Engineering Science

Design, Engineering & Technology

What are the aims of this course?

Within S3 you will build on your knowledge of logic, structures, pneumatics, computer programming, applied electronics etc enhancing these skills will allow you the opportunity to progress onto N4/5 engineering Science in S4.

In S4 the Engineering Science course involves the theory of engineering and its real world applications. Pupils are encouraged to solve problems that engineers face in the real world. This involves pupils gaining knowledge of pneumatics, systems and control, electronics, mechanisms and structures. The Course provides opportunities to develop and enhance engineering creativity and practical problem-solving skills.

The aims of the Course are to enable learners to:

understand how things work from an Engineers point of view;
gain experience of Technology in everyday life;
learn ICT skills;
learn how to work individually and with others;
apply mathematical skills to real problems and
learn how to use Technology to solve problems.

What will I be learning about in the course?

The Course comprises three mandatory Units.

Engineering: Contexts and challenges

The general aim of this Unit is to develop a basic understanding of engineering, and its role and impact on our society and environment.

Pupils who complete this Unit will be able to:

1 Investigate engineering systems, problems and solutions
2 Investigate engineering challenges and relate these to key engineering concepts
3 Describe some aspects of the impact of engineering

Electrical and electronic systems

The general aim of this Unit is to develop an understanding of electrical and electronic control systems.

Pupils who complete this Unit will be able to:

- Develop analogue electronic control systems
- Develop digital electronic control systems
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Mechanical systems

The general aim of this Unit is to develop an understanding of mechanical systems.
Pupils who complete this Unit will be able to:

- Investigate a range of mechanical and pneumatic systems
- Develop mechanical or pneumatic solutions to solve problems

What skills will I develop?

Course activities will provide you with opportunities to build self-confidence, generic and transferable skills in numeracy, employability skills, thinking skills, and skills in planning and organising work tasks and working independently and in collaboration with others, as well as skills in communication and in self- and peer-evaluation in an engineering context.

What learning and teaching approaches will I experience?

You will experience many different approaches to your learning. These will include whole class lessons and demonstrations, as well as learning within small groups and independently. You will be encouraged to take responsibility for some of your learning.

How will I be assessed?

In S3 all work in the course will be internally assessed on a pass/fail basis. The SQA will provide rigorous external quality assurance, including external verification, to ensure assessment judgments are consistent and meet national standards.

National 4-5 Engineering Science includes an added value unit which is an assignment that will be internally assessed and externally verified by the SQA. All National 4 and National 5 candidates in Engineering Science are likely to complete this unit. National 5 candidates will also sit an SQA external examination.

What are the homework requirements?

Homework will be provided for you on a regular basis in this subject and will many be in the form of question and answer tasks or research.

What might the course lead to in the future?

It is hoped that pupils taking Engineering Science in S3 will complete N4 or N5 in S4.

The Course or its Units may provide progression to entry into a wide range of further and Higher Education courses from Software Engineering to Microelectronics. In particular the course uses Microcontroller technology, which is at the forefront of technology used in modern day appliances. It can also lead to Higher Engineering Science, Advanced Higher Engineering Science and ultimately, for some, to: University degrees, Further Education and Employment

PLEASE NOTE: Due to the level of mathematical application used in this course, it is highly recommended that pupils are being presented at National 5/4 Maths.
Further information

You can find out more at: http://www.sqa.org.uk/sqa/47458.html