

## Key Stage 4 GCSE Design & Technology Overview

Year	Autumn		Spring		Summer	
	1	2	1	2	1	2
10	Practical Skills	<p><b>Tea-light holder:</b></p> <ul style="list-style-type: none"> <li>• Marking gauge</li> <li>• Tenon saw</li> <li>• Fortner bit</li> <li>• Chisel &amp; Mallet</li> <li>• Application of finish: oil &amp; wax</li> </ul> <p><b>Heraldic Shield:</b></p> <ul style="list-style-type: none"> <li>• Templates</li> <li>• Scroll saw</li> <li>• Hand held router</li> <li>• Jigs</li> <li>• CAD - CorelDraw</li> <li>• Vinyl cutter</li> <li>• Painting &amp; finishing technique</li> </ul>	<p><b>Landrover:</b></p> <ul style="list-style-type: none"> <li>• Marking out:               <ul style="list-style-type: none"> <li>✓ Try-square</li> <li>✓ Marking Gauge</li> <li>✓ Adjustable bevel</li> <li>✓ Jigs</li> </ul> </li> <li>• Machining:               <ul style="list-style-type: none"> <li>✓ Drilling</li> <li>✓ Scroll saw</li> <li>✓ Bandfacer</li> </ul> </li> <li>• Wasting:               <ul style="list-style-type: none"> <li>✓ Cutting</li> <li>✓ Chiselling</li> <li>✓ Filing</li> <li>✓ Planing</li> <li>✓ Sanding</li> </ul> </li> <li>• CAD/CAM:               <ul style="list-style-type: none"> <li>✓ Laser cutter</li> <li>✓ Vinyl Cutter</li> </ul> </li> <li>• Finishing techniques</li> </ul>	<p><b>Metal Keyring:</b></p> <ul style="list-style-type: none"> <li>• CAD</li> <li>• CAM (Laser Cutter) to make mould</li> <li>• Pewter Casting (molten metal)</li> <li>• Drilling metal</li> <li>• Metal finishing techniques</li> </ul>	<p><b>Desk light:</b></p> <p>Design &amp; Make mini project</p> <ul style="list-style-type: none"> <li>• Soldering</li> <li>• CAD/CAM</li> <li>• Designing for others</li> <li>• Volumes of production</li> <li>• Planning</li> <li>• Finishing techniques</li> <li>• Evaluation &amp; testing</li> </ul> <p><b>Extension projects are available for pupils who complete these skill based practicals early, and pupils are encouraged to try a range of additional techniques, equipment and skills.</b></p>	<p><b>NEA Section A: Identify &amp; Investigate Design Possibilities</b></p> <ul style="list-style-type: none"> <li>• Context &amp; mind map</li> <li>• Explore possibilities</li> <li>• Work of others</li> <li>• Client profile &amp; target market</li> <li>• Research Impact on environment &amp; society</li> </ul>
	Theory knowledge	<p><b>Unit 1: New &amp; Emerging Technologies</b></p> <ul style="list-style-type: none"> <li>• Industry &amp; enterprise</li> <li>• Sustainability &amp; environment</li> <li>• People, culture &amp; society</li> <li>• Production techniques &amp; systems</li> <li>• Informing design decisions</li> <li>• <b>End of unit test.</b></li> </ul>	<p><b>Unit 2: Energy, Materials, Systems &amp; Devices</b></p> <ul style="list-style-type: none"> <li>• Energy generation</li> <li>• Energy storage</li> <li>• Modern materials</li> <li>• Smart materials</li> <li>• Composite materials &amp; technical textiles</li> <li>• Systems approach to designing</li> <li>• Electronic systems</li> <li>• Mechanical systems</li> <li>• <b>End of unit test.</b></li> </ul>	<p><b>Unit 3: Materials</b></p> <ul style="list-style-type: none"> <li>• Paper &amp; board</li> <li>• Timber based materials</li> <li>• Metals &amp; alloys</li> <li>• Polymers</li> <li>• Textiles</li> <li>• End of unit test.</li> </ul> <p><b>Unit 4: Common Specialist Technical Principles</b></p> <ul style="list-style-type: none"> <li>• Forces &amp; stresses</li> <li>• Improving functionality</li> <li>• Ecological &amp; social footprint</li> </ul>	<ul style="list-style-type: none"> <li>• The 6 R's</li> <li>• Scales of production</li> <li>• <b>End of unit test.</b></li> </ul> <p><b>Unit 5A: Paper &amp; Boards</b></p> <ul style="list-style-type: none"> <li>• Sources, origins &amp; properties</li> <li>• Working with paper &amp; board</li> <li>• Commercial manufacturing, surface treatments &amp; finishes</li> <li>• <b>End of unit test.</b></li> </ul>	<p><b>Unit 5B: Timber Based Materials</b></p> <ul style="list-style-type: none"> <li>• Sources, origins &amp; properties</li> <li>• Working with timber</li> <li>• Commercial manufacturing, surface treatments &amp; finishes</li> <li>• <b>End of unit test.</b></li> </ul> <p><b>Unit 5C: Metals &amp; Alloys</b></p> <ul style="list-style-type: none"> <li>• Sources, origins &amp; properties</li> <li>• Working with metals</li> </ul>

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11	Practical Skills	<b>NEA Section B: Design criteria &amp; brief</b> <ul style="list-style-type: none"> <li>Research analysis</li> <li>Design criteria</li> <li>Design brief</li> </ul>	<b>NEA Section C: Generating ideas</b> <ul style="list-style-type: none"> <li>Sketch design solutions</li> <li>Model, test &amp; evaluate design ideas</li> </ul> <p><b>NEA progress so far will be assessed</b></p>	<b>NEA Section D: Developing ideas</b> <ul style="list-style-type: none"> <li>Development sketches, modelling &amp; testing</li> <li>Technical development</li> <li>CAD solution</li> <li>Orthographic with dimensions</li> <li>Proposal</li> </ul>	<b>NEA Section E: Making prototype</b> <ul style="list-style-type: none"> <li>Planning</li> <li>Making diary</li> <li>Make prototype</li> </ul> <p>The making element of the NEA is only worth 10% of the overall grade.</p>	<b>NEA Section F: Analyse &amp; Evaluate</b> <ul style="list-style-type: none"> <li>Testing against Spec.</li> <li>Technical testing</li> <li>Customer Testing</li> <li>Possible improvements</li> </ul>	
	Theory knowledge	<b>Unit 6: Designing Principles</b> <ul style="list-style-type: none"> <li>Investigation, Primary &amp; secondary data, understanding client needs</li> <li>The work of other designers</li> <li>The work of design companies</li> <li>Design strategies</li> <li>Communication of design ideas</li> <li>End of unit test.</li> </ul>	<p><b>Mock Exam revision and Exam,</b></p> <p><b>Unit 7: Making Principles</b></p> <ul style="list-style-type: none"> <li>Selection of materials &amp; components</li> <li>Tolerances</li> <li>Materials management</li> <li>Tools, equipment &amp; techniques</li> <li>Surface treatments &amp; finishes</li> <li>End of unit test.</li> </ul>	<b>Unit 8: Contextual Maths Skills</b> <ul style="list-style-type: none"> <li>Decimal places &amp; significant figures</li> <li>Ratio &amp; fractions</li> <li>Percentages</li> <li>Angles, area &amp; volume</li> <li>Working with data</li> <li>Solving contextual problems</li> <li>End of unit test.</li> </ul>	<p><b>Final Exam Revision &amp; practice</b></p> <p>A full revision list is also available from the school web site.</p>		

Note:

The GCSE is awarded 50% Terminal Exam and 50% NEA, and so the Predicted grade will also be generated with the same weighting.