

# Design Technology and Engineering Curriculum Map Overview

Please note further information can be found in the Design Technology and Engineering curriculum sequencing document



## Key Stage 3

<b>KS3</b> <b>Year 7</b>	<b>Half term 1</b> <b>Autumn 1</b>	<b>Half term 2</b> <b>Autumn 2</b>	<b>Half term 3</b> <b>Spring 1</b>	<b>Half term 4</b> <b>Spring 2</b>	<b>Half term 5</b> <b>Summer 1</b>	<b>Half term 6</b> <b>Summer 2</b>
<b>Design, Tech &amp; Engineering</b>	Depending on student rotation - Students complete 3 projects using booklets covering Graphic Design, Electronics, Resistant Materials, Product Design and use of CAD/CAM packages <ul style="list-style-type: none"><li>• Students study a 12 week programme focusing on structures. This is delivered through 2 projects: Egg Drop Project and Bridge Project</li><li>• Energy and Electronics, Electronic Desk Tidy</li><li>• Materials – Timber and Chinese Calendar Project</li></ul>					

<b>KS3</b> <b>Year 8</b>	<b>Half term 1</b> <b>Autumn 1</b>	<b>Half term 2</b> <b>Autumn 2</b>	<b>Half term 3</b> <b>Spring 1</b>	<b>Half term 4</b> <b>Spring 2</b>	<b>Half term 5</b> <b>Summer 1</b>	<b>Half term 6</b> <b>Summer 2</b>
<b>Design, Tech &amp; Engineering</b>	<p>During this half term students study a sequence of lessons developing essential knowledge of:</p> <p>Students study a 12-week programme focusing on Prototypes. This is delivered through the following project:            Designing and Modelling Prototypes - Mobile Phone Project</p> <p>Students study a 12-week programme focusing on Electronics. This is delivered through the following project:            IKEA - Night light project</p> <p>Students study a 12-week programme focusing on Metals. This is delivered through the following project:            Wind Turbine Project</p>					

<b>KS3</b> <b>Year 9</b>	<b>Half term 1</b> <b>Autumn 1</b>	<b>Half term 2</b> <b>Autumn 2</b>	<b>Half term 3</b> <b>Spring 1</b>	<b>Half term 4</b> <b>Spring 2</b>	<b>Half term 5</b> <b>Summer 1</b>	<b>Half term 6</b> <b>Summer 2</b>
Design, Tech & Engineering	<p>Students study a 12-week programme focusing on Design influences. This is delivered through the following project: Influential Designers &amp; Design Movements - Point of sales display project</p> <p>Students study a 12-week programme focusing on Engineering. This is delivered through the following project: Designer Jewelry Project</p> <p>Students study a 12-week programme focusing on Polymers. This is delivered through the following project: Mechanical Toy Project</p>					

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## Key Stage 4

KS4 Year 10	Half term 1 Autumn 1	Half term 2 Autumn 2	Half term 3 Spring 1	Half term 4 Spring 2	Half term 5 Summer 1	Half term 6 Summer 2
Design, Tech & Engineering	<p><b>During this half term students study a sequence of lessons developing essential knowledge of:</b></p> <p><b>New and emerging technologies</b> Industry and enterprise Sustainability and the environment People, culture and society Production techniques and systems Informing design decisions</p> <ul style="list-style-type: none"> <li>Informing design decisions</li> </ul>	<p><b>Energy generation and storage</b> Energy generation Energy storage Modern materials Smart materials Composite materials Systems approach to designing Electronic systems processing Mechanical Devices</p> <p><b>Materials and their working properties</b> Paper &amp; Boards Natural &amp; Manufactured Timbers Metals &amp; Alloys Polymers Textiles</p>	<p><b>Common Specialist Principals</b></p> <p>Forces &amp; Stresses</p> <p>Improving functionality</p> <p>Ecology and social footprint</p> <p>The six R's</p> <p>Scales of production</p>	<p><b>Timber</b> Sources Origins &amp; Properties</p> <p>Working with Timber based materials</p> <p>Commercial manufacturing, surface treatments and finishes</p> <p><b>Metal</b> Sources Origins &amp; Properties</p> <p>Working with Metal based material and fixings.</p> <p>Commercial manufacturing, surface treatments and finishes</p> <p><b>Polymers</b> Sources Origins &amp; Properties</p>	<p><b>Stock forms, types and sizes</b></p> <p><b>3.2.7 Scales of production</b></p> <p><b>Specialist techniques and processes</b></p> <p><b>Surface treatments and finishes</b></p>	<p><b>Designing Principals</b></p> <p>Investigation Primary &amp; secondary data</p> <p>Environmental social and economic challenge</p> <p>The work of others</p> <p>Design Strategies</p> <p>Communication of design ideas</p> <p><b>Making Principals</b></p> <p>Prototype development</p> <p>Selection of materials &amp; components</p>

				Working with Polymer based materials and fixings  Commercial manufacturing, surface treatments and finishes		Tolerances & allowances  Material management and marking out  Specialist tools, equipment techniques and processes  Surface treatments and finishes
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<b>KS4 Year 10</b>	<b>Half term 1 Autumn 1</b>	<b>Half term 2 Autumn 2</b>	<b>Half term 3 Spring 1</b>	<b>Half term 4 Spring 2</b>	<b>Half term 5 Summer 1</b>	<b>Half term 6 Summer 2</b>
Construction	Safety and security in construction  Practical construction skills Joinery	Safety and security in construction  Practical construction skills Joinery	Safety and security in construction  Practical construction skills Joinery	Safety and security in construction  Practical construction skills Painting & Decorating	Safety and security in construction  Practical construction skills Painting & Decorating  <b>Responding to an Engineering Brief</b> Functionality Interpreting Charts & Graphs Data Measuring Equipment	<b>Responding to an Engineering Brief</b>

<b>KS4 Year 10</b>	<b>Half term 1 Autumn 1</b>	<b>Half term 2 Autumn 2</b>	<b>Half term 3 Spring 1</b>	<b>Half term 4 Spring 2</b>	<b>Half term 5 Summer 1</b>	<b>Half term 6 Summer 2</b>
Engineering	During this half term students study a sequence of lessons developing essential knowledge of:  <b>Material Properties</b>		During this half term students study a sequence of lessons developing essential knowledge of:  <b>Investigating an Engineering product</b>  Learners will investigate the selection of components, materials and manufacturing processes, and learn how to disassemble and examine an engineering product  (Components and materials)		Investigate features of a given engineered product  Develop a production plan	<b>Investigate features of a given engineered product</b>

<b>KS4 Year 11</b>	<b>Half term 1 Autumn 1</b>	<b>Half term 2 Autumn 2</b>	<b>Half term 3 Spring 1</b>	<b>Half term 4 Spring 2</b>	<b>Half term 5 Summer 1</b>
Design, Tech & Engineering	Identify, investigate and outline design possibilities  Identifying & investigating design possibilities  Producing a design brief & Specification	Generating design ideas  Students should explore a range of possible ideas for their chosen topic. These design ideas should demonstrate flair and originality and students are encouraged to take	Students will develop and refine design ideas. This may include, formal and informal 2D/3D drawing including CAD, systems and schematic diagrams, and models. Students will develop at least one model high quality model.	Students will work with a range of appropriate materials/components to produce prototypes that are accurate and within close tolerances. This will involve using specialist tools and equipment, which may include hand tools, machines or CAM/CNC. The	Within this iterative design process students are expected to continuously analyse and evaluate their work, using their decisions to improve outcomes. This should include defining requirements, analysing the design brief and

		risks with their designs. Students may wish to use a variety of techniques to communicate.		prototypes will be constructed through a range of techniques, which may involve shaping, fabrication, construction and assembly.	specifications along with the testing and evaluating of ideas produced during the generation and development stages.
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<b>KS4 Year 11</b>	<b>Half term 1 Autumn 1</b>	<b>Half term 2 Autumn 2</b>	<b>Half term 3 Spring 1</b>	<b>Half term 4 Spring 2</b>	<b>Half term 5 Summer 1</b>	<b>Half term 6 Summer 2</b>
<b>Construction</b>	<p>During this half term students study a sequence of lessons developing essential knowledge of:</p> <ul style="list-style-type: none"> <li>• Planning construction projects</li> <li>• Practical construction skills Electrical Installation</li> </ul>	<p>During this half term students study a sequence of lessons developing essential knowledge of:</p> <ul style="list-style-type: none"> <li>• Planning construction projects</li> <li>• Practical construction skills Electrical Installation</li> </ul>	<p>During this half term students study a sequence of lessons developing essential knowledge of:</p> <ul style="list-style-type: none"> <li>• Planning construction projects</li> <li>• Practical construction skills Electrical Installation</li> </ul>	<p>During this half term students study a sequence of lessons developing essential knowledge of:</p> <ul style="list-style-type: none"> <li>• Planning construction projects</li> </ul>	<p>During this half term students study a sequence of lessons developing essential knowledge of:</p> <ul style="list-style-type: none"> <li>• Planning construction projects</li> </ul>	

<b>KS4</b> <b>Year 11</b>	Half term 1 Autumn 1	Half term 2 Autumn 2	Half term 3 Spring 1	Half term 4 Spring 2	Half term 5 Summer 1	Half term 6 Summer 2
<b>Engineering</b>	<p>During this half term students study a sequence of lessons developing essential knowledge of:</p> <p><b>Explore Engineering through the design process.</b></p> <p><b>Responding to an Engineering Brief</b>            Materials            Processes            Sketching            Aesthetics</p>	<p>During this half term students study a sequence of lessons developing essential knowledge of:</p> <p><b>Explore Engineering through the design process.</b></p> <p><b>Responding to an Engineering Brief</b>            Functionality            Interpreting Charts &amp; Graphs            Data Measuring Equipment</p>	<p>During this half term students study a sequence of lessons developing essential knowledge of:</p> <p><b>Engineering Sectors Part A1 &amp; A2</b></p> <p><b>Explore Engineering through the design process.</b></p>	<p>During this half term students study a sequence of lessons developing essential knowledge of:</p> <ul style="list-style-type: none"> <li>• Component 3 Responding to an Engineering Brief</li> <li>• Materials</li> <li>• Processes</li> <li>• Sketching</li> <li>• Aesthetics</li> </ul>	<p>During this half term students study a sequence of lessons developing essential knowledge of:</p> <ul style="list-style-type: none"> <li>• Component 3 Responding to an Engineering Brief</li> <li>• Functionality</li> <li>• Interpreting Charts &amp; Graphs</li> <li>• Data Measuring Equipment</li> </ul>	<p>Component 3 Responding to an Engineering Brief</p>



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## Key Stage 5

KS5 Year 12	Half term 1 Autumn 1	Half term 2 Autumn 2	Half term 3 Spring 1	Half term 4 Spring 2	Half term 5 Summer 1	Half term 6 Summer 2
Design, Tech & Engineering	<p>During this half term students study a sequence of lessons developing essential knowledge of:</p> <p><b>Engineering principals.</b></p> <p>Design process,</p>	<p>During this half term students study a sequence of lessons developing essential knowledge of:</p> <p><b>Engineering principals.</b></p> <p>Design process</p> <p>Computer Aided Design in Engineering</p>	<p>During this half term students study a sequence of lessons developing essential knowledge of:</p> <p><b>Engineering principals.</b></p> <p>Design process</p> <p>Computer Aided Design in Engineering</p>	<p>During this half term students study a sequence of lessons developing essential knowledge of:</p> <p><b>Engineering principals</b></p> <p>Design process</p> <p>Computer Aided Design in Engineering</p>	<p>During this half term students study a sequence of lessons developing essential knowledge of:</p> <p><b>Engineering principals</b></p> <p>Design process</p>	<p>During this half term students study a sequence of lessons developing essential knowledge of:</p> <p><b>Delivery of Engineering Processes Safely as a Team</b></p> <p>Design process</p>

<b>KS5</b> <b>Year 13</b>	<b>Half term 1</b> <b>Autumn 1</b>	<b>Half term 2</b> <b>Autumn 2</b>	<b>Half term 3</b> <b>Spring 1</b>	<b>Half term 4</b> <b>Spring 2</b>	<b>Half term 5</b> <b>Summer 1</b>	<b>Half term 6</b> <b>Summer 2</b>
	<b>Delivery of Engineering Processes Safely as a Team</b>  <b>Maintenance of Mechanical Systems</b>	<b>Maintenance of Mechanical Systems</b>	<b>Additive Manufacturing Processes</b>	<b>Additive Manufacturing Processes</b>	<b>Applied Commercial and Quality Principles in Engineering</b>	<b>Applied Commercial and Quality Principles in Engineering</b>