

OCR Level 1/2 Cambridge National Certificate in Principles in Engineering and Engineering Business (601/1273/6)

Who is this qualification for?

This qualification is for students aged 14–16 who wish to develop knowledge and skills in engineering, particularly its role in the world of business and commerce.

What will the student study as part of this qualification?

All students will study four topics.

- Engineering principles:
 - basic mechanical principles
 - properties of commonly engineered materials (such as metals, plastics and the effect of water, air, etc.)
 - basic electrical principles
 - fluid power principles relating to pressure and flow, and systems used to transmit power in engineering (such as mechanical and hydraulic systems).
- The engineered business world:
 - different sectors of engineering, such as aerospace, electronics, civil engineering (construction/roads, etc.)
 - how engineering companies operate, both internally and externally
 - how engineering companies interact with each other
 - careers in engineering
 - innovation and recent technological advances in engineering.
- Sustainable engineering:
 - sustainability of materials used in engineering
 - environmental considerations in relation to the design of engineered products
 - the impact of global manufacturing on sustainability.
- Optimising performance in engineering systems and products:
 - ensuring machines, systems and equipment work at their maximum output as often as possible
 - reasons why this is done
 - methods engineers use to try and ensure this
 - factors that lead to system or equipment failure
 - perform simple checks
 - maintenance procedures to try and maintain performance.

What knowledge and skills will the student develop as part of this qualification and how might these be of use and value in further studies?

The students will gain a detailed grounding in the principles of engineering that underpin mechanical, electrical and fluid power applications. This will enable the students to use their knowledge in all manner of applied engineering practical activities.

Students will develop a detailed knowledge and awareness of how engineering businesses operate, why they are structured in certain ways, and the roles needed to make an engineering business effective. This will enable them to research innovative practices and new techniques in the engineering industry.

Students will develop knowledge and understanding of sustainable engineering and how concern for the environment has impacted on modern engineering practices. This will include how businesses operate responsibly in a competitive world to produce and maintain marketable products. Students will need to understand the importance of sustainable practice particularly in relation to the global manufacturing industry.

Students will acquire knowledge and skills in the area of maintaining and optimising performance in engineering systems and equipment. They will also develop an understanding of why this is important to the effectiveness of an engineering business. Skills developed will include the ability to assess the factors that lead to system/equipment failure, and the ability to carry out basic remedial actions to correct and improve performance.

Which subjects will complement this course?

The Cambridge National Certificate in Principles in Engineering and Engineering Business is equivalent in size to a GCSE and will take 120 guided learning hours (GLH) to deliver.

The qualification is complemented by a wide range of GCSEs including Maths, Chemistry, Physics, Computer Science, Business Studies and Economics. It can be delivered alongside the other vocational courses such as ICT and Business or other qualifications from the suite of Level 1/2 Cambridge Nationals in Engineering which includes Cambridge Nationals in Engineering Design, Systems Control in Engineering and Engineering Manufacture.

The Cambridge Nationals in Systems Control in Engineering focusses on topics such as electronic principles, simulation, construction and testing of electronic circuits, engineering applications of computers and process control systems.

The Cambridge Nationals in Engineering Manufacture focusses on topics including engineering materials, processes and production, preparing and planning for manufacture, computer aided manufacturing and the quality control of engineered products.

The Cambridge Nationals in Engineering Design focusses on topics such as design briefs and design specifications, product analysis and research, developing and presenting engineering designs and 3D design realisation.

In addition to this Certificate in Principles of Engineering and Engineering Business, there is an Award which is only half of the time it takes to deliver a GCSE, and made up of only two topics, *Engineering principles* and *The engineered business world*. Both of these topics are also mandatory in this Certificate and have been outlined above.

This Award will give the student a foundation of some of the essential principles, knowledge and skills which underpin engineering and engineering businesses and it is designed to be taken alongside other qualifications.

Schools and Colleges should note that the Certificate-sized qualification is the only qualification in this suite that is eligible for inclusion in Performance Tables.