

Curriculum Sequencing Grid: **Design & Technology**

Year 9	Term 1	Term 2	Term 3
Unit (Tablet in 39 week plan)	Introduction to Engineering Graphics skills development Wooden photo frame module	Metals - Coat hook module Metal theory	Mechanisms – Automata module Mechanisms theory Timber theory
Key Retainable Knowledge (Required for Y11/13) <ul style="list-style-type: none"> What... How.... Why.... 	<p>Introduction to Engineering What? - Introduction to different Engineering disciplines, the design process with a car crash project How? - Investigating different Engineering disciplines, showing the type of products involved. By combining theory with practice to ensure knowledge and understanding of the design process. Why? - This is an integral part of the world of Engineering</p> <p>Graphics skills development What? – Developing prior knowledge of graphic skills How? – Introducing 1 and 2-point perspective drawings, then recapping prior knowledge on Isometric and CAD skills Why? – This is a key element in Engineering drawing and industrial practice.</p> <p>Wooden photo frame What? – Developing knowledge and understanding of wooden joints and timber theory</p>	<p>Metal theory What? – Theory on metals and practical skills development to produce a metal coat hook. How? – Assessment of metal theory and application of how metals can be shaped and finished. Why? – To develop learners understand of the safe and correct use of common tools, equipment and machines used in the engineering industry.</p> <p>Metal coat hook practical What? - Reinforcing prior knowledge and understanding of materials, tools and equipment How? - By choosing the correct processes, tools and equipment for the activity Why? - To develop independence when producing practical work</p>	<p>Mechanisms theory What? - Develop an understanding of mechanical control systems How? – Investigate existing mechanisms in an industrial context Why? – To develop understanding of mechanical engineering systems.</p> <p>Timber automata practical What? – Produce a fully functioning automata with integrated mechanisms. How? – Develop ideas to design, then manufacture a working timber automata. Why? – To demonstrate 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.</p>

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	<p>How? – Demonstration and application in the production of a wooden photo frame</p> <p>Why? – To reinforce prior knowledge and understand regarding 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.</p>		
<p>Key Technical Vocabulary (To be modelled and deliberately practiced in context.)</p>	<p>Engineering Disciplines, Mechanical, electrical, aerospace, communications, civil, automotive, biomedical, software. Perspective drawings, Isometric and orthographic projection, rendering and CAD.</p>	<p>Tolerance, scale, orthographic projection, isometric projection. Ferrous metal, non-ferrous metal, annealing.</p>	<p>Pully wheel, gear wheel, gear chain, worm gear, idler gear, driver gear, driven gear. Rotary, linear, oscillating, reciprocating.</p>
<p>Opportunities for Reading</p>	<p>You-tube videos which demonstrate practical skills in an industrial context. Hyperlinked in PowerPoints.</p>	<p>Focus Educational Software – Focus on Materials - CD ROM</p>	<p>Focus Educational Software – Focus on Systems - CD ROM</p>
<p>Developing Cultural Capital (exposure to very best- essential knowledge and skills of educated citizens)</p>	<p>Engineering disciplines taught in the context of real world engineering projects.</p>	<p>AESEAL trip to see all Engineering disciplines, how they work and a practical workshop with the Engineers. Building industrial relationships with the opportunity of apprenticeships at the end of year 11.</p>	<p>Potential Factory Visit to AESSEAL Observation of real world engineering processes.</p>
<p>Cross Curricular Links (Authentic Connections)</p>			
<p>Key Assessment</p>	<p>Rendered, Isometric hand drawn box</p>	<p>Wooden frame practical outcome</p>	<p>Automata practical outcome</p>

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	Graphics end of module test. Wooden frame CAD drawing	Metal and graphics test Metal coat hook practical outcome	Mechanisms end of unit test Mechanisms, timber, metal and graphics test
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