

# YEAR 9 DESIGN TECHNOLOGY CURRICULUM PROGRESSION OVERVIEW

Design and Technology is an inspiring and practical subject. Using creativity and technical knowledge, students design and make products for real life situations. They acquire a broad range of subject knowledge and draw on disciplines such as mathematics, science, engineering, computing and art. Students will learn how to take risks and problem solve, encouraging them to become more resourceful, innovative and creative. They will study designers, manufacturers and products and through the analysis and knowledge of these, they develop a critical understanding of design and technology and its importance within the industry.

Within Food and Nutrition, students will cover a wide and varied curriculum based on food preparation and building practical skills. Students will study an array of food commodities and investigate their properties and functions within recipes, thus building a solid understanding of the dishes and ingredients they have used. Throughout KS3, students will acquire a sound knowledge of nutritional principles which allow the learner to make informed choices in diet as well as provide a smooth progression in knowledge into KS4. Alongside this, the curriculum offers essential knowledge of economic, ethical and environmental education surrounding this subject area. KS3 Food and Nutrition provides a solid foundation for progression to KS4 courses whilst delivering key knowledge and understanding of the entire food industry for students' future careers.

The Design Technology department at Huntcliff offer a fully inclusive and supportive working environment where all students can access all areas of the subject equally. Pupil premium students will be provided with all ingredients for any recipes required for Food and Nutrition lessons, they will also be provided with any design materials for both Graphics and Engineering. We recognise that students may need extra help and intervention and the Design and Technology department offer full support to ensure that all students regardless of background or ability achieve and exceed their potential. SEND students are offered alternative resources based on their individual needs. We work closely with the SEND inclusion provision within the school to ensure that they receive any extra support and the correct education depending on their needs.

We aim to stretch and challenge student's personal development by including topics designed to educate them on relevant and intriguing concepts. We focus on themes such as nutrition and maintaining healthy balanced diets and looking after their health. Students will examine how industries such as design, engineering and food effect the environment and be proactive in suggesting ways that these can be reduced. In food and Nutrition, students will study other cultures, religion and dietary needs and apply their knowledge by adapting recipes to cater for others besides themselves. Students will develop key life skills such as problem solving, team work and empathy as well as leadership and self-belief.

Year 9 allows students to cement knowledge in preparation for a smooth transition to KS4. Practical skills develop complex techniques needed to access the higher expectations of each subsequent course. Theoretical knowledge becomes yet more detailed and focussed and building on previous years bases. Students should end the year being able to make informed decisions about their KS4 study choices, have a fundamental knowledge and skill base to allow them to begin their KS4 journey and provide valuable life skills to take with them if their journey in Technology ends at this stage.

	Autumn Term 1	Autumn Term 2	Spring Term 1	Spring Term 2	Summer Term 1	Summer Term 2
Topic	<b>Food &amp; Nutrition</b>		<b>Graphic Communication</b>		<b>Materials Technology</b>	
Core Knowledge/ Threshold Concept	<p><b>Nutritional Principles</b> Proteins Carbohydrates Fats</p> <p><b>Food Provenance</b> Environmental considerations Ethical farming</p> <p><b>Food Science</b> Functions of ingredients in cakes Role of fats</p>		<p>AO1 - Looking at a range of art work, experimenting with techniques to try and replicate the effects created.</p> <p>AO2 - Using photoshop to create their own digitally manipulated design ideas while being influenced by the art work.</p> <p>AO3 - Using a secondary photo observation of a portrait and using it as the base of their designs.</p> <p>AO4 - Developing their best design until they get to their final design. The art formal elements are used for the development and final design process.</p>		<p><b>Project – Desk Lamp</b></p> <ul style="list-style-type: none"> <li>Safety in the workshop and safe use of equipment</li> <li>Specification – considerations of design &amp; manufacture</li> <li>Research – Engineering disciplines – focus on careers and job prospects.</li> <li>Electronic Products – circuit diagrams, electronic symbols and soldering techniques.</li> <li>Product analysis – using others work to influence design. (Homework)</li> <li>Tools – Uses and safe use.</li> </ul>	

	<p>Role of Gluten</p> <p><b>Practical Skills</b>          Beef Burger &amp; Potato Wedges          Shortcrust pastry Quiche          Pasta Bake and Garlic Focaccia Bread          Puff pastry Sausage rolls          Shepherd's Pie          Chocolate Gateaux</p>		<ul style="list-style-type: none"> <li>• Development – design development using CAD/CAM. Use of drawing tools building on Y8 work</li> <li>• Product Manufacture – practical skills and techniques/accuracy and problem solving</li> <li>• Evaluation and testing of products.</li> <li>• Isometric technical drawing</li> <li>• Use of CAD – sketch up to produce models.</li> </ul>
<p><b>Why this learning now?</b></p>	<p><b>Theoretical Knowledge</b>          Year 9 studies in food and nutrition again follow the main principles of Nutrition, food provenance, food safety and practical skills. Alongside these themes, food science principles are introduced to help students achieve a greater understanding of ingredients and their effects on dishes they create. Thus, making them more creative, independent chefs.          Year 9 begins with nutritional studies that are supported by practical outcomes. As in previous years, where nutritional learning has been undertaken in singular lessons, Year 9 sees a more in depth focus on individual macronutrients.          Firstly, students will look at protein. They will examine the functions of this nutrient, and understand the importance of including enough of it in our diets. To extend this knowledge, the students will understand amino acids, and how different kinds of protein are made up and the effects of them in the diet.          Following this lesson, students will then move on to carbohydrates, extending their prior knowledge by assessing simple and complex carbohydrates, the similarities and differences between them and how the body uses each to provide energy. They also learn about the role of fibre. Students conclude this by demonstrating their knowledge by completing exam style question in preparation for KS4.          Next the students will focus on fat – extending prior knowledge by exploring polyunsaturated and monounsaturated fats as well as evaluating the use of trans fats. Again, the students will demonstrate their knowledge by completing practice exam questions evaluating the role of fat in the diet.          Students will move on from nutrition at this point and begin a new aspect of food studies and focus on food science. This section of the project is supported by baking practical's which demonstrate the food science they have studied in the previous theory lesson.</p>	<p>Year 9 studies in Graphics sees the students adopt a more independent approach to their work. This allows for more creativity and freedom to use the various skills acquired throughout KS3 so far. Students will also have access to the same support and guidance that they have had in the previous years, however they are encouraged to use this support to produce their own work.          The students will begin by completing their own contextual research (support and guidance is there if needed) the main graphic art work They will study their work and how they produce their final pieces.          They will then use this research and analysis of the art work to produce a range of techniques and collaged art.          Students will practice practical techniques which allows them to be creative and are also a good mindfulness activity. They will then be encouraged to utilise the techniques they have created onto their previous collage – further adding to their artist influence and design development.          They will be reminded of skills they have used in photoshop and will add to this technique with image manipulation skills and produce a range of designs that reflect the art work they have been looking at. This then leads to a final product.          It is important that this project builds to be more self-led, this is important for their studies at KS4 in graphics. This project mimics the design process of KS4 thus preparing them for their studies.</p>	<p>Year 9 studies are built on knowledge and techniques gained throughout KS3.          Students will begin as always with activities focussed on workshop and tool safety which underpins the practical aspect of the subject along with recalling routines and respect for the room and equipment.          Students then progress through the design process beginning with the design brief and building a detailed specification outlining all of the design and manufacture considerations that should take place.          Students will then undertake guided research into the engineering industry – focussing on engineering disciplines and sectors with a focus on careers and qualifications.          Students will then use CAD to draw up designs for their desk lamp leading to CAM via the laser cutter to produce decorative acrylic for their lamp.          Practical lessons follow this whilst the students manufacture their lamp base using specialist tools and equipment – focus on accuracy and professional finishes.          Students will expand their manufacturing skills by exploring electronic products – building a circuit and soldering. Testing their circuit to see if it works and fits within their base.          All products will be tested and reflected on via an evaluation.          Students will also study technical drawing and produce an isometric drawing of their finished game.          CAD will be developed further by use of Sketch Up to produce a model of their final product.</p>

	<p>Students will begin by studying the role of gluten in flour and its function in baked products. This accumulates with a practical food science investigation of extracting gluten from different types of flour in order to assess the most appropriate one for bread.</p> <p>Next the students will study the role of each ingredient in cakes. Leading to another investigation where groups will leave out key ingredients and hypothesise the outcomes by applying their knowledge of the functions the ingredients create.</p> <p>Finally, students will move on to the food provenance aspect of their project. This time, they will study environmental implications of the food industry. Specifically focussing on food and plastic waste. They will then be able to suggest viable ways to reduce this.</p> <p><b>Practical outcomes.</b></p> <p>Practical outcomes in Year 9 will support theory lessons, demonstrating key concepts such as the function of the ingredients they are using and the food scientific reactions that are taking place in their dishes. and allowing the students to evaluate nutritional values of the dishes that they are creating.</p> <p>The main aim of the practical aspect of Year 9 however is to begin to encourage higher skills from the recipes that the students are producing. Recipes that use higher levels of skill such as pastry making, enriched bread doughs, manipulation of raw meat, use of high-risk ingredients such as eggs. Dishes with various components will also be practiced to allow knowledge to build on how to dovetail recipes which is an essential skill for controlled assessment at KS4.</p>		
<p><b>Assessment Opportunities:</b></p>	<p>Every lesson has:</p> <ul style="list-style-type: none"> <li>- A recall starter</li> <li>- Self-assessment opportunities (set against ARE's) these are visible to the students and act as success criteria.</li> <li>- Formative assessment from teachers (set against ARE's)</li> <li>- Food and nutrition practical work is reflective with mark scheme that mirrors KS4 techniques and skills.</li> </ul> <p>End of Unit Assessments</p> <ul style="list-style-type: none"> <li>- Each subject has both a theoretical assessment (teacher assessed) based on learning of each term</li> <li>- Each subject has a practical assessment based on either the final product outcome (MT/GC) or a targeted practical (FN)</li> </ul>		
<p><b>Learning at Home</b></p>	<p>Homework will be set and teacher assessed once per topic (minimum).</p>		

<b>Key Vocabulary</b>	High Biological Value Low Biological Value Saccharides Saturated Unsaturated Sustainability	Artist research, collage, stamp printing, water colour, mark making, design development, formal elements.	
<b>Spiritual, Moral, Social and Cultural concepts covered</b>	The Design Technology curriculum provides students with the opportunity to learn about and discuss current issues in the design and manufacturing industry as well as food production. More specifically, concepts covered are: Spiritual – Food and religions, analysing artists/designers work Mindfulness – practical techniques Moral - Ethics in food provenance, recycling materials, sustainability. Social – impact of food choice and influences. Social influences into design. Examining social factors of products and why they are successful. Cultural – farming in different countries. Use of materials in other cultures. Designers and artists cultural links.		
<b>Links to careers and the world of work</b>	Strong links to careers in each subject – discussions on food industry careers beyond the 'chef role'. Links with engineering industry – investigating different types of engineering and their roles. Teaching professional skills and techniques.		