

Sackville School GCSE Design and Technology Curriculum - Year 10



TERM	WHAT? (Is delivered?)	WHY? (Is this important?)	WHY NOW? (Why is this taught now?)	IMPACT? (What is the impact at the end of this half term?)	ASSESSMENT
Aut 1	<p>Storage box project</p> <p>Storage for your personal possessions, combining modern and traditional manufacturing methods with timber theory. Identifying fixtures and fittings</p>	<p>Learning to research personal items for storage and analysing existing products by identifying what makes a successful product. Understanding the difference between natural and man-made timbers. The practical will allow students to learn how to use hand tools to create joints which they will need to know for the final NEA.</p>	<p>This allows students to learn about producing wood joints and working properties of timbers as the first material focus of the GCSE,</p>	<p>Students will be able to recognise the tools and equipment needed to create accurate wood joints with decorative and finishing techniques, but also to understand the range of timbers and working properties these have. This is a skills and knowledge unit for timbers.</p>	<p>Product analysis</p> <p>Production plan</p> <p>Fixtures and fittings</p> <p>Natural and manmade boards</p> <p>Material properties</p> <p>6Rs</p> <p>Surface treatments</p> <p>Exam questions</p>

Aut 2	<p>Theory 1</p> <p>In order to make effective design choices students will need a breadth of core technical knowledge and understanding that consists of:</p> <ul style="list-style-type: none"> ● new and emerging technologies ● energy generation and storage ● developments in new materials ● systems approach to designing ● mechanical devices ● materials and their working properties. 	<p>This builds upon links to maths and science taught in these subjects. Covers key aspects of the theory section of the AQA exam specification. Enables students to understand how core technical knowledge is embedded and will later feed into the working properties, stock and form of materials.</p>	<p>Breaking the theory into smaller sections early on into the course will ensure students have this knowledge early on and retrieval practice used to support metacognition.</p>	<p>Students will be aware of how funding for companies and new start-ups occur, sources for energy and the impact it will have on the environment. How smart and modern materials work and where they are used.</p>	<p>Google quizzes to check student's understanding and recall.</p>
Spr 1	<p>Pewter casting inspired by Charles Rennie Macintosh</p>	<p>Understanding the work of designers</p> <p>Linking metal theory into practice</p> <p>Recognising the working properties of pewter and finishing techniques.</p> <p>Drawing upon skills developed in Y7 with 2D Design (CAD) to create the design and using (CAM) to cut out the mould</p>	<p>Exposure to a new material area not covered before</p> <p>Allows students to incorporate the work of others through creativity into their design.</p>	<p>Students will be able to select the correct tools and equipment for metalwork.</p> <p>Identify the tools and the role they have.</p> <p>Be able to recognise the work of Charles Rennie Macintosh</p>	<p>Research into Charles Rennie Macintosh</p> <p>Design ideas</p> <p>Evaluation and modifications</p> <p>Metals and alloys</p> <p>Metal-based</p>

					materials Tolerances Maths in DT
Spr 2	<p>Theory 2</p> <p>In addition to the core technical principles, all students should develop an in-depth knowledge and understanding of the following specialist technical principles:</p> <ul style="list-style-type: none"> ● selection of materials or components ● forces and stresses ● ecological and social footprint ● sources and origins ● using and working with materials ● stock forms, types and sizes ● scales of production ● specialist techniques and processes 	<p>Covering new content that builds upon theory 1 and introduces new content not covered before. This content will be related back to the mini-projects that have been completed and the material areas of these.</p>	<p>These topics fit perfectly into gaining an improved knowledge of the core principles and also will support the next mini-project the students will undertake.</p>	<p>Calculation of material costs.</p> <p>Selection and use of materials considering end-of-life disposal.</p> <p>Changing the magnitude and direction of forces.</p> <p>Selecting appropriate materials.</p> <p>Understanding of how to choose appropriate energy sources.</p> <p>Ethical factors and the social footprint of materials used in products.</p> <p>Life cycle assessment and recycling ie the basic principles in carrying out a life cycle assessment of a material.</p>	<p>Google quizzes to check student's understanding and recall.</p>

	<ul style="list-style-type: none"> • surface treatments and finishes 				
Sum 1	CAD / CAM pencil stand	Building upon the skills used in Y7 with 2D design to create a design from a flat form into a 3-dimensional shape without gluing and can only bend. This enables students to have to think from 2D to 3D to hold a single pencil.	This supports students' development of using further 2D design tools to create a drawing. This will support the drawings that will be needed in the NEA in Y11.	CAD skills further developed to draw complex designs and link to cutting out via the laser machine (CAM).	<p>Mind maps</p> <p>Design and final product</p> <p>Understanding CAD/CAM</p> <p>Evaluating and modifying</p> <p>Theory of plastics</p> <p>Theory of composites and modern materials</p> <p>Theory of SMART materials</p> <p>Exam questions</p>
Sum 2	NEA Introduction, research and specification.	50% of the final grade is the Non-Examination Assessment (NEA) To understand the context and investigate all areas to fully understand the needs of the client through detailed research.	This allows students to understand the needs of the client and research understanding that allows the starting point of the NEA that will support the information needed to create designs in the next section.	<p>Students will conduct primary and secondary research.</p> <p>Analysing the research to write a design brief and specification.</p>	Section A - 10 marks and B - 10 marks.

[Links to L4L Curriculum and Gatsby Benchmarks:](#)

[Gatsby Benchmark](#)