

Year 10 ENGINEERING ~ Curriculum Map for Design and Technology (dept.)

What are the intended aims for this year's curriculum? To ensure students complete 75% of the course this year including sitting their exam a year early in May.

	Term 1 Theory & Lamp lengths and uprights	Term 2 Theory & Lamp uprights and angles	Term 3 Theory & lamp handles	Term 4 Theory with acrylic sections	Term 5 Theory with 2D design	Term 6 Assembly lamp & electronics. UNIT 1
	<p>Topic(s): Structural; engineering Mechanical engineering Electrical engineering Local and overseas exploration.</p> <ul style="list-style-type: none"> UK ENGINEERS INTERNATIONAL ENGINEERS KEY INPUTS TECHNOLOGIES APPLICATIONS 	<p>Engineering processes Material testing</p> <ul style="list-style-type: none"> Tensile strength Hardness Toughness Malleability Ductility Conductivity Corrosive resistance Environmental degradation Elasticity Destructive tests <p>Non-destructive tests</p>	<p>Topic(s): Processes</p> <ul style="list-style-type: none"> Marking out Cutting Finishing Preparing Shaping Drilling Turning <p>Processes</p> <ul style="list-style-type: none"> Brazing Joining Permanent Temporary fixings 	<p>Topic(s): Maths</p> <ul style="list-style-type: none"> Use of formulae - Ohms law - Efficiency. Areas and volumes of geometric shapes Calculation Measuring Estimation Mean <p>Units of measurement - Metric - Metres, millimetres - Pounds, pence</p> <p>Drawing's skills</p> <ul style="list-style-type: none"> ISOMETRIC ORTHOGRAPHIC Section views Construction lines Centre lines Hidden detail <p>Standard conventions</p>	<p>Topic(s): Problem solving skills.</p> <ul style="list-style-type: none"> Propose solutions Communication Logical structure <p>REVISION Orthographic practice, problem solving practice.</p> <p>EXAM 15TH MAY ;</p>	<p>Topic(s): Orthographic drawing skills To understand construction lines and the importance of a working drawing. To complete lamp and start unit 1</p>
	Aim of A&R	Aim of A&R	Aim of A&R	Aim of A&R	Aim of A&R	Aim of EoY exam
'Big idea(s)' / fundamental concepts	To start creating the aluminium sections of the lamp. This term focuses on the uprights and the lengths.	To complete the uprights of the lamp and move onto the aluminium angles. Ensure all drill holes and sizes are in the correct place. To complete theory.	To be able to knurl aluminium bar and create two identical handles for their lamps.	To be able to convert isometric drawings into orthographic drawings and vice versa. To create the acrylic sections of the lamp using 2D design and the laser cutter.	To be able to recall all theory knowledge for the exam and have good drawing skills.	To assemble the lamp and connect the circuits. To ensure all parts of the lamp are at MEG or higher. To polish sections of the lamp.
Knowledge to be learnt	How to use the centre lathe and pillar drill safely and independently.	To mark out and tap the uprights using cutting compound. To undergo materials testing and understand the working properties.	Knurling is a very specific tool used on the centre lathe and using a die on the centre lathe to create a tread on the handle will be their trickiest challenge of the entire lamp practical	CAD, CAM. 2D design. Laser cutting software. Drawing skills.	To be able to problem solve and practice exam question before the exam and to understand how the questions need to be answered.	Using brasso to polish the aluminium sections of the lamp. To use plastic polish for the acrylic sections of the lamp, to complete any outstanding coursework for UNIT 2.
Key vocabulary	Uses, Disposal, Recycling, Materials development, Engineering processes, Costs, Transportation, Sustainability, engineers blue. Centre lathe, pillar drill, scribe, file, hack saw.	Ferrous, Non-ferrous, Thermoplastics, Thermosetting plastics, Smart, Composite	Material removal, shaping, manipulation, joining, assembly,	Filter information, synthesise information, identify salient points, Identify requirements. Isometric, orthographic.	All previous words stated.	Polish, assemble, lamp, jobsheet, gphant chart, analyse, identify drawing conventions, evaluations.
The role of reading and comprehension	Written instructions Identifications of keywords. SMHW quiz	Written instructions Identifications of keywords. SMHW quiz	Written instructions Identifications of keywords. SMHW quiz	Written instructions Identifications of keywords. SMHW quiz	Written instructions Identifications of keywords. SMHW quiz	Written instructions Identifications of keywords. SMHW quiz
The role of independent extended writing	Guided writing frames Exam questions in the summative assessments	Guided writing frames Exam questions in the summative assessments	Guided writing frames Exam questions in the summative assessments	Guided writing frames Exam questions in the summative assessments	Guided writing frames Exam questions in the summative assessments	Guided writing frames Exam questions in the summative assessments
The role of maths/ numeracy	Accuracy, measuring to tolerance, shapes and symmetry.	Accuracy, measuring to tolerance, shapes and symmetry.	CAD Accuracy, measuring to tolerance, shapes and symmetry.	Accuracy, measuring to tolerance, shapes and symmetry.	Accuracy, measuring to tolerance, shapes and symmetry.	Accuracy, measuring to tolerance, shapes and symmetry.
Links to careers/ aspirations	Car designer, fashion designer, Architecture, engineer, designer	Car designer, fashion designer, Architecture, engineer, designer	Car designer, fashion designer, Architecture, engineer, designer	Car designer, fashion designer, Architecture, engineer, designer	Car designer, fashion designer, Architecture, engineer, designer	Car designer, fashion designer, Architecture, engineer, designer
Core skills	To be able to use: Centre lathe Pillar drill Listening Safety	To be able to: Communication Materials Testing Hand tools	To be able to: Processes Wasting Addition Redistribution	To be able to: Cad Cam 2D design Solidworks	To be able to: Problem solve. Areas of shape Accuracy Calculations	To be able to: Finalise Assemble Construct Draw
Dept. enrichment activities	Catch up club Thursday after school 3:30 – 4:15	Catch up club Thursday after school 3:30 – 4:15	Catch up club Thursday after school 3:30 – 4:15	Catch up club Thursday after school 3:30 – 4:15	Catch up club Thursday after school 3:30 – 4:15	Catch up club Thursday after school 3:30 – 4:15
Home learning opportunities	https://www.youtube.com/watch?v=NFZ0tWY12Dw	https://www.youtube.com/watch?v=cEQbTsHbe8E	https://www.youtube.com/watch?v=YP0fi8ms3-c	https://www.youtube.com/watch?v=FBR5rmR3JWK	https://www.youtube.com/watch?v=VLVmmfqwDIY	https://www.youtube.com/watch?v=RdF76LlpNBA