

## Year 9 Design and Technology

During KS3 design technology, students experience a range of "design and make" activities using both resistant materials such as wood, metal and plastic, and also compliant materials such as food, textiles and card. All technology projects involve analysing problems and producing design solutions. These could be either models or real products. Students use computers, graphic and CAD/CAM software to enhance their design work and manufacture high quality products. Students will pick one discipline from Food, Textiles and ProductDesign/Engineering.

### Methods of deepening and securing knowledge:

<b>Retrieval practice</b>	Theory and practical sessions are used as opportunities to revisit prior learning. Before students embark on any new project, they are reminded of the links to the key theory covered in the course. Students will frequently revisit theory and skills they have used in previous tasks, building knowledge through questioning and further application of tasks. The practical work itself allows students to apply their prior learning in real-life contexts, which helps to secure students' understanding.
<b>Elaboration</b>	Through exciting new projects students are able to elaborate on new making methods and techniques to extend skills further.
<b>Concrete examples</b>	Demonstrations are used to consolidate understanding of processes and techniques.
<b>Knowledge organisers</b>	Knowledge organisers are used to inform students of the skills and techniques used throughout the project and develop research skills needed in the tasks.

	Autumn term 1/2 Food	Autumn term 1/2 Textiles	Autumn term 1/2 Product Design/Engineering
<b>Topic(s)</b>	<p><b>Food Hygiene &amp; Nutrition/Food Science</b></p> <p>This unit will give an Introduction to Food Hygiene and Safety, Nutrition and diet, Exploring how age, health, lifestyle, morals, ethics and religion may affect our choice of food and diet. Students will then apply this knowledge to design and make a savoury dish for an identified consumer group.</p>	<p><b>Textiles -</b></p> <p>Students will be using paper/card and fabric to learn about how they can be manipulated and the strengths and weaknesses of each of the different properties of fabric and paper. Students begin to create a folder of samples, using the fabric manipulated as a start. This folder will be added to throughout the year, culminating in a detailed file of samples that can be referred back to in GCSE.</p>	<p><b>Product Design - Clock Project</b></p> <p>Students will design and make a clock using a number of different designing and manufacturing techniques. Students will also analyse a range of clocks already on the market and famous design movements and use this research to inform their design. Students will develop an appropriate clock</p>

	<p>Content will include:</p> <ul style="list-style-type: none"> <li>• 4 Cs and application to practical sessions</li> <li>• Personal Hygiene and safe temperatures</li> <li>• Nutrient sources and function</li> <li>• Special diets – life stages</li> <li>• Special diets – Medical</li> <li>• Special diets – Religious and ethical</li> <li>• Food science – reduction, gelatinisation, oxidation. gluten</li> <li>• Build on Provenance – seasonal and local foods/food miles.</li> </ul>	<ul style="list-style-type: none"> <li>• Fabric manipulation</li> <li>• Fibre construction</li> <li>• Production method</li> <li>• How to analyse a Design Brief</li> <li>• How to complete a Product Analysis</li> <li>• How to produce a Specification</li> <li>• How to develop Design Ideas</li> <li>• How to use CAD &amp; CAM</li> <li>• Quality control</li> </ul>	<p>design using development techniques which include model making and CAD in order to create their final design.</p> <ul style="list-style-type: none"> <li>• Polymer materials</li> <li>• The use of CAD CAM CNC in industry</li> <li>• Ready-made components/ fixings</li> <li>• Adhesives</li> <li>• Quality control</li> <li>• Manufacturing methods</li> <li>• How to create a Design Brief</li> <li>• How to complete a Product Analysis</li> <li>• How to produce a Specification</li> <li>• How to develop Design Ideas</li> <li>• How to use CAD CAM CNC</li> </ul>
Assessment	Assessed against relevant elements in the individual student tracking sheets - designing, making, evaluation, technical knowledge and cooking and nutrition across B to P criteria. Allows for some overlap to allow progression. GCSE assessment comparison as well as finalisation of Key Stage 3 assessment levels supplemented by end of year assessment test.	Assessed against relevant elements in the individual student tracking sheets - designing, making, evaluation, technical knowledge and cooking and nutrition across B to P criteria. Allows for some overlap to allow progression. GCSE assessment comparison as well as finalisation of Key Stage 3 assessment levels supplemented by end of year assessment test.	Assessed against relevant elements in the individual student tracking sheets -research designing, making and evaluation across B to P criteria. Allows for some overlap to allow progression. GCSE assessment comparison as well as finalisation of Key Stage 3 assessment levels supplemented by end of year assessment test.
CEIAG ( <i>Careers that are linked to that topic</i> )	Environmental Health, Quality control food industry, Nutritionist, Dietician	Looking at how CAD/CAM works in industry and the jobs it creates and removes.	Jobs in Product Design.

	Spring term 1/2 Food	Spring term 1/2 Textiles	Spring term 1/2 Engineering
Topic(s)	<p><b>Mini GCSE Design &amp; Make Street Food</b></p> <p>Students will use knowledge and experiences of design and technology 'Food' to write a design brief for a Food product which they will then design and make for a 'Street Food /</p>	<p><b>Mini GCSE Design &amp; Make- Worry doll</b></p> <p>Students are tasked to design and make a 'Make you own' worry doll kit, with key focus on design and construction of the cardboard box , and the production of a textiles kit. Students will be using</p>	<p><b>Coat Hook - Small engineering tasks</b></p> <p>Students will make a coat hook from sheet aluminium and pine from an engineering drawing. Students will learn how to work with sheet metal, including marking, measuring</p>

	<p>Food Festival' to be sold from a van or pop-up stall aimed at a chosen target market (other people that the product is for). The product should be desirable and if possible unique to allow them to explore building up a small food business.</p> <p>This will develop research skills and knowledge of the food industry and how we manufacture and package food.</p>	<p>GCSE inspiration from designers and art movements.</p> <ul style="list-style-type: none"> <li>● Net design and construction</li> <li>● Correct and safe use of laser cutter</li> <li>● How to analyse a Design Brief</li> <li>● How to complete a Product Analysis</li> <li>● How to produce a Specification</li> <li>● How to develop Design Ideas</li> <li>● How to use CAD &amp; CAM</li> <li>● Working with a real life client</li> <li>● Pattern drafting</li> <li>● Pattern cutting</li> <li>● Flow charts</li> <li>● Production methods</li> <li>● Quality control</li> </ul>	<p>techniques to cutting, shaping and folding.</p> <ul style="list-style-type: none"> <li>● Health and safety/ Risks/ Hazards</li> <li>● Engineering/resistant materials tools and equipment</li> <li>● Sources and origins of metal/wood materials</li> <li>● Properties of hardwoods and softwoods</li> <li>● Properties of ferrous and non ferrous metals</li> <li>● Surface finishing processes</li> <li>● Marking and measuring</li> <li>● Use of templates</li> <li>● Use of tools equipment and processes-cutting, shaping and manipulation</li> <li>● Quality control</li> <li>● Finishing techniques</li> <li>● Production planning</li> <li>● Evaluating work</li> </ul>
Assessment	<p>Assessed against relevant elements in the individual student tracking sheets - designing, making, evaluation, technical knowledge and cooking and nutrition across B to P criteria. Allows for some overlap to allow progression. GCSE assessment comparison as well as finalisation of Key Stage 3 assessment levels supplemented by end of year assessment test.</p>	<p>Assessed against relevant elements in the individual student tracking sheets - designing, making, evaluation, technical knowledge and cooking and nutrition across B to P criteria. Allows for some overlap to allow progression. GCSE assessment comparison as well as finalisation of Key Stage 3 assessment levels supplemented by end of year assessment test.</p>	<p>Assessed against relevant elements in the individual student tracking sheets -research designing, making and evaluation across B to P criteria. Allows for some overlap to allow progression. GCSE assessment comparison as well as finalisation of Key Stage 3 assessment levels supplemented by end of year assessment test.</p>
CEIAG ( <i>Careers that are linked to that topic</i> )	Entrepreneur - Food industry	How designers and manufacturers work to a client and the effects of this.	Engineering jobs/apprenticeships/Level 2/3 courses in the North East.

	Summer term 1/2 Food	Summer term 1/2 Textiles	Summer term 1/2 Product Design/Engineering
Topic(s)	<p><b>Mini GCSE Design &amp; Make</b></p> <p>Students will design and make a range of four dishes to raise student awareness of an identified</p>	<p><b>Mini GCSE Design &amp; Make - 1 meter of fabric challenge</b></p>	<p><b>Mini GCSE Design &amp; Make - Lamp</b></p> <p>Students will design and make a lamp using a</p>

	<p>'cuisine' of their choice for 'multicultural' week at a local primary school.</p> <p>Content will include:</p> <ul style="list-style-type: none"> <li>• Cuisines – own and other cultures</li> <li>• Build on Health &amp; Safety- room, self</li> <li>• Build on Knife skills/oven safe</li> <li>• use of staples and sauces</li> <li>• Build on basic nutrition</li> <li>• Build on food choice</li> <li>• Progressive evaluations</li> <li>• Design and make to specified brief</li> <li>• Washing up/room use/timings.</li> </ul>	<p>Students will be challenged to find a real life client, they must speak with and question the client to find an area they could create a product that will enhance the clients person, home or work place. Students will create an NEA style folder to help them understand the expectations of GCSE product design. Students will learn to work to client specification.</p> <ul style="list-style-type: none"> <li>• Health and safety/ Risks/ Hazards</li> <li>• Fibre construction</li> <li>• How to create a Design Brief</li> <li>• How to complete a Product Analysis</li> <li>• Working with a real life client</li> <li>• How to produce a Specification</li> <li>• Design development from client specification and research</li> <li>• How to use CAD &amp; CAM</li> <li>• Quality control</li> </ul>	<p>number of different designing and manufacturing techniques. Students will also analyse a range of lamps already on the market and use this research to inform their design. Students will develop an appropriate lamp design using development techniques which include model making and CAD in order to create their final design. Students will look in detail what makes a successful GCSE Design Technology/Engineering portfolio..</p> <ul style="list-style-type: none"> <li>• The use of CAD CAM CNC in industry</li> <li>• Ready-made components/ fixings</li> <li>• Adhesives</li> <li>• Quality control</li> <li>• Soldering Equipment and uses</li> <li>• Resistors and resistor values</li> <li>• Health and Safety when soldering</li> <li>• Manufacturing methods</li> <li>• How to create a Design Brief</li> <li>• How to complete a Product Analysis</li> <li>• How to produce a Specification</li> <li>• How to develop Design Ideas</li> <li>• How to use CAD CAM CNC</li> <li>• How to evaluate throughout a design/engineering portfolio</li> <li>• Understanding what a GCSE Design Technology and Engineering level 5 - 9 portfolio looks like.</li> </ul>
<p>Assessment</p>	<p>Assessed against relevant elements in the individual student tracking sheets - designing, making, evaluation, technical knowledge and cooking and nutrition across B to P criteria. Allows for some overlap to allow progression. GCSE assessment comparison as well as finalisation of Key Stage 3 assessment levels supplemented by end of year assessment test.</p>	<p>Assessed against relevant elements in the individual student tracking sheets - designing, making, evaluation, technical knowledge and cooking and nutrition across B to P criteria. Allows for some overlap to allow progression. GCSE assessment comparison as well as finalisation of Key Stage 3 assessment levels supplemented by end of year assessment test.</p>	<p>Assessed against relevant elements in the individual student tracking sheets -research designing, making and evaluation across B to P criteria. Allows for some overlap to allow progression. GCSE assessment comparison as well as finalisation of Key Stage 3 assessment levels supplemented by end of year assessment test.</p>

CEIAG ( <i>Careers that are linked to that topic</i> )	Product developer, catering	How designers and manufacturers work to a client and the effects of this.	How designers and manufacturers work to a client and the effects of this.
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Independent Study

Students in Year 9 have access to the course materials through Google Classroom. Independent study is accessible through this platform and is given either each week or once a fortnight. Independent study is generally used to secure prior learning through practise to develop confidence and memory.