

DEPARTMENT: DESIGN & TECHNOLOGY

TITLE OF COURSE: ENGINEERING SCIENCE

LEVEL: NATIONAL 4

RECOMMENDED ENTRY LEVELS

Level 4 Engineering & Graphics

COURSE CONTENT

Engineering Science is the study of engineering and its impact on society, as well as the application of fundamental engineering principles in electronics, control, mechanisms and structures. It gives students the opportunity to apply their skills in numeracy, critical thinking and problem solving to real life situations. Knowledge and experience is gained over the duration of the course, providing valuable insight into the worlds of industry and technology.

This course consists of four units:

- UNIT 1** Engineering Contexts and Challenges
- UNIT 2** Electronics and Control
- UNIT 3** Mechanisms and Structures
- UNIT 4** Added Value Unit – Engineering Science Assignment

METHODOLOGY:

Engineering Science is a classroom based course. Students will learn about engineering contexts and challenges, including the role of engineers in industry. They will also learn about control systems including electrical and electronic circuits and programmable microcontrollers, and mechanical systems including mechanical and pneumatic components. Students will be able to participate in interactive tasks to build circuits and robotic devices, as well as writing programs and simulating mechanical systems using physical models, components, and simulation software. Students will be expected to use their knowledge and understanding to solve engineering problems which will include the use of mathematical formulae.

The **aims** of the course are to:

- Develop a knowledge and understanding of the varied roles of engineering within society, and the impact that it can have
- Develop specific knowledge about fundamental engineering principles which can be applied to solve problems
- Enable students to design, simulate, build and test engineering solutions that encompass electronic, programmable, structural and mechanical elements
- Enable students to further develop and apply their numeracy skills in new and unfamiliar contexts

ASSESSMENT

- Units 1 to 3 **internally** assessed – engineering portfolio
- Unit 4 **internally** assessed – extended engineering project