

## Design & Technology Curriculum Map 2022-2023

<b>Year 7</b> <small>(on rotation)</small>	<b>Timbers</b>		<b>Food &amp; Nutrition</b>		<b>Promotion: 3D printing and packaging</b>					
	Working to a design brief and specification		Health and safety: bacteria, the 4 C's and the danger zone		Sustainability and the 6 R's					
	Technical drawing: isometric		Conducting practicals in the kitchen, roles and responsibilities		Plastics v bioplastics: lifecycle analysis					
	Technical drawing: one point perspective		Practical: Pasta Salad: knife skills, using the hob, organoleptic needs		Branding: purpose and forms					
	Physical, working and characteristic properties of timbers		The Eatwell Guide: recommendations and planning for a healthy diet		Product analysis					
	Timbers: origins, forms, properties and uses		Practical: Pizza Pinwheels: accurate weighing and measuring, making, kneading and rolling dough, shaping, accurate portioning		Writing a design specification					
	Working from a third angle orthographic drawing		Macronutrients: carbohydrates		Creating design ideas					
	Templates, wastage and tessellation		Macronutrients: fat		Additive v subtractive manufacture					
	Measuring and marking out (steel rule and tri square)		Practical: Chicken nuggets & wedges: preparation of high risk food, accurate knife skills, enrobing, baking		Using on shape to create a product for 3D printing					
	Working safely in the workshop (rules, PPE etc)		Macronutrients: protein		Papers and boards: origins, forms, types, properties and uses					
	Cutting, drilling and shaping timber (tenon saw, coping saw, pillar drill, chisel etc)		Vegan and vegetarianism		Blister packaging					
	Finishing and assembly techniques: filing, bandsaw, glass paper, painting, gluing		Practical: Chicken curry: adapting recipe for flavour, experimenting with spices, preparation of high risk foods, accurate knife skills, reduction of a sauce, simmering		Using Serif Draw to create sized artwork					
	Testing and evaluating an outcome		Macronutrients: protein		Advantages and disadvantages of CAD / CAM					
			Vegan and vegetarianism		Product labelling					
		Practical: Spaghetti Bolognese: browning of mince, accurate knife skills, flavouring, simmering, reduction of sauce, using the hob to boil		Vacuum forming						
<b>Year 8</b> <small>(on rotation)</small>	<b>Textiles: Sublimation, stencil and stitch</b>		<b>Polymers &amp; Programming</b>		<b>Motion &amp; Mechanisms</b>					
	Working to a design brief		CAD & CAM: what are they? advantages and disadvantages, uses and roles in industry		Types of motion: linear, rotary, reciprocating, oscillating					
	Product analysis- pattern placement and use of components		What is a laser cutter - how does it work? How are they used in industry?		What is a mechanism and what are they used for?					
	Writing a design specification		Creating a finger joint net using Serif Draw		Categories of levers, their purpose and examples					
	Pattern placement		Using Serif Draw tools to create an effective design		Linkages: their purpose, types and commercial uses					
	Using CAD to create a surface pattern design and stencil		Properties associated with polymers		Cams and followers: their purpose, types and commercial uses					
	Sublimation printing- what is it and how is it used commercially?		Thermoforming and thermosetting polymers - sources, properties and uses		The iterative design process: using testing to improve an outcome					
	Physical, working and characteristic properties associated with fibres		What is a circuit and how does one work?		Models v prototypes					
	Fibres: lengths, origins, types, properties and uses		Inputs, processes and outputs		Engineering an outcome as a team					
	Using CAD to create a surface pattern design and stencil		Circuit component symbols		Final testing and prize giving!					
	Using the heat press to transfer an image		Building a circuit that responds to environmental inputs							
	Applying a stencilled design		Programming a microcontroller							
	Embellishing a product with embroidery		Technical drawing: two point perspective							
	Safely using a sewing machine to create a commercially viable product									
Testing and evaluating an outcome										
<b>Year 9</b> <small>(on rotation)</small>	<b>Timbers &amp; CAD *RC</b>		<b>Food &amp; Nutrition *RC</b>		<b>Sustainable Architecture</b>					
	Researching a theme in response to a brief		Food borne illness		What is our 'carbon footprint'?					
	Writing a design specification		Common types of food poisoning		How sustainable is the Shuttleworth College building?					
	Producing a third angle orthographic drawing		Macronutrients recap		Sustainability: Renewable v non-renewable energy sources					
	Applying British Standard conventions for drawing		Micronutrients: what are they? why do we need them? where do we find them?		Sustainability in architecture: water harvesting, living walls					
	Using CAD to design part of a product incorporating etching, cutting and inserts		Careers: key roles in the Hospitality and Catering industry		Biomimicry and biomorphism					
	Recap: Timber origins, properties and uses		Food production plans		Designing for a purpose					
	Working safely in the workshop (rules, PPE etc)		Practical: Cheese and onion pie: Using rubbing in method to create a short crust pastry, using microwave as a heat transfer to soften onions without using fat. Shaping and rolling		Roles and responsibilities with architecture and urban design					
	Measuring and cutting within tolerances		Practical: Stuffed Chicken Breast (Advanced knife skills: butchering and butterflying chicken breast, create flavourful filling that will complement the chicken. Coating the chicken to create a mix of textures). Hassleback baby potatoes and roasted vegetables.		Construction materials					
	Finishing and assembly techniques: sanding, bandsaw, glass paper, gluing		Practical: Flavoured and shaped bread rolls (bread dough, use of portioning into same sized buns, shaping dough, kneading, even distribution of filling)		Models and prototypes					
	Surface finishes		Practical: Lasagne (gelatinisation of roux sauce, accurate measuring of milk and flour to make a smooth consistency - accurate knife skills and browning of mince meat - layering and baking)		Presenting a concept					
	Adding a component to complete the product		Crumble and custard (using dovetailed food production plan)							
	Testing and evaluating an outcome									
	<b>Year 10 2022-2023 AQA GCSE Design &amp; Technology</b>									
<b>Practical skills</b> <small>(1.5 hours per week)</small>	<b>Wood working skills: Bird Box</b>		<b>Polymer and CAD skills: Phone holder and storage</b>		<b>Portfolio Project: Safe and comfortable home</b>		<b>NEA</b>			
	Measuring and cutting within tolerances		CAD / CAM:		Identifying and investigating design possibilities					
	Wastage		cutting, etching, inserts, operating the laser cutter		Design brief and specification					
	Finger, dowel, dovetail joints		3D printing		Generating ideas					
	Drilling		Line bending		Developing design ideas					
	Components		Adhesives		Realising design idea					
	Surface finishes				Evaluation					
Assembly										
<b>Theory</b> <small>(1 hour per week)</small>	<b>UNIT 1: Core Technical Principles:</b>		<b>UNIT 2: Specialist technical principles:</b>		<b>UNIT 2: Specialist technical principles:</b>		<b>UNIT 3: Core technical principles:</b>			
	Material properties		Sources and origins, ecological and social issues,		Sources and origins, stock forms		Production techniques and systems: FMS, JIT, lean			
	Material categories		Forces, stresses and improving functionality		Ecological and social issues, lifecycle assessment		Production techniques and systems: automation and Enterprise			
	Developments in new materials		Selection of timber materials according to purpose		Selection of polymers according to purpose and Stock forms and sizes & scales of production		People, culture and society			
			Shaping and forming, tools & equipment, production		Shaping and forming, tools & equipment, Commercial processes		Industry (design & organisation of workplace, Planned obsolescence, designing for maintenance, ethics,			
			Commercial processes and quality control							
<b>Year 11 2023-2024 AQA GCSE Design &amp; Technology</b>										
<b>Practical skills</b> <small>(1.5 hours per week)</small>	<b>NEA</b>						<b>Revision &amp; exam strategy</b>	<b>Exam window</b>		
	SECTION A: Review	SECTION B: Design brief & spec	SECTION C: Generating design ideas	SECTION D: Developing design ideas	SECTION E: Realising design ideas	SECTION F: Evaluation				
	<b>UNIT 4: Designing &amp; making principles (interlinked with NEA development)</b>		<b>UNIT 5: Core technical</b>		<b>UNIT 6: Mechanical</b>				<b>UNIT 7: Systems approach to</b>	
	Writing a design brief and specification		Fossil fuels		Types of movement and levers				Circuits, inputs, processes and outputs	
	Design strategies and communicating design ideas: isometric		Nuclear power		Linkages				Creating and programming a circuit	
	Communicating design ideas: perspective		Renewable energy		Rotary systems					
	Communicating design ideas: exploded		Energy storage systems							
Communicating design ideas: third angle orthographic										
Environmental, social and economic challenge										
Prototype development										
Selecting materials and components										
The work of others										
<b>Year 11 2022-2023 AQA GCSE Design &amp; Technology</b>										
<b>Practical skills</b> <small>(1.5 hours per week)</small>	<b>NEA</b>						<b>Revision &amp; exam strategy</b>	<b>Exam window</b>		
	SECTION A: Review	SECTION B: Design brief & spec	SECTION C: Generating design ideas	SECTION D: Developing design ideas	SECTION E: Realising design ideas	SECTION F: Evaluation				
	<b>UNIT 6: Designing &amp; making principles (interlinked with NEA)</b>		<b>UNIT 7: Common specialist principles</b>							
	Writing a brief and design and manufacturing specification		Specialist techniques & processes: timbers							
	Design strategies		Specialist techniques & processes: polymers							
	Communicating design ideas: sketching and annotating (inc. enviro/social/economic)		Surface treatments and finishes							
	Communicating design ideas: isometric		Tolerances & material management							
Communicating design ideas: perspective		Forces and stresses and improving functionality								
Communicating design ideas: third angle orthographic		Ecological and social footprint, lifecycle assessment								
The work of others		Scales of production								
		<b>NEA focus and revision</b>								