

# Engineering Manufacture

## Frequently Asked Questions

### Q: What will I learn on this course?

A: The course is split into four different units of work:

1. **R109: Engineering materials, processes and production.** This unit allows students to develop their understanding of a wide range of engineering materials and how their properties and characteristics impact on a design specification. Students will also examine different production processes and their applications.
2. **R110: Preparing and planning for manufacture.** This unit allows students to plan and apply appropriate processes to make a pre-production product using hand-held tools, measuring and marking equipment safely. Students then carry out a range of manually controlled machining operations and perform quality control checks to review their finished pre-production product.
3. **R111: Computer-aided manufacturing.** This unit allows students to 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. Students then investigate into 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.
4. **R112: Quality control of engineered products.** Students will develop their knowledge and understanding of the techniques and procedures used, including 'lean processes' to ensure the quality of engineered products. Students will 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.

### Q: How is the course assessed?

A: Students will study four units which will provide them with a clear and coherent understanding of the world of engineering manufacture. Considerable time is spent learning both practically and theoretically about many engineering manufacturing techniques and processes. Students will also spend a lot of time completing practice questions and understanding exam technique throughout the course. Each unit is worth 25% of the total grade

In Y10 we will focus on:

- **R109:** Engineering materials, processes and production – 25% - External Exam
- **R110:** Preparing and planning for manufacture – 25% - Internal Coursework

In Y11 we focus on:

- **R111:** Computer-aided manufacturing - 25% - Internal Coursework
- **R112:** Quality control of engineered products - 25% - Internal Coursework

The Engineering Manufacture specification and assessment materials can be found here;  
<https://www.ocr.org.uk/qualifications/cambridge-nationals/engineering-manufacture-level-1-2-award-certificate-j832-j842/>

### Q: Is this course a GCSE?

A: Engineering Manufacture is a Cambridge National, not a GCSE. Cambridge Nationals are vocational qualifications equivalent to GCSEs but without such a heavy reliance upon terminal exams. Cambridge Nationals do contain exams but are predominantly based on internal assessment. Instead of the 9-1 grading system used by GCSEs, Cambridge Nationals are graded Pass, Merit or Distinction on a Level 1 or 2 basis. In no way is a Cambridge National a lesser qualification.

### Q: What is the main difference between GCSE Design and Technology and Engineering?

A: In the GCSE Design and Technology course, pupils learn a range of theoretical content which is tested in the end of course exam. Pupils also complete a coursework unit where pupils design and make a product responding to a real-life problem in a creative way. In Engineering, pupils learn a range of theoretical content like that in GCSE Design and Technology, which again is tested in an exam. However, the rest of the course is made up of a range of units where pupils are taught skills. There is no aspect of creativity in the Engineering course.

### Q: What equipment and tools can be used on the course?

A: Pupils have full access to all the workshop tools and equipment. Alongside this, pupils will use CAD software, laser cutters and Lathes