



## Curriculum Overview 2021-22: Design and Technology: Materials Technology: GCSE Edexcel

| Year Group                      | Autumn Term  | Spring Term   | Summer Term   | Useful Information/ Websites   |
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| Year 9<br>Materials Technology  | <p>Development of basic drawing skills needed for non-examined assessment</p> <p>Understanding the different categories of wood, metal and plastic</p> <ul style="list-style-type: none"> <li>• Isometric projection</li> <li>• Orthographic projection</li> <li>• Zoom in/technical features</li> <li>• Wood – ferrous / non-ferrous</li> <li>• Thermoplastic/Thermoset</li> <li>• Hardwood/ Softwood / Man-made board</li> </ul> | <p>Design and make a metal, balancing toy, with a unique design.</p> <ul style="list-style-type: none"> <li>• Design development</li> <li>• Working with various metals</li> <li>• Brazing</li> <li>• Riveting</li> <li>• Joining using industrial processes</li> <li>• Use of CAD/CAM</li> <li>• Sustainability and eco-friendly use of materials</li> </ul> | <p>Design and make a small, wooden storage box incorporating various wooden joints</p> <ul style="list-style-type: none"> <li>• Research into wooden joints and their mechanical properties</li> <li>• Wooden joints covered; Dowel, finger/comb, dovetail, butt and cross halving.</li> <li>• Fixtures and fittings – permanent and semi-permanent</li> <li>• Finishing techniques – wax, paint and varnish.</li> <li>• CAD/CAM design for lid/cover</li> </ul> <p><b>Understand and make an Electronic Cyber pet.</b></p> <ul style="list-style-type: none"> <li>• Electronics project including; Resistors, LED's, Input – process – output, LDR's, PicAxe programming / computer programming</li> </ul> | <p>www.technologystudent.com</p> <p>www.BBCbitesize.com</p> <p>www.designtechnology.info/home</p> <p>www.design-technology.org</p> <p><a href="http://www.mr-dt.com">www.mr-dt.com</a></p> <p><a href="http://www.edexcel.com/designandtechnology.com">www.edexcel.com/designandtechnology.com</a></p> |
| Year 10<br>Materials Technology | <p>Design and Technology core content: Learning key areas that are required for the GCSE exam and the non-</p>   | <p>Core content is continued thorough the spring term.</p> <ul style="list-style-type: none"> <li>• The functions of mechanical devices used</li> </ul>   | <p>Core content is continued through the summer term.</p>   | <p>www.technologystudent.com</p> <p>www.BBCbitesize.com</p> <p>www.designtechnology.info/home</p>  |



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|  | <p>examined assessment (project).</p> <ul style="list-style-type: none"> <li>• The impact of new and emerging technologies</li> <li>• How the critical evaluation of new and emerging technologies informs design decisions; considering contemporary and potential future scenarios from different perspectives, such as ethics and the environment</li> <li>• How energy is generated and stored in order to choose and use appropriate sources to make products and power systems</li> <li>• Developments in modern and smart materials, composite materials and technical textiles</li> </ul> | <p>to produce different sorts of movements, including the changing of magnitude and the direction of forces</p> <ul style="list-style-type: none"> <li>• How electronic systems provide functionality to products and processes, including sensors and control devices to respond to a variety of inputs, and devices to produce a range of outputs</li> <li>• The use of programmable components to embed functionality into products in order to enhance and customise their operation</li> <li>• The categorisation of the types, properties and structure of ferrous and non-ferrous metals</li> </ul> <p><b>Mini GCSE Project based on a theme similar to current Year 11 contextual challenge</b></p> <ul style="list-style-type: none"> <li>• Design process</li> <li>• Design &amp; Make</li> <li>• Modelling research, investigate, primary and secondary research.</li> </ul> | <ul style="list-style-type: none"> <li>• The categorisation of the types, properties and structure of papers and boards</li> <li>• The categorisation of the types, properties and structure of thermoforming and thermosetting polymers</li> <li>• 2 The categorisation of the types, properties and structure of natural and manufactured timbers</li> <li>• Investigate and analyse the work of past and present professionals and companies in order to inform design</li> </ul> <p>1<sup>st</sup> June – GCSE begins, with contextual challenges released and students begin to select their preferred challenge to design and make. This leads into the Year 11 NEA.</p> | <p><a href="http://www.design-technology.org">www.design-technology.org</a></p> <p><a href="http://www.mr-dt.com">www.mr-dt.com</a></p> <p><a href="http://www.edexcel.com/designandtechnology.com">www.edexcel.com/designandtechnology.com</a></p> |
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| <p>Year 11<br/>Materials<br/>Technology</p> | <p><b>Design &amp; make project – 50% of qualification.</b><br/>Students pick a contextual challenge provided by the exam board. Students will produce a project, based on their specialism, which consists of a portfolio and prototype.</p> <p>Part 1 – Investigate<br/>Part 2 – Design<br/>Part 3- Make<br/>Part 4 - Evaluate</p> | <p>Design &amp; Make project completed, moderated and submitted. Revision on core content is revisited from year 10. Revision is more focused on exam style questions.</p> | <p><b>Examination – 50% of qualification.</b><br/>Core content is revisited and implemented into the teaching. Subject specific content is covered for the exam.</p> <p><b>Section A:</b> Core This section is 40 marks and contains a mixture of different question styles, including open-response, graphical, calculation and extended-open-response questions. There will be 10 marks of calculation questions in Section A. <b>Section B:</b> Material categories This section is 60 marks and contains a mixture of different question styles, including open-response, graphical, calculation and extended-open-response questions. There will be 5 marks of calculation questions in Section B</p> | <p>www.technologystudent.com</p> <p>www.BBCbitesize.com</p> <p>www.designtechnology.info/home</p> <p>www.design-technology.org</p> <p><a href="http://www.mr-dt.com">www.mr-dt.com</a></p> <p><a href="http://www.edexcel.com/designandtechnology.com">www.edexcel.com/designandtechnology.com</a></p> |