



## Year 8 Design & Technology curriculum – 2024-2025

	Autumn Term	Spring Term	Summer Term	
	<p>In Design &amp; Technology we work in rotations with specialist teachers. Whilst each project is the same wherever it is taught in the year, care is taken to ensure that within the areas that students make progress and develop skills and knowledge differently depending on when in the year. There are varied stretch and challenge opportunities throughout each project allowing this progression.</p>			
	Project 1	Project 2	Project 3	STEAM
Key Concepts	<p><b>Food Technology - building of practical skills and nutritional requirements</b></p> <p>Students will recap the health and safety practices from year 7. They will also delve further into dietary requirements and discuss appropriate foods for certain groups. Practical skills will be expanded with students making dishes such as lemon muffins, pizza and quiche. Presentation skills are also developed through the teacake presentation challenge.</p>	<p><b>Materials</b> <b>Automata - Wood</b></p> <p>Students design and manufacture a wooden moving toy. Students develop skills and knowledge about working with tools and equipment in wood as well as their knowledge of mechanisms and materials.</p>	<p><b>Materials</b> <b>Games</b></p> <p>Students design and manufacture a Steady Hand game and Tic Tac Toe game.</p>	<p><b>Smart Materials</b> - Design and make a thermochromic Cup</p> <p><b>Boats</b> - Group work design and make a boat to hold as many weights as possible</p> <p><b>Science in food</b> - Churning - Butter making Yeast - pretzels</p>



**Knowledge & Understanding (National Curriculum)**

*Skills are across the whole year.*

Students know and understand how to:

**Design**

- Use research and exploration, such as the study of different cultures, to identify and understand user needs.
- Identify and solve their own design problems and understand how to reformulate problems given to them for the boat STEAM design project.
- Develop specifications to inform the design of innovative, functional, appealing products that respond to needs in a variety of situations.
- Use a variety of approaches to generate creative ideas and avoid stereotypical responses.
- Develop and communicate design ideas using annotated sketches, detailed plans, 3-D and mathematical modelling, oral and digital presentations and computer-based tools.
- Create innovative approaches to presenting basic ingredients through the teacake challenge task.

**Make**

- Select from and use the tenon saws, bench hook, coping saws, hegner saws, belt sander, pillar drill, glass paper, pyrography pens, soldering irons, PCD drills, etch tank, vacuum former, hot glue gun, hand drill precisely and the laser cutter.
- Select from MDF, plywood, pine, hardwood, Hips, taking into account their properties.
- Select and use approach electronic components for the steady hand game.
- Use thermochromic pigments with glaze to manufacture a colour changing cup.
- Use a variety of cooking skills when following a method to make dishes.

**Evaluate**

- Analyse the work of past and present professionals and others to develop and broaden their understanding.
- Investigate new and emerging technologies.
- Test, evaluate and refine their ideas and products against a specification, taking into account the views of intended users and other interested groups.
- Understand developments in design and technology, its impact on individuals, society and the environment, and the responsibilities of designers, engineers and technologists.

**Technical Knowledge**

- Understand and use the properties of woods and the performance of structural elements to achieve functioning solutions.
- Understand how more advanced mechanical systems used in their products enable changes in movement and force in the automata and theory around it.
- Develop understanding of smart materials and their functionality. .
- Understand how more advanced electrical and electronic systems can be powered and used in their products, touch sensors, capacitors, LED's, resistors.



	<ul style="list-style-type: none"> <li>Apply computing and use electronics to embed intelligence in products that respond to inputs [for example, sensors], and control outputs [for example, actuators], using programmable components [for example, microcontrollers].</li> </ul> <p><b>Cooking and nutrition</b></p> <ul style="list-style-type: none"> <li>Understand and apply the principles of nutrition and health. Students should now be able to apply this to specific groups.</li> <li>Cook a repertoire of predominantly savoury dishes so that they are able to feed themselves and others a healthy and varied diet. Students will look at savoury recipes such as general bread making and pizza, pasta bake, quiche and ham wrap.</li> <li>Become competent in a range of cooking techniques [for example, selecting and preparing ingredients; using utensils and electrical equipment; applying heat in different ways; using awareness of taste, texture and smell to decide how to season dishes and combine ingredients; adapting and using their own recipes].</li> <li>Understand the source, seasonality and characteristics of a broad range of ingredients. Students will become aware of how fresh ingredients are grown and harvested.</li> </ul>	
<p><b>Skills</b></p>	<p><b>R</b> Develop <b>RESILIENCE</b></p>	<p>★ <i>Evaluating situations and outcomes allows students to assess what worked well and what didn't. This process encourages adaptability by learning from mistakes, adjusting strategies, and embracing change more effectively.</i></p>
	<p><b>A</b> Possess <b>AMBITION</b></p>	<p>★ <i>Technical knowledge provides the foundation for innovation. Ambitious students with technical expertise are more likely to develop groundbreaking solutions, products, or services, driven by a desire to make a significant impact in their field.</i></p>



	<p><b>I</b> <i>Demonstrate</i> <b>INTEGRITY</b></p>	<ul style="list-style-type: none"> <li>★ <i>By studying different cultures, students gain a deeper understanding of diverse perspectives and practices. This understanding fosters tolerance and respect for others, which are key components of integrity.</i></li> <li>★ <i>By understanding dietary preferences, allergies, and cultural or religious restrictions, you can tailor dishes to meet the specific needs of your diners.</i></li> </ul>		
	<p><b>S</b> <i>Embed</i> <b>Self-Discovery</b></p>	<ul style="list-style-type: none"> <li>★ <i>Design often involves receiving feedback from peers, teachers, or 'clients'. This feedback loop fosters self-awareness by highlighting strengths and areas for improvement, encouraging continuous growth and refinement of skills.</i></li> </ul>		
	<p><b>E</b> <i>Display</i> <b>EMPATHY</b></p>	<ul style="list-style-type: none"> <li>★ <i>Cooking often involves working with diverse ingredients and recipes from different cultures. Exploring these ingredients and recipes can deepen student's understanding of various cultures' culinary traditions, history, and values. This knowledge fosters empathy by appreciating and respecting cultural diversity.</i></li> </ul>		
<p><b>Curriculum Links</b></p>	<p>Students are building upon their cooking knowledge from Year 7. They will continue to use all different parts of the oven but will expand their skill set by using them more independently. They should be more confident in their literacy and numeracy skills which will support their weighing, measuring and recipe reading.</p>	<p>This project is wood based and gives the students knowledge and understanding that is the building blocks to the whole of the D&amp;T/Engineering curriculums. Students develop workshop skills using machines and tools to cut and shape the wood in a more independent manner than year 7.</p>	<p>This project is electronics and systems based and gives the students new knowledge and understanding as well as developing previous skills such as the vacuum former and working with metal and wood again.</p>	<p><b>STEAM</b> These year 8 3 STEAM projects in the last half term are to develop students and to provide an integrated approach to learning that encourages students to think more broadly about real-world problems and to</p>



	Faculty staff use the rotational timetable to review which projects students have completed and discuss previous learning differently in each rotation. Tasks are approached differently	Students are encouraged to take responsibility for their safe working practices built upon in year 7.  Faculty staff use the rotational timetable to review which projects students have completed and discuss previous learning differently in each rotation. Tasks are approached differently	Faculty staff use the rotational timetable to review which projects students have completed and discuss previous learning differently in each rotation. Tasks are approached differently	innovate creatively. Students have developed core knowledge and skills over the last 2 years and are more readily equipped to use critical thinking, problem solving, interdisciplinary approach to learning and working in collaboration.
<b>Assessment</b>	<b>Designing</b> - Teacake challenge <b>Making</b> - Pizza <b>Knowing</b> - Mid project nutrition test	<b>Designing</b> - Design Ideas for Characters <b>Making</b> - Automata <b>Knowing</b> - End of session theory test.	<b>Designing</b> - Product Specification <b>Making</b> - The steady hand game <b>Knowing</b> - End of session theory test.	
<b>Aspirations &amp; Careers</b>	<ul style="list-style-type: none"> <li>• Discussion of many careers in the design and technology industry such as product designer, engineer, web developer, animator, information architect, robotics engineer, 3D modeller, industrial designer.</li> <li>• Discussion of many careers in the food technology industry such as chef, nutritionist, product development specialist, food scientist, microbiologist, supply chain manager, environmental health officer.</li> <li>• Students will watch demos from professionals on class video clips which are embedded into SOW</li> <li>• Practical skills allow students to apply theoretical knowledge learned in classrooms to real-world scenarios. This hands-on experience bridges the gap between theory and practice, enhancing understanding and retention of concepts. Practical skills allow students to apply theoretical knowledge learned in classrooms to real-world scenarios. This hands-on experience bridges the gap between theory and practice, enhancing understanding and retention of concepts.</li> <li>• Practical skills often involve solving real-world problems or challenges. This process cultivates critical thinking, analytical reasoning, and innovative problem-solving skills, which are invaluable in any career.</li> </ul>			

