National 4 Engineering Science (Course Code: C723 74)

SCQF Level 4 (24 Credit Points)

Why study Engineering Science?

Engineering is vital to everyday life; it shapes the world in which we live and its future. Engineers play key roles in meeting the needs of society in fields which include climate change, medicine, IT and transport. Our society needs more engineers, and more young people with an informed view of engineering.

In this course you will develop and extend knowledge and understanding of key engineering concepts and processes, and learn to apply these to a variety of problems. On completing the course you will learn skills in: analysis and problem solving, engineering design, the use of equipment and materials, and evaluation.

The skills you learn from this course are valuable for a wide range of career areas and industries. This includes Engineering, Electronics, Oil, Renewable Energy Production, Science, Mechanics, Construction and the Built Environment.

Career Pathways

To see what career areas this subject could lead to and the routes to get there, download and view these career pathways:

Art and Design

Computing and ICT

Construction

Engineering

Garage Services

Health and Medicine

Transport and Distribution

What do I need to get in?

The school or college will decide on the entry requirements for the course. You would normally have achieved:

- **National 3 Design and Technology**

What will I study?

In this course you will develop a broad range of technological skills, including analysis, problem solving and design skills. You will learn how to use equipment and materials, and evaluate products and systems. You will look at key

engineering concepts and processes and how to solve different problems. You will also look at the impact of engineering on society and the **environment.**

The course has **three** compulsory units, plus an **added value** unit that assesses your practical skills.

Engineering Contexts and Challenges (6 SCQF credit points)

In this unit you will:

- explore a range of engineered objects, and straightforward engineering problems and solutions
- explore some existing and emerging technologies and challenges
- consider problems relating to the environment, sustainable development, and economic and social issues.

Note: This unit may be taken with a Scottish Context option, which contributes towards the Scottish Studies Award.

Electronics and Control (6 SCQF credit points)

In this unit you will:

- explore a range of key concepts and devices used in analogue and digital electronic control systems
- develop problem solving skills through simulation, practical projects and investigative tasks in a range of contexts.

Mechanisms and Structures (6 SCQF credit points)

In this unit you will:

- develop a basic understanding of simple mechanisms and structures
- develop problem solving skills through simulation, practical projects and investigative tasks in a range of contexts.

Added Value Unit: Engineering Science Assignment (6 SCQF credit points)

In this unit you will:

- think of an appropriate solution to a straightforward engineering problem
- record your progress by way of, for example, an electric log or diary
- report on how you have tested the solution, either written or verbally.

How will I be assessed?

Your teacher or tutor will assess your work on a regular basis throughout the course. Items of work might include:

- practical work – producing hand drawn or electronic diagrams or drawings
- project work – answering design briefs or solving engineering problems

- report work – producing oral or written reports.

You must pass all units including the practical unit to gain the course qualification.

Study Materials

BBC Bitesize National 4 Engineering Science

What can I go on to next?

If you complete the course successfully, it may lead to:

- **National 5 Engineering Science**

Further study, training or employment in:

- Art and Design
- Computing and ICT
- Construction
- Engineering
- Garage Services
- Health and Medicine
- Transport and Distribution