



## Year 10 Engineering curriculum – 2024-2025

	Autumn Term		Spring Term		Summer Term	
	1	2	1	2	1	2
<b>Key Concepts</b>	<p><b>Unit 1: Teaching - Manufacturing engineering products</b></p> <p>Students develop practical skills and processes, such as; selecting parts, reading technical drawings, marking out and further use of hand tools.</p> <p>Further developing machine processes, for example: using the centre lathe and pillar drill.</p> <p>In theory lessons we recall and develop</p>	<p><b>Unit 1: Manufacturing Engineering Products</b> <b>Controlled assessment: 20 hours</b> <b>40% of qualification</b></p> <p>The assessment begins with the planning stage, following a new annual client brief.</p> <p>Students understand the brief requirements and begin to understand each project component. They investigate the materials and processes required, whilst developing time management plans and risk assessments to support the project manufacture.</p> <p>With the project manufacturing stage now complete, students self-reflect and evaluate their performance in manufacturing and the project conclusion.</p>			<p><b>Unit 2: Teaching Designing Engineering Products</b></p> <p>Beginning the design process, an extended client brief sets the requirements to develop the existing project. This is achieved by looking at existing examples and analysing the engineering products in everyday life.</p> <p>Applying the knowledge of existing products and processes to design a</p>	<p><b>Unit 3: Teaching Solving engineering problems</b></p> <p>Through a series of formal theory lessons students will embed the knowledge learnt in unit 1 of material classifications, properties, uses and stock forms, manufacturing processes in the context of bicycles and theme parks ready for the formal exam in Year 11.</p>



	<p>understanding of safety and risk assessment, and apply it to practical aspects of the project.</p>		<p>suitable solution to complete the customer brief.</p>	
<p><b>Knowledge &amp; Understanding (National Curriculum)</b> <i>Skills are across the whole year.</i></p>	<p>Students will know and understand how to:</p> <p><b>Unit 1</b>            1.1 Understanding engineering drawings - interpreting engineering drawings, interpreting engineering information, presenting engineering information.            1.2 Planning operations - identifying materials, equipment selection, tool selection, planning and sequencing, contingency planning.            1.3 Using engineering tools and equipment - using engineering tools, using engineering equipment, health and safety            1.4 Implementing engineering processes - apply a range of engineering processes, work with a range of materials, evaluate the quality of engineered products, evaluate own practices and processes.</p> <p><b>Unit 2</b>            2.2 Proposing design solutions - generating a range of engineered solutions using hand and CAD methods, developing ideas through to a conclusion, communicating design ideas.</p> <p><b>Unit 3</b>            3.2.1 understanding materials, their properties, and their selections for specific purposes            3.2.2 describing properties required of materials for engineering products            3.3.1 describing engineering processes            3.3.2 describing applications of engineering processes</p>			
<p><b>Skills</b></p>	<p><b>R</b> <i>Develop RESILIENCE</i></p>	<p>★ <i>Students develop the ability to overcome challenges, persist through difficulties, and learn from failures</i></p>		



		<ul style="list-style-type: none"> <li>★ <i>Students are encouraged to be reflective Practitioners, encouraging regular reflection on what worked, what didn't, and why, fostering a habit of learning from every experience.</i></li> <li>★ <i>Students are taught the principles of a growth mindset, emphasising that abilities can be developed through effort and learning.</i></li> </ul>
	<p><b>A</b> Possess <b>AMBITION</b></p>	<ul style="list-style-type: none"> <li>★ <i>Students are inspired to set high goals, take initiative, and pursue their aspirations with determination and passion.</i></li> <li>★ <i>Students are taught practical applications of engineering principles in the curriculum.</i></li> </ul>
	<p><b>I</b> Demonstrate <b>INTEGRITY</b></p>	<ul style="list-style-type: none"> <li>★ <i>Faculty members model integrity in their interactions with students and colleagues.</i></li> <li>★ <i>Students foster an accountability for their own controlled assessments, theory work and practical pieces.</i></li> </ul>
	<p><b>S</b> Embed <b>Self-Discovery</b></p>	<ul style="list-style-type: none"> <li>★ <i>Students are inspired to set high goals, take initiative, and pursue their aspirations with determination and passion.</i></li> <li>★ <i>Students are taught practical applications of engineering principles in the curriculum.</i></li> </ul>



	<p><b>E</b> Display <b>EMPATHY</b></p>		<ul style="list-style-type: none"> <li>★ Faculty members model integrity in their interactions with students and colleagues.</li> <li>★ Students foster an accountability for their own controlled assessments, theory work and practical pieces.</li> </ul>	
<p><b>Curriculum Links</b></p>	<p>Building upon the D&amp;T curriculum in year 7-9, students are introduced to more complex machinery and materials in this first term, ready for the controlled assessment next Half Term.</p>	<p>Unit 1 is completed here ready for submission with the exam board in May.</p>	<p>Unit 2 teaching links to work understanding of engineering drawings in unit 1 but links to the designing side of component 2. Here we further embed understanding of CAD from year 9 using Onshape.</p>	<p>Unit 3 teaching of material and processes here links to Unit 1 work but applies to the bicycles and theme park contexts and starts to prepare students to be able to apply the knowledge to the examination questions rather than the controlled assessments.</p>
<p><b>Assessment</b></p>	<p>Materials test and practical ongoing assessment</p>	<p><b>Unit 1: Manufacturing Engineering Products</b> Formal Internal Controlled assessment, externally moderated: 20 hours 40% of qualification</p>	<p>Hand drawing ongoing assessment CAD- onshape ongoing assessment</p>	<p>Theory checks throughout</p>
<p><b>Aspirations &amp; Careers</b></p>	<ul style="list-style-type: none"> <li>• Students are taught to the top, allowing all to achieve a Distinction in all units.</li> <li>• Throughout all unit discussions are had on career opportunities Marine engineer, Industrial engineer, Mechanical engineer, Computer engineer, Chemical engineer, Biomedical engineer, Petroleum engineer, Civil engineer, Environmental engineer, Electrical engineer, Nuclear engineer, Aeronautical engineer, Materials engineer &amp; Software engineer</li> <li>• University courses as well as apprenticeships options are discussed to ensure that everyone knows available opportunities.</li> </ul>			

