



# Year 9 Technology

Curriculum Leader: Mr Steve Finch

Our vision is to raise the achievement of all pupils and give them the opportunity to be creative and ambitious while enjoying and learning new skills and knowledge.

## Topics to be covered in Year 9

Students will rotate throughout the Autumn and Spring terms , completing modules on Mechanisms, Food Preparation and Nutrition, Design Technology and Textiles. In the Summer term students will select one area to study in preparation for GCSE.

### Art & Design Textiles

	Term 1	Term 2	Term 3
<b>Topics to be covered</b>	<b>Popular Culture</b> <ul style="list-style-type: none"> <li>Initial research/Artist study</li> <li>Exploration of techniques</li> <li>Design work</li> <li>Development and refinement of final design</li> <li>Final piece inclusive of techniques learnt</li> </ul> Recording and evaluation of work.		Students will carry out a 2nd practical task based on the theme of popular culture.
<b>Key vocabulary</b>	<ul style="list-style-type: none"> <li>Applique</li> <li>Embroidery</li> <li>properties</li> <li>Synthetic fibres</li> <li>Natural fibres</li> <li>Embroidery</li> </ul>	<ul style="list-style-type: none"> <li>Regenerated fibres</li> <li>Woven fabrics</li> <li>Knitted fabrics</li> <li>Illustration</li> <li>Decorative stitches</li> <li>Vilene</li> </ul>	
<b>Skills to be developed</b>	<ul style="list-style-type: none"> <li><b>AO2:</b> Refine investigations by exploring ideas, selecting and experimenting with appropriate media, materials, techniques and processes (a variety of painting, sketching, embroidery, applique and other creative textiles techniques).</li> <li><b>AO3:</b> Record ideas, observations and insights relevant to intentions as work progresses – design work needs to be related to the given theme and completed research, showing a clear process that links from beginning to end.</li> <li><b>AO4:</b> Present a personal and meaningful response (final piece: door stop ,relating to the theme). that realises intentions and demonstrates understanding of visual language.</li> </ul> <b>More specific skills:</b> <ul style="list-style-type: none"> <li>Detailed artist’s investigation</li> <li>Clear responses to artist – creating and experimenting with a range of textile’s techniques demonstrated by the teacher.</li> <li>Development and refinement of specific chosen textile’s techniques.</li> <li>Product design illustration.</li> <li>Final piece needs to be a combination of research and design ideas.</li> <li>Analytical and evaluative skills used in recording of work.</li> </ul>		
<b>Opportunities for revisiting previous learning</b>	Y8: Application of Vilene, Applique, Embroidery, design ideas		
<b>When will formal assessment of progress take place?</b>	Formative assessment of design work mid rotation. Summative assessment at end of each rotation.	Option rotation: Summer term Formative assessment week 4/5 of summer term. Summative assessment at end of project .	

## Design & Technology

	Term 1	Term 2	Term 3
	<b>Architectural project</b>		<b>Box in a Box</b>
<b>Topics to be covered</b>	<ul style="list-style-type: none"> <li>• Ecological and social footprint</li> <li>• The work of others</li> <li>• Design strategies</li> <li>• Communication of design ideas (Orthographic and isometric)</li> <li>• The work of an architect</li> <li>• Designing and understanding principles of floorplans</li> <li>• To construct a 3D model of proposed floorplan</li> <li>• Draw/sketch 3D view of chosen room</li> <li>• Understanding scale ratio and anthropometrics</li> <li>• Construct 3D model</li> <li>• Extension activity: create an information portfolio for the purpose of selling the house on the market</li> </ul>		<p>Option Block - students opt for one area of technology to continue for the last term of KS3.</p> <p>THEME: Box in Box—GCSE trial making skills.</p> <ul style="list-style-type: none"> <li>• Wood joints (finger and dovetail).</li> <li>• Accuracy in marking out.</li> <li>• Safe and accurate use of hand tools including chisels.</li> <li>• Use of a router for creating a rebate.</li> <li>• Fixtures and fittings (hinges and clasps).</li> <li>• Surface Treatments and Finishes.</li> <li>• Computer aided design (CAD)</li> <li>• computer aided manufacture (CAM).</li> </ul>
<b>Key vocabulary</b>	<ul style="list-style-type: none"> <li>• Sustainability</li> <li>• Ecological and social footprint</li> <li>• Aesthetics</li> <li>• fabric interfacing</li> <li>• Primary sources of materials</li> <li>• Deforestation</li> <li>• Perspective drawing</li> <li>• Isometric drawing</li> <li>• Orthographic drawing</li> </ul>		<ul style="list-style-type: none"> <li>• Computer aided design (CAD)</li> <li>• Computer aided manufacture (CAM)</li> <li>• Tolerance</li> <li>• Router</li> </ul>
<b>Skills to be developed</b>	<ul style="list-style-type: none"> <li>• Understanding of the materials categories and properties and how that are used in the selection for the manufacture of specific products.</li> <li>• Understanding of the ecological and social footprint left by designers.</li> <li>• Using modelling to generate understanding for the design of a architectural house.</li> <li>• Generate imaginative and creative design ideas using a range of different design strategies</li> <li>• Communicate ideas using freehand and formal drawing techniques such as orthographic.</li> <li>• Application of ergonomic and anthropometric data in the design of a building.</li> </ul>		<ul style="list-style-type: none"> <li>• Knowledge and practical application of how materials can be reinforced, stiffened or made more flexible</li> <li>• Apply and understand the principle of tolerance when designing, manufacturing and testing a product.</li> <li>• Manage the sourcing and deployment of materials during the manufacture of a product.</li> <li>• Practical and theoretical knowledge of how to shape and form Wood using cutting, abrasion and addition.</li> <li>• Knowledge and practical application of production aids.</li> <li>• Knowledge and practical understanding of different finishing techniques for woods, metals and plastics</li> <li>• (Wood, plastic and metal)</li> </ul>
<b>Opportunities for revisiting previous learning</b>	<ul style="list-style-type: none"> <li>• Marking out and use of modelling tools.</li> <li>• Drawing techniques (Orthographic and Isometric) including free-hand drawing.</li> </ul>		<ul style="list-style-type: none"> <li>• Marking out and use of woodworking tools.</li> <li>• Categories of wood and plastic materials.</li> <li>• Working properties of wood.</li> </ul>
<b>When will formal assessment of progress take place?</b>	<ol style="list-style-type: none"> <li>1. Formal project assessment at the end of the module of work.</li> <li>2. Summative test at the end of the module.</li> </ol>		

## Food Preparation and Nutrition

	Term 1	Term 2	Term 3
<p><b>Topics to be covered</b></p> <p>Students will all do a rotation of food in either term one or two. They can then choose to opt for food in term three where they will start learning and preparing for the GCSE food preparation and nutrition course.</p>	<p><b>Rotation of DT subjects:</b></p> <ul style="list-style-type: none"> <li>Recap from year 8: Health, Hygiene and Safety</li> <li>Knife skills</li> <li>Seasonality</li> <li>Food science</li> <li>Fats and oils</li> <li>Food Provenance</li> <li>Raising agents and chemical reactions in food.</li> <li>Nutrition and Healthy Eating</li> <li>Carbohydrates (pastry)</li> </ul> <p><b>*Practical skills – During the food rotation; Students will carry out a practical task every other lesson. There will be a total of 7 practical tasks.</b></p>	<p><b>Rotation of DT subjects:</b></p> <ul style="list-style-type: none"> <li>Recap from year 8: Health, Hygiene and Safety</li> <li>Knife skills</li> <li>Seasonality</li> <li>Food science</li> <li>Fats and oils</li> <li>Food Provenance</li> <li>Raising agents and chemical reactions in food.</li> <li>Nutrition and Healthy Eating</li> <li>Carbohydrates (pastry)</li> </ul> <p><b>*Practical skills – During the food rotation; Students will carry out a practical task every other lesson. There will be a total of 7 practical tasks.</b></p>	<ul style="list-style-type: none"> <li>More in depth look at the eat well guide (GCSE preparation)</li> <li>More in depth look at Food safety and Hygiene (GCSE preparation)</li> <li>Commodity: Carbohydrates</li> <li>Producing high quality finished practical work</li> <li>Food Science</li> </ul>
<p><b>Key vocabulary</b></p> <p>A mix of the key words listed will be covered over the three terms.</p>	<ul style="list-style-type: none"> <li>Healthy eating</li> <li>Balanced diet</li> <li>Nutritionally balanced</li> <li>Eat well guide</li> <li>Technical skills</li> <li>Carbohydrates</li> <li>Shortening</li> <li>Gluten</li> <li>Gelatinisation</li> <li>Preserving</li> <li>Seasonality</li> </ul>	<ul style="list-style-type: none"> <li>Molecules</li> <li>Saturated/unsaturated</li> <li>Hypothesis</li> <li>Raising agent</li> <li>Sensory analysis</li> <li>Fat soluble</li> <li>Water soluble</li> <li>Dextrinization</li> <li>Denaturation</li> <li>Coagulation</li> <li>Classification</li> </ul>	<ul style="list-style-type: none"> <li>Nutritionally balanced</li> <li>Food provenance</li> <li>Enzymic browning</li> <li>Oxidation</li> <li>Primary and secondary processing</li> <li>wheat</li> <li>Protein</li> <li>Food provenance</li> <li>Vitamin</li> <li>Minerals</li> </ul>
<p><b>Skills to be developed</b></p>	<ul style="list-style-type: none"> <li>Appropriate use equipment in the food rooms</li> <li>Ensure food is safe to eat – food poisoning, cross-contamination.</li> <li>Development of practical skills including knife skills.</li> <li>Knowledge of food science and active properties of ingredients.</li> <li>Knowledge and understanding of nutrients and diet.</li> </ul>	<ul style="list-style-type: none"> <li>Appropriate use equipment in the food rooms.</li> <li>Ensure food is safe to eat – food poisoning, cross-contamination.</li> <li>Development of practical skills including knife skills.</li> <li>Knowledge of food science and active properties of ingredients.</li> <li>Knowledge and understanding of nutrients and diet.</li> </ul>	<ul style="list-style-type: none"> <li>Nutrition and the body (eat well guidelines)</li> <li>Develop a knowledge and understanding of nutrients, their function in the body, main sources, RDI, Consequences of too much or too little and which ones complement each other</li> <li>Food commodities: carbohydrates/ proteins.</li> <li>Knowledge and understanding of their function in our diet</li> <li>Where they come from/are grown/ caught or reared/stored/cooked.</li> </ul>
<p><b>Opportunities for revisiting previous learning</b></p>	<ul style="list-style-type: none"> <li>Build on the introduction in KS3</li> </ul>	<ul style="list-style-type: none"> <li>Nutrition and healthy eating was taught to a basic level during year 7 and 8. Students may also have visited this in Science</li> </ul>	<ul style="list-style-type: none"> <li>Fruit and vegetables were taught in terms of healthy eating and food provenance at year 7 and 8.</li> <li>Some basic cooking skills can be used to develop further.</li> </ul>
<p><b>When will formal assessment of progress take place?</b></p>	<ul style="list-style-type: none"> <li>End of topics tests</li> <li>Summative assessments</li> <li>Practical assessment at the end of each topic</li> </ul>	<ul style="list-style-type: none"> <li>End of topics tests</li> <li>Summative assessments</li> <li>Practical assessment at the end of each topic</li> </ul>	<ul style="list-style-type: none"> <li>End of topics tests</li> <li>Summative assessments</li> <li>Practical assessment at the end of each topic</li> <li>EOY exam</li> </ul>

## Mechanisms

	Term 1 and Term 2	Term 3
<b>Topics to be covered</b>	<ul style="list-style-type: none"> <li>Types of motion and 3 classes of lever. Identifying lever types found in common products.</li> <li>Modelling of basic lever and linkage mechanisms – identification of how force and movement is influenced by the position of the pivot point.</li> <li>Modelling more advanced levers and linkage mechanisms.</li> <li>Introduction to the basics of CAMs (key concepts) + modelling of CAM systems.</li> <li>Cranks.</li> <li>Pullies and belts theory and experimentation. Velocity ratios and speed calculations.</li> <li>Moments theory with calculations including extension activity calculating Non-symmetrical loads on beams.</li> <li>How forces on the ends of a beam with two non-symmetrical loads can be calculated. Extension activity: designing a mechanical solution to problems.</li> </ul>	<p>Option Block - students opt for one area of technology to continue for the last term of KS3. THEME: Box in Box—GCSE trial making skills.</p> <p>Wood joints (finger and dovetail). Accuracy in marking out. Safe and accurate use of hand tools including chisels. Use of a router for creating a rebate. Fixtures and fittings (hinges and clasps). Surface Treatments and Finishes. Computer aided design (CAD). Computer aided manufacture (CAM).</p>
<b>Key vocabulary</b>	<ul style="list-style-type: none"> <li>Lever</li> <li>Pivot</li> <li>Linkage</li> <li>Mechanism</li> <li>Force</li> <li>Linear motion</li> <li>Reciprocating motion</li> <li>Rotary motion</li> <li>Oscillating motion</li> </ul>	<ul style="list-style-type: none"> <li>Crank and slider</li> <li>Cam</li> <li>Moment</li> <li>Velocity ratio</li> <li>Mechanical advantage</li> <li>Efficiency</li> <li>Eccentrics</li> <li>Displacement</li> </ul>
<b>Skills to be developed</b>	<ul style="list-style-type: none"> <li>Theory and recognition of the different types of motion (Rotary, Linear, Reciprocating, Oscillating) used in everyday objects.</li> <li>Theory and recognition of the different types of lever (1st, 2nd and 3rd class) and how the load and effort interact with the pivot.</li> <li>Understanding of how levers and linkages can be made to produce different direction and force in a mechanism.</li> <li>Understand through experiments, how different shaped Cams can be used to produce different forms of reciprocating motion.</li> <li>Understand through experiments how cranks can be used to produce oscillating and reciprocating motion.</li> <li>Study and recognise the different forms of mechanism that are used in everyday machines.</li> <li>Conversion of motion in a complex mechanism.</li> <li>Application of mechanisms theory to produce a simple animated picture</li> </ul> <p>Extension activities:</p> <ul style="list-style-type: none"> <li>Moments theory and calculations</li> <li>Velocity ratios of pullies</li> <li>Mechanical advantage calculations</li> </ul>	
<b>Opportunities for revisiting previous learning</b>	<ul style="list-style-type: none"> <li>Not applicable as this is the first time students will have learned this are of the curriculum.</li> <li>Theory of levers and moments will be revisited in Y10 Science.</li> </ul>	
<b>When will formal assessment of progress take place?</b>	1. Summative test at the end of the module.	

## Year 9 Useful Resources

### Website Links

[www.bitesize.co.uk](http://www.bitesize.co.uk)

<https://www.aqa.org.uk/subjects/art-and-design/gcse/art-and-design-8201-8206/subject-content/textile-design>

[https://www.eduqas.co.uk/qualifications/food-preparation-and-nutrition-gcse/#tab\\_overview](https://www.eduqas.co.uk/qualifications/food-preparation-and-nutrition-gcse/#tab_overview)

<https://www.foodafactoflife.org.uk/>

[www.bbc.co.uk/bitesize/subjects/zdn9jhy](http://www.bbc.co.uk/bitesize/subjects/zdn9jhy)

### Marking, Assessment and Feedback

Over the course of an academic year students will complete a number of formal assessments, these will be used to assess where students are in their learning journey.

Information from these assessments could be used when making decisions regarding setting of students, reporting progress home and predicting outcome. Regular verbal feedback is used in lessons to inform students of their progress and areas they can improve. Teachers will continue to provide planned written feedback on selected pieces of work.

### Homework

Homework will be set using the online platform Go 4 Schools.

Homework tasks are designed to prepare students for future learning or consolidate work completed in the classroom. It will be clear what should be handed in, when it should be handed in and how it should be handed in.

### Contact Information:

If you would like to contact the Design and Technology Department please email: [design@gilberd.com](mailto:design@gilberd.com).

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