QUALIFICATION	Level 1/2 Award Engineering Design
EXAMINING BOARD	OCR
CONTACT TEACHER	Mrs Carter
LESSONS PER FORTNIGHT	5

What will you learn?

Unit 1: Design briefs, specifications and user requirements

Students explore the requirements of design briefs and specifications for the development of new products and how consumer requirements and market opportunities inform these briefs. They develop an understanding of the design cycle, the requirements for a design brief and specification, and the importance of research data in developing a design solution.

Unit 2: Product analysis and research

Students find out how to perform effective product analysis through both research and practical experience of product assembly and disassembly procedures. This helps them develop skills in critical analysis and an understanding and appreciation of manufacturing processes, design features, materials used and the principles behind good design.

Unit 3: Developing and presenting engineering designs

Students develop their knowledge and skills in communicating 2D and 3D design ideas, including effective annotation and labelling. They use detailed hand rendering as well as computer-based presentation techniques and computer-aided design (CAD) software.

Unit 4: 3D design realisation

Students produce a model prototype and test design ideas in a practical context. They evaluate the prototype against the product specification and consider potential improvements to features, function, materials, aesthetics and ergonomics in the final product.

Course Overview

Engineering design is a process used to develop and enhance new products and systems as a response to market opportunities. This qualification is an opportunity for students to develop a design specification and study the processes involved in designing new engineered products.

Students will use practical skills such as drawing, computer modelling and model making to communicate design ideas. The qualification will also encourage students to consult with a client and will engage them in producing, testing and evaluating a prototype in the form of a model within the practical unit.

Assessment

Overview			
Unit 1	R105: Design briefs, specifications and user requirements	25%	Written Exam End of Year 10 2 nd Attempt Year 11
Unit 2, 3 & 4	R106: Product analysis and research	25%	Internal Assessment
	R107: Developing and presenting engineering designs	25%	Internal Assessment
	R108: 3D design realisation	25%	Internal Assessment

Unit 1: Exam paper

A mix of short answer, structured and extended writing questions assessing knowledge and understanding of technical knowledge and designing and making principles. The exam also assesses their ability to analyse and evaluate products, design decisions and wider issues in engineering contexts.

Units 2, 3 and 4: Controlled assessment

Design tasks based on a design brief set by the exam board, assessing the students' ability to:

- Identify, investigate, draw and communicate design possibilities.
- Design and make prototypes.
- Analyse and evaluate design decisions and wider issues in engineering design.

What pupils say?

Positives:

"It's creative, you find out about all materials, you can make products, it's varied and interesting."

Be aware of:

"There's more theory than you think, you have to remember facts, the lesson goes too quick!"

Qualities needed to do well:

"Creative, hard working, good listener, imaginative."

Careers and Pathways

- AS and A Levels
- Apprenticeships
- 3D/Product Design
- Engineering
- Construction trades
- Architecture