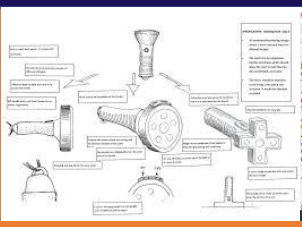
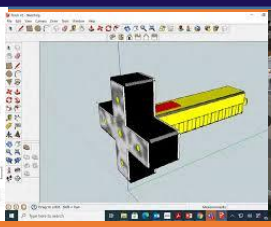
GOLDINGTON ACADEMY


Engineering Design

Ofsted said: "Leaders have overseen the improvement of facilities to support learning." February 2022

ENGINEERING DESIGN SPECIFICATION AT A GLANCE

EXAM BOARD: OCR

This qualification has **three** mandatory units.

COURSE ASSESSMENT:

R038: Principles of engineering design (40%)

Externally assessed written exam (1 hour 15 minutes) 70 marks

Topics included:

1. **Design processes**
2. **Design requirements**
3. **Communicating design outcomes**
4. **Evaluating design ideas**

Unit R039: Communicating designs (30%)

This is a set assignment project (10-12 hours) 60 marks

What is assessed?

Pupils will learn how to develop your techniques in **sketching,** and gain industrial skills in **engineering drawing** using standard conventions that include dimensioning, line types, abbreviations, and representation of mechanical features. This is set from OCRs brief.

Topic areas are:

1. **Manual production of freehand sketches**
2. **Production of engineering drawings**
3. **Use of computer aided design (CAD)**

Unit R040: Design, evaluation and modelling (30%)

This is a set assignment project (10-12 hours) 60 marks

What is assessed?

Analysing how products are made can help to inform designs, and it can be useful to disassemble existing products to discover how they function and how they were manufactured. You will develop your virtual modelling skills using computer aided design (CAD) 3D software, to produce a high-quality model that will be able to simulate your design prototype. You will also develop your physical modelling skills using modelling materials or rapid prototyping processes to produce a physical prototype. This is set from OCR's brief.

Topic areas covered:

1. **Product evaluation**
2. **Modelling design ideas**

SUPPORTING TRIPS AND ACTIVITIES:

Weekly Drop-Ins at school £0

Product Design STEM university visit Estimated cost: £0

External visitors - engineers Cost: £0

Colpac Estimated cost: £5

SHOULD MY CHILD STUDY ENGINEERING DESIGN?

A pupil choosing Engineering Design should be **self-motivated**, willing to work hard, and able to **stay focused** on long-term practical projects. They need the confidence to **sketch and communicate ideas visually,** the **resilience to learn from mistakes**, and a problem-solving mindset that helps them tackle challenges creatively. Most importantly, they should be ready **to reflect on their work** and continually look for ways to improve their designs.

What will my child gain from Engineering Design?

Engineering Design gives pupils a wide range of valuable skills and experiences. They learn how to think creatively, solve real-world problems, and develop practical solutions through hands-on designing and making. The subject builds resilience, independence, and the ability to iterate and improve work based on feedback. Pupils also gain technical knowledge about materials, manufacturing processes, and emerging technologies, alongside essential skills such as communication, planning and project management.

Where will Engineering Design take my child?

It develops practical creativity, problem-solving and technical skills that lead naturally into fields like engineering, product design, architecture, graphics and fashion. Students also gain transferable skills—such as resilience, planning and critical thinking—that are valued in any profession. Overall, Engineering Design opens pathways to both further education and a wide range of modern, innovation-focused careers such as:

- Product Designer
- Engineer
- Architect
- Carpenter
- Interior Manufacturer
- Set/stage designer

Further reading/ suggested revision materials:

Cambridge National in Engineering Design Revision Guide and Workbook with Digital Access
Reet, Claire

Alessi: the Design Factory Alessi

The Design of Everyday Things
Norman, Don

Design modelling:
visualising ideas in 2D and 3D Bairstow, John

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