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| **ENGINEERING SCIENCE – National 4/5** |
| **What are the aims of this course?**  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 teal problems and learn how to use Technology to solve problems. Depending on S3 learning pupils may be recommended for National 3 Design and technology. This is a simpler course that combines all of the technical subjects and lets pupils achieve an overall National 3 award. |
| **What will I be learning in this 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. |
| **Electrical and electronic systems**  Pupils who complete this unit will be able to:   1. Develop analogue electronic control systems 2. Develop digital electronic control systems |
| **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:   1. Investigate a range of mechanical and pneumatic systems 2. 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. |

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| **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. There will be a large proportion of work devoted to Computer Aided Drawing, also some manual work incorporating rendering techniques and drawing board work. |
| **What are the homework requirements?**  Homework will have many forms i.e. question and answer, sketching practice and rendering practice. |
| **What might the course lead to in the future?**  Studying Graphic Communication, at any level, will provide a pathway for learners to continue studying Graphic Communication at Higher in S6, or in a wide range of other subjects in colleges and universities. The numeracy, employability, enterprise and thinking skills developed within Graphic Communication are transferable and valued across a wide range of professions. |