

Key Stage 5 Subject Timeline Year 12 to 13
 Subject: Design and Technology – 3D Product Design A level
 Exam Board: AQA

Year 12					
Autumn 1	Autumn 2	Spring 1	Spring 2	Summer 1	Summer 2
Key concept/Skill	Key concept/Skill	Key concept/Skill	Key concept/Skill	Key concept/Skill	Key concept/Skill
<p>Focus: <u>Introduction to Design</u> Work of others – Examining the work of influential designers and design movements through the conducting of research and creation of presentable posters. Making use of colour and presentation skills using both IT graphical software and freehand sketching. Students will then present their posters to rest of their peers. Sketching – Creating basic freehand, isometric, exploded, orthographic sketches and perspective sketches of products and using rendering</p>	<p>Focus: <u>Material properties Continued – Natural Timber and Manufactured Boards</u> <u>Sustainability and the environment.</u> Designing through wood – Types of woods (hardwoods, softwoods, manufactured boards), wood as a raw material – harvesting to production, finishes. Types of joints and their uses/strengths/weaknesses. Solving problems using timber – analysing the strengths and weaknesses of using timber and how properties can be utilised to solve problems. Creation of a clock/display that makes use of a variety of tools and machinery to achieve a variety of processes such as cutting,</p>	<p>Focus: <u>Material properties continued Polymers. Electrical Systems/Electronics</u> Plastics – properties, types, sources and origins, environmental considerations, working with polymers, finishes How has design been influenced by electrical systems in the last 50 years Analysis of a PCP board, how do they work, what materials are used. Examining electrical components and their circuit symbols – input vs outputs, how to draw a simple circuit diagram for a switch on and off light system for race car project. Create a plastic car body using heat to bend and shape acrylic to shape.</p>	<p>Focus: <u>Material Properties Continued – Metals and modern materials.</u> Metals – Properties, sources and origins, environmental considerations, working with metals, finishes. Design iteration for proposed jewellery project, multiple sketches of different designs as well as sketch created on 2d design. Using casting to create jewellery pieces, creation of MDF moulds using scroll saw, and use of Pewter Caster to fill the moulds. Wet and dry sanding of jewellery to create a shine before adding a finish. Using alloys as a starting point discuss the development of modern materials and in groups</p>	<p>Focus: <u>Material Properties Continued – Textiles and technical textiles/composite materials</u> Textiles – Properties, sources and origins, ethical considerations, working with textiles, finishes. Exploring the term composite materials through the lens of textiles and the benefits of using them, group presentations will be made on a given case study. Client ideation and market research – how to identify a target market and conduct investigation into needs and wants. Creating a eye mask using a variety of textiles, joining methods such as</p>	<p>Focus: <u>Prototyping (papers and Boards) & CAD</u> Examining different types of papers and boards and why they are suitable for the creation of prototypes. Identify the importance of prototyping in the design process. Why do we prototype? Create a prototype of a camera using cardboards, papers, board and foam. Introduction to basic CAD design using solid works, camera and computer monitor Students are to create a design sheet, accompanying physical prototypes and CAD modelling to create 2 different accessories for the earlier designed camera.</p>

Use of Technology Cultural Capital Inclusiveness Diversity

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<p>techniques to create more realised representations.</p> <p><u>Skills</u> Conducting research and investigation. Sketching. Use of basic ICT.</p>	<p>drilling, planing, chiselling, and sanding.</p> <p>Continuation of sketching and designing through the designing of a clock face and a supporting hand drawn design sheet.</p> <p>Introduction to sustainability through examining sustainable forestry.</p> <p><u>Skills</u> Sketching Designing Tool use Machine use. Use of finishes More advanced design.</p>	<p>Use of a variety of heating apparatus such as line bender and vacuum former. Process a wooden base to match it.</p> <p>3D printing individual designed car wheels</p> <p>Create a design sheet featuring an exploded view of their proposed car spoiler, showing the manufacturing process and parts.</p> <p>Work with peers to adapt a spoiler for the car</p> <p>Soldering/joining components – solder the electronics for the light circuit for their race car.</p> <p>Create the spoiler for their car design and assemble the entire race car</p> <p><u>Skills</u> Soldering/joining components Tool use Machine use. Sketching Designing ICT skills CAM</p>	<p>create a presentation on a given case study.</p> <p><u>Skills</u> Handcraft skills Machine use Researching</p>	<p>hand sewing and machine sewing</p> <p>Creating an individual pattern/design on canva, which will then be printed onto textiles using sublimation printer and heat press.</p> <p><u>Skills</u> Handcraft skills Machine use Designing Primary investigating</p>	<p><u>Skills</u> Cardboard Prototyping Foam prototyping CAD abilities. Sketching</p>
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End Point	End Point	End Point	End Point	End Point	End Point
Students will have created a presentable folder on the different designers and movements that influenced modern design as well as a journey of the improvement of their sketching journey.	Create a timber clock making use of a variety of tools and machinery with their own individual craft design as a centre piece with accompanying design sheet.	Create an assembled polymer race car that has a switch on off front and rear light system, personalised 3d printed wheels, rear spoiler and accompanying design sheet.	Create a metal cast necklace that is designed around the students' own ideas, with accompanying design sheets showing their design iteration.	To create an eye mask using a variety of textiles and textile joining methods to sell to a target market which the student will researched and investigated in depth.	Understand the importance of prototyping and use a variety of techniques to show different iterations of modifications to a camera.
Assessment	Assessment	Assessment	Assessment	Assessment	Assessment
Formative assessment Summative assessment Verbal feedback	Formative assessment Summative assessment Verbal feedback	Formative assessment Summative assessment Verbal feedback	Formative assessment Summative assessment Verbal feedback	Formative assessment Summative assessment Verbal feedback	PPE Formative assessment Summative assessment Verbal feedback

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<p>Focus: <u>GCSE COURSEWORK</u></p> <p>Completion of Objectives 1&2 Situation & Brief Investigation of the problem Research</p> <p>Producing a Specification Initial Design Ideas Chosen design Development of chosen design</p> <p><u>Theory & Knowledge</u> Production systems One off Batch production Continuous flow Smart Materials</p>	<p>Focus: <u>Coursework</u></p> <p>Modelling trialling and testing. Test Joint 3D Model Testing of materials and finishes Production of product</p> <p><u>Theory and Knowledge</u> Product Analysis</p>	<p>Focus: <u>Coursework</u></p> <p>Completion of practical coursework and Design folder</p> <p>Evaluation/Images of completed product</p> <p><u>Theory and knowledge</u> Flow charts</p>	<p>Focus: <u>Revision Programme</u></p> <p>Past papers Exam preparation</p> <p><u>Analysis of themed exam question</u></p> <p><u>Theory and knowledge</u> DVDS Focus on educational software Technology student.com</p>	<p>Focus: <u>Revision Programme</u></p> <p>Past papers Exam preparation</p> <p><u>Analysis of themed exam question</u></p>	
End Point	End Point	End Point	End Point	End Point	
	Produce prototypes	Create a 20 page			

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<p>To develop an understanding of the design context.</p> <p>Produced a specification with design ideas and a chosen design.</p>	<p>modelled through CAD and by hand.</p>	<p>portfolio showing the design process needed to make a functioning prototype.</p> <p>Completion of final prototype.</p> <p>An evaluation and testing of prototype.</p>	<p>Fully prepared for the exam having covered all topics covered in specification.</p>	<p>Fully prepared for the exam having covered all topics covered in specification.</p>	
Assessment	Assessment	Assessment	Assessment		
<p>Formative assessment</p> <p>Summative assessment</p> <p>Verbal feedback</p>	<p>PPE</p> <p>Formative assessment</p> <p>Summative assessment</p> <p>Verbal feedback</p>	<p>Formative assessment</p> <p>Summative assessment</p> <p>Verbal feedback</p>	<p>Formative assessment</p> <p>Summative assessment</p> <p>Verbal feedback</p>		

Use of Technology

Cultural Capital

Inclusiveness

Diversity