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| C:\Work\Website\Website Resources\School Logos\Toot Hill College\THSFC_Badge.pngSUBJECT: ENGINEERING  EXAM BOARD: OCR | |
| Course Overview (Y12) | You might be interested in this qualification if you want to apply what you learn to practical, real-life contexts, such as:  • Recreating physical products as a 3D model.  • Assembling, testing and programming electronic devices.  • Disassembling a product to investigate how it works.  The qualification will also help you develop independence and confidence in using skills that are relevant to the sector and that prepare you for progressing to university courses where independent study skills are needed.  You will develop the following transferable skills that can be used in both higher education and other life and work situations:  • Safe working practices. Safety always comes first in engineering. Working safely requires good planning skills and the ability to manage both resources and time effectively.  • Communicating effectively with individuals or groups. Communication is important for engineers to ensure that ideas and solutions can be shared and understood by others.  • Using thinking and problem-solving skills in order to identify solutions and improvements.  • Project-base  This qualification provides a broad basis of study for the Engineering sector. This course contains 5 units of which 3 are mandatory and 2 are assessed externally.    **The 3 mandatory units that will be covered are:**  **F130 Principles of engineering**- This unit is assessed by an exam.  In this unit you will learn about the mathematical techniques, forces and the electrical/electronic principles widely used in the engineering industry.  Topics include:  o Topic Area 1 Mathematics  o Topic Area 2 Mechanical principles  o Topic Area 3 Electrical/electronic principles  **F131 Materials science and technology-**This unit is assessed by an exam.  In this unit you will learn about different material properties, the types of material and their relative properties, and how these properties can be affected by different processing techniques.  Topics include:  o Topic Area 1 Material properties  o Topic Area 2 Types of material  o Topic Area 3 Effect of processing techniques on material properties  o Topic Area 4 Material failure mechanisms and prevention  o Topic Area 5 Sustainable materials and practices in engineering  **F132 Engineering in practice-** This unit is assessed by an assignment. In this unit you will analyse products, produce engineering CAD drawings and make a component and a circuit prototype.  Topics include:  o Topic Area 1 Product analysis  o Topic Area 2 Produce Computer Aided Design (CAD) mechanical and electronic engineering drawings  o Topic Area 3 Plan the safe manufacture of a mechanical prototype, and an electronic circuit prototype  o Topic Area 4 Manufacturing processes  o Topic Area 5 Evaluate a prototype  **The optional units that will be covered are:**  **F133 Computer Aided Design (CAD)-**   This unit is assessed by an assignment. In this unit you will create a 3D model of an object, make changes to the design and carry out simulations.  Topics include:  o Topic Area 1 Produce 3D models using Computer Aided Design (CAD)  o Topic Area 2 Create a 3D assembly of multiple components within a CAD software  o Topic Area 3 Creating technical drawings from 3D models  o Topic Area 4 Simulations in 3D modelling  **F135 Mechanical product design-**This unit is assessed by an assignment.  In this unit you will analyse and disassemble existing products safely to unlock their design secrets and investigate how to redesign them.  Topics include:  o Topic Area 1 Product analysis  o Topic Area 2 Product redesign  **This qualification is the equivalent of 1 A level during the course you will be both internally and externally assessed.**  **Units are assessed using a grading scale of Distinction (D), Merit (M), Pass (P), Near Pass (N) and Unclassified (U).** |
| Useful websites | |  | | --- | |  |   https://www.ocr.org.uk/Images/697570-specification-cambridge-advanced-national-in-engineering.pdf    <https://www.solidworks.com/sw/resources/solidworks-tutorials.htm> |
| Essential text books and reading list | Title: Cambridge Advanced National Level 3 Alternative Academic Qualification in Engineering Paperback  Price: £32.95 |