

The Grange Academy Design and Technology curriculum map

Intent

The Design and Technology curriculum gives students the skills and abilities to engage positively with a wide range of designed and made items and to engage with many aspects of technology. Students learn how products and systems are designed and manufactured, how to be problem solve, be innovative and creative to improve the world around them.

This is a very 'hands on' subject encouraging students to work safely, logically and to develop their hand-eye coordination and organisational skills whilst working with wood, plastics, metal and electrical components. From Year 7 onwards, students are encouraged to use Maths and Science in their designing and see first-hand the importance of these subjects.

Implementation

	Autumn Term I	Autumn Term II	Spring Term I	Spring Term II	Summer Term I	Summer Term II
Year 7	<p>Content</p> <p>Year 7 is taught on a rotation with Food and Computer science. Every student studies Food for two terms.</p> <p>Health & safety</p> <p>Introduction to Tools and Equipment</p> <p>Design and Make Task:</p> <p>Wooden Robot project</p> <p>Marking out-accuracy skills</p> <p>Use of the disc/ belt sander-Wood shaping</p> <p>Use of the pillar drill-Drill work</p> <p>Finishing skills- Hand sanding, fine finishing and colour</p> <p>Practical assessment</p> <p>Hand tool use</p> <p>Machine tool use</p> <p>Accuracy</p> <p>Quality of finish</p> <p>H&S- multiple choice quiz</p> <p>Homework Tasks</p> <p>HIR Activities</p>	<p>Content</p> <p>Desk Tidy Project</p> <p>Research skills</p> <p>Exploring design briefs</p> <p>Producing design ideas</p> <p>Modelling ideas</p> <p>Isometric drawing</p> <p>Make Skills-</p> <p>Wood shaping- Marking out-accuracy skills</p> <p>Use of the disc/ belt sander-Wood shaping</p> <p>Drill work-accuracy/ use of the pillar drill</p> <p>Plastic bending</p> <p>Final Assembly</p> <p>Technical knowledge</p> <p>Materials-</p> <p>Timber,</p> <p>Plastics,</p> <p>Research and investigation</p> <p>Briefs and specifications</p> <p>Manufacturing processes</p> <p>Practical assessment</p> <ul style="list-style-type: none"> • Creativity and Shaping • Drilling • Accuracy <p>Materials Research task</p> <p>Homework Tasks</p> <p>HIR Activities</p>	Content	Content	Content	Content
Year 8	<p>Content</p> <p>Year 8 is taught on a rotation with Food and</p>	<p>Content</p> <p>Mechanical Toy Project</p> <p>Research skills</p>	Content	Content	Content	Content

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	<p>Computer science. Every student studies Food for two terms.</p> <p>Recap Health & safety Recap Tools and Equipment Design and development of puzzle design <u>Design Task:</u> Producing design ideas Modelling ideas Maze Game project Frame making Marking out-accuracy skills Use of the disc/ belt sander-Wood shaping Assembly skills Finishing skills- Hand sanding, fine finishing and colour Designing the maze CAD (computer aided designing) Use of the laser cutter-developing CAM skills(computer aided manufacturing) <u>Practical assessment</u> Hand tool use Machine tool use Accuracy Quality of finish Homework Tasks HIR Activities</p>	<p>Exploring design briefs Producing design ideas Modelling ideas Make Skills- Design and make Wood shaping Drilling work Applying a finish Joining techniques Technical knowledge Materials- Timber, Plastics, Mechanism Forces Mechanical systems Research and investigation Briefs and specifications Manufacturing processes Practical assessment Creativity and Shaping Drilling Accuracy Materials Research task Homework Tasks HIR Activities</p>				
Year 9	<p>Content Year 9 is taught on a rotation with Food and Computer science. Every student studies Food for two terms.</p> <p>Recap Health & safety Recap Tools and Equipment Design and development of</p>	<p>Content Acoustic Speaker Project Exploring design briefs Producing design ideas Modelling ideas Design and Make Task Marking out-accuracy skills Use of the disc/ belt sander-Wood shaping Cutting skills</p>	Content	Content	Content	Content

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	<p>Headphone wrap Design Task: Researching skills Producing design ideas Modelling ideas</p> <p>Make Task Headphone wrap Marking out-accuracy skills Use of the disc/ belt sander-Wood shaping Finishing skills- Hand sanding, fine finishing and colour Designing the maze CAD (computer aided designing) Use of the laser cutter-developing CAM skills(computer aided manufacturing)</p> <p>Practical assessment Hand tool use Machine tool use Accuracy Quality of finish</p> <p>Homework Tasks HIR Activities</p>	<p>Wood shaping Drilling work Joining skills Finishing skills- Hand sanding, fine finishing and colour</p> <p>Technical knowledge Product Analysis Timber knowledge Briefs and specifications Manufacturing processes</p> <p>Practical assessment Hand tool use Machine tool use Accuracy Quality of finish</p> <p>Materials Research task Homework Tasks HIR Activities</p>				
Year 10	<p>Content Theory Materials Timbers Plastics Metals</p> <p>Design and Make Assignment Bluetooth Speaker – practising the following: Design Ideas Designer Influences Research Skills</p>	<p>Content Theory Materials Paper Textiles</p> <p>Design and Make Assignment Bluetooth Speaker – practising the following: Model Making Soldering Finishing Skills</p>	<p>Content Theory New and Emerging Materials Industry Sustainability People and Cultures</p> <p>Design and Make Assignment Educational Toy Practising the following: Design Ideas Ergonomics Materials Research</p>	<p>Content Theory New and Emerging Materials Production Techniques Informing Decisions</p> <p>Design and Make Assignment Educational Toy Practising the following: Wood techniques – cutting, sanding, finishing</p>	<p>Content Theory Energy Materials Systems Energy Generation Energy Storage Smart Materials</p> <p>Design and Make Assignment LED Lamp Practising the following: CAD Design Wood techniques – cutting, sanding, finishing</p>	<p>Content Theory Energy Materials Systems Composites System Approach to Design Electronic Systems Mechanical Systems Design and Make Assignment LED Lamp Practising the following: Wood techniques – cutting, sanding, finishing Using Laser Cutter</p>
Year 11	<p>Content Theory Design principles</p>	<p>Content Theory Specialist Materials - Timbers</p>	<p>Content Theory Specialist Materials –</p>	<p>Content Theory Making Principles</p>	<p>Content Theory Common Specialist</p>	<p>Content</p>

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	<p>Investigation Primary and Secondary Design The Work of Others Design Strategies Communication of ideas</p> <p>NEA Assessment is 50% of GCSE Students made aware of topics. <u>Section A</u> – Identifying and investigating design possibilities <u>Section B</u> - Producing a design brief and specification</p>	<p>Sources Working with Timber Commercial Manufacture</p> <p>Section C - Generating design ideas Section D - Developing design ideas Section E - Realising design ideas</p>	<p>Polymers Sources Working with Timber Commercial Manufacture</p> <p>Section E - Realising design ideas Section F - Analysing & evaluating</p>	<p>Selection of Materials Tolerances Material management</p> <p><u>Recap and revise</u></p>	<p>Forces Functionality Ecology 6rs Scales of Production</p> <p><u>Recap and revise</u></p>	
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