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| Curriculum Intent: In Engineering we aim to provide learners with the skills, knowledge and understanding of industry appropriate practices, aiming to prepare them for the 21st century. Learners will gain valuable knowledge of engineering disciplines, including the science and mathematics that is applied in engineering. They will understand the importance of health and safety legislation, that would ready them for industry. This course will prepare students and give them an insight into the engineering field, ready to progress onto further education or industry. |
| Subject Specific Skills:* understand engineering disciplines
* understand how science and maths are applied in engineering
* understand how to read engineering drawings
* understand properties and characteristics of engineering materials and know why specific materials are selected for engineering applications
* understand engineering tools, equipment, and machines
* produce hand-drawn engineering drawings
* produce Computer Aided Design (CAD) engineering drawings
* demonstrate production planning techniques
* demonstrate processing skills and techniques applied to materials for a manufacturing task
* understand how to create present and review art and design work
 | Wider Key Skills:* Examination Techniques
* Evaluation of Key Concepts
* Independent Learning
* Problem solving
* Resilience
* Proof-reading
* Critical thinking
* Independent enquiry
* Reflective learning
* Creative thinking
* Self-management
* Time management
* Arithmetic and numerical computation
* Handling data
* Graphs
* Geometry & Trigonometry
* Science links
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| **Year Group: 10** | **Term 1** | **Term 2** | **Term 3** | **Term 4** | **Term 5** | **Term 6** |
| **Topic** | **Understand engineering disciplines** | **Understand how science and mathematics is applied in engineering** | **Understand how to read engineering drawings** | **Understand the properties and characteristics of engineering materials and why specific materials are selected for engineering applications** | **Understand engineering tools, equipment, and machines** | **Produce hand drawn engineering drawings** |
| **Key Content/ Knowledge** | Learners will be introduced to the different components that create the subject of engineering. These are Mechanical, Electrical, and electronic, Aerospace, Communications and consider the types of software that they will use in Engineering.  | Learners will understand how SI units of measurement are used in engineering products and projects. | Learners will be able to read and interpret engineering drawings accurately; understand specific drawing conventions used throughout the engineering industry, and the purpose of using British Standards. | Learners will know and understand the properties and characteristics of materials and why they are selected for engineering products and projects. | Learners will know and understand the health and safety, control measures, safe and correct use of common tools, equipment and machines used in the engineering industry for manufacturing including those used for marking out, cutting, modifying, joining, and finishing | Learners will be able to produce hand drawn engineering drawings; they will be able to apply specific drawing conventions and use layouts recognised within the engineering industry following British Standard. |
| **Skills Covered**Note. The skills listed here are only a sample of the total skills covered. | Hydraulics (Pascal’s principle), gears and pulleys.Power station, household appliances, and integrated circuits. Aircraft, space vehicles, missiles. Telephone, radio, and fibre optic.Applications, systems, and computer programming | Current – ampere. Luminous intensity – candela. Thermodynamic temperature – kelvin.Mass – kilogram. Amount of substance – mole | Lines.Tolerance.Content of title block.Scale.System of measurement. Two-dimensional projection.Three-dimensional projection | Chemical.Electrical and magnetic. Mechanical. Optical.Thermal | Marking out. Modification. Joining.Finishing.Safe and Correct Use.Control measures. Learners should understand the safe and correct use of tools, equipment and machines and be able to discuss the different training requirements and control measures. | Rendering. Annotation. Dimensions.An A3 hand drafted Isometric drawing sheet.An A3 hand drafted Orthographic drawing sheet |
| **Assessment** | FORMATIVE | CUMULATIVEEnd of term exam | CUMULATIVEEnd of term exam | CUMULATIVEEnd of term exam | CUMULATIVEEnd of term exam | CUMULATIVEEnd of term exam |
| **Tier 2 and 3 Words** | Hydraulics, Pascals Principles, Legislation, Respiratory, Thermodynamic, Prosthetics, Orthographic Projection, Tolerances, Manufacturing, Extraction, Ventilation. |

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| **Year Group: 11** | **Term 1** | **Term 2** | **Term 3** | **Term 4** | Term 5 | **Term 6** |
| **Topic** | Produce hand drawn engineering drawings continued | Produce Computer Aided Design (CAD) engineering drawings | Demonstrate production planning techniques | Demonstrate processing skills and techniques applied to materials for a manufacturing task | Preparation for exam (revision) |  |
| **Key Content/ Knowledge** | Learners will be able to produce hand drawn engineering drawings; they will be able to apply specific drawing conventions and use layouts recognised within the engineering industry following British Standard. | Learners will be able to use CAD software to produce engineering drawings. They will be able to apply specific drawing conventions and use layouts recognised within the engineering industry following British Standard BS 8888. | Learners will be able to plan the manufacturing process of an engineered product, for a manufacturing task. They will be able to plan the process, considering the individual stages of manufacture, to include health and safety factors. | Learners will demonstrate a variety of processing skills and manufacturing techniques: preparing, modifying, joining, and finishing techniques applied to materials for a manufacturing task, whilst maintaining safe and correct use of tools, equipment, and machines. | This term is spent addressing any gaps in the students’ understanding and addressing those areas which require further clarification or consolidation. |
| **Skills Covered**Note. Those skills listed here are only a sample of the total skills covered. | First or third angle projection.Unit of measurement. Tolerance | Three-dimensional with 30° angle applied to the sides.An A3 CAD orthographic drawing sheet | Risk assessment. Production plan. Flow chart symbolsTime plan. |  | Exam practice and revision |
| **Assessment** | CUMULATIVEEnd of term exam |  | PAST PAPERS | PAST PAPERS | PAST PAPERS |
| **Tier 2 and 3 Words** | Hydraulics, Pascals Principles, Legislation, Respiratory, Thermodynamic, Prosthetics, Orthographic Projection, Tolerances, Manufacturing, Extraction, Ventilation. |