Design Technology
Curriculum Information

Year 7	
Learning Outcomes	Students work independently learning how to use workshop equipment safely such as hand saws, pillar drills and belt sanders. They follow written instructions to enable self-sufficient working practices and resilience when working. They develop their research and investigative skills through creating individual designs which are then transferred to computer using 2D design software. The designs are developed, cut out using the laser cutter and the acrylic parts are put together before being packaged. The packaging will either be vacuum formed or made from a cardboard net which they have also created using software in our design studio. Developing a wider knowledge of materials to allow creativity in different media and to produce unique product outcomes.
Topics taught	Blockheads – wooden characters packaged for sale with bags and tags. CADCAM Clocks– Computer designed and produced, design movement inspired / themed clocks - packaged via vacuum forming or cardboard nets. Tree decoration – Using felt and hand embroidery to create Christmas Tree decorations.
Year 8	
Learning Outcomes	Students learn new skills with the design, development and manufacture of textile products and designing for a client. The cushion project involves learning about the structure of textiles as well as both hand & machine sewing. This involves combining textiles with printing processes to create a decorative personalised cushion. Mechanisms are considered in the development of handheld toys which allows students to develop skills and confidence in the use of workshop tools and machinery. Design ideas will be developed via pencil sketching and using CAD software after product research has been carried out. Analysis and evaluation of products and projects will help students to increase their design technology literacy.
Topics taught	Textiles – Using recycled fabrics, calico, felt, printing & embroidery to create a personalised cushion. Handheld toy – students will design and make a small handheld toy, looking at simple mechanisms that could be included in their product. Systems & electronics - An understanding of electronic systems and simple circuits will be developed through practical demo and theory.

Year 9	
Learning Outcomes	Students work on technical drawings & CAD to figure out how to cut and create joints and fix together a plywood trinket box. They need problem solving skills, good mathematics and spatial awareness skills. Many of the tools and machines in the department are accessed in preparation for GCSE use to create smaller objects for their box. An awareness of user needs helps to design unique features for the box, so that is personalized to each student or their client. The project allows for the inclusion of processes such as laser cutting and casting which broadens the practical experience of students. In preparation for choosing options a mini-NEA project gives students an awareness of the rigours of a GCSE folio and layout while allowing their creativity to flourish with their design outcomes for the chosen design pathway.
Topics taught	What's in a box? – practical skills project using new techniques and processes using learned skills and prior knowledge that feed into future studies. Mini NEA – A structural sample of a GCSE project. Students discover how to develop ideas from a given design context through research, design sketching & model making.

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GCSE	
Learning Outcomes	Students look at the core theory learning and practical outcomes. Students embark on a self-driven project within the constraints of the exam set themes and contexts. Working independently, they design and develop a product to solve a researched problem. Contexts and themes are outlined by Edexcel each summer. All include the chance to expand on students' skills and personal interests in design technology.

Topics taught	Core theory learning • Investigate environmental, social and economic challenges when identifying opportunities and constraints that influence the processes of designing and making • Investigate and analyse the work of past and present professionals and companies in order to inform design • Use different design strategies to generate initial ideas and avoid design fixation. Develop, communicate, record and justify design ideas, applying suitable techniques • The impact of new and emerging technologies • How energy is generated and stored in order to choose and use appropriate sources to make products and power systems • The categorization of the types, properties and structure of natural and manufactured timbers, ferrous and non-ferrous metals, thermoforming and thermosetting polymers, papers and boards and of natural, synthetic, blended and mixed fibres, and woven, non-woven and knitted textiles • Developments in modern and smart materials, composite materials and technical textiles • The functions of mechanical devices used to produce different sorts of movements, including the changing of magnitude and the direction of forces • How electronic systems provide functionality to products and processes, including sensors and control devices to respond to a variety of inputs, and devices to produce a range of outputs • The use of programmable components to embed functionality into products in order to enhance and customize their operation Specialism theory learning - **Timbers** Natural timbers – hardwoods & softwoods – sources & origins. Manufactured timbers – sources & origins. Physical characteristics & working properties of timbers. Social & ecological footprint. Aesthetic factors / Environmental factors / Availability factors / Cost factors / Social factors / Cultural and ethical factors / Forces and stresses / Reinforcement & stiffening techniques / Stock forms & types / Sizes (imperial & metric, cross-sectional area, diameter, board sizes).

	Processes / Scales of production/ Techniques for quantity production / Tools and equipment / shaping / fabricating / construction / assembling / surface finishes & treatments. Students learn theory alongside the coursework in distinct lessons each week which concentrates on specific areas of the course. This is tested at intervals to enable the extent of learning to be assessed. Homework is set based on both theoretical aspects and project work.