

Stage 4 Subject Timeline Year 9 to 11
 Subject: Design and Technology (9-1)
 Exam Board: AQA

Year 9					
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

Stage 4 Subject Timeline Year 9 to 11
Subject: Design and Technology (9-1)
Exam Board: AQA

<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>
--	--	---	--	---	--

Stage 4 Subject Timeline Year 9 to 11
Subject: Design and Technology (9-1)
Exam Board: AQA

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

Stage 4 Subject Timeline Year 9 to 11
Subject: Design and Technology (9-1)
Exam Board: AQA

Year 10					
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: Mechanical Systems and electronic systems processing. Types of Motion – linear, circular, reciprocating, oscillating. Where are prime examples of each. Examine a variety of mechanical systems and where each of them can be in a variety of industries. Mechanical systems include. Gears Belts & Pulleys Cams Cranks Linkages Levers Analysis of a PCB board, how do they work, what materials are used. Examining electrical components and their circuit symbols – input vs outputs. In groups of 4 design and create a rover that is</p>	<p>Focus: Wood advanced manufacturing, CNC router and bending Briefly revise back over the use of wood as a material and the properties and the complexities that influence design. Focus put of manufactured boards in particular plywood and how it can be used for laminating, creating interesting shapes and curves by steam bending plywood using jigs made out of MDF. Logical vs abstract (thinking outside of the box mentality.) the importance of this in modern design and society Use CNC router to create MDF jigs. Students will be introduced to CAD softwares in order to design said jigs and the importance of CAD software's</p>	<p>Focus: Wood advanced manufacturing, CNC router and turning, basic design strategies. Individual challenge-based term, students will be introduced to the process of wood turning and will be given demonstrations. In turn students will develop their own product that makes use of turning and the CNC router. They will have to do this out of a given selection materials. Students must make use of the CNC router and Onshape in some stage of design. Product must solve a specific problem identified by the student, focus being on more personal problem. Students will need to accompany with a CAD developed working</p>	<p>Focus: Innovative design, and sustainable design and problem solving (Upcycling) Group challenge-based term, students will in groups be given one of the following contexts: Life on land Life in water Waste management Students in group will come up with a specific problem to solve based on an area they feel is important to tackle. The students must then make use of upcycled materials that they source themselves to create a solution to the project. This solution should use a variety of prototyping methods and sketches and iterations to create a concept solution. Finally, some form of testing</p>	<p>Focus: ;Computer aided design, Computer aided manufacture in industry Continuation on previous terms use of CAD & CAM. Students will be introduced to solid works creating basic designs using commands such as extrude, cut, fillet chamfer, rotate. Will create cameras and other every day household items. Begin new focus on using CAD software's such as Onshape to continue on in the use of 3D printers to create mobile phone cases for each of their individual types of phones. Research into size, material, breaking forces etc. To look at modern designs turn toward use of CAM over hand</p>	<p>Focus: Choice of GCSE Project Project options The Design Process Design Briefs Research Client Interview Task Analysis Existing Products Mood Board Market Research Specification Generation of Design Proposals Initial Design Ideas Chosen Design Skills Researching, generating ideas</p>

Use of Technology Cultural Capital Inclusiveness Diversity

Stage 4 Subject Timeline Year 9 to 11
Subject: Design and Technology (9-1)
Exam Board: AQA

<p>tailored to a specific use, the rover must move backwards and forwards and must make use of one external mechanism either mechanised or moved by hand. Rover will make use of a micro controller that will give simple directions, advanced students can add decision making.</p> <p>Skills How mechanisms work where they are used. Tool use ICT Electronics More advanced design Problem solving</p>	<p>involvement in modern design. Students will create a steam bended headphone stand and desk tidy. The main support for headphones will be designed however influenced by student research into ergonomics and anthropometrics, whilst the base will be designed by the student depending on what they feel also would be useful in this stand based on a target market they wish to sell to e.g gaming / music / Netflix etc.</p> <p>Skills Laminating Use of CNC router Development of CAD language</p>	<p>drawing of their product. Showing a fully assembled product making use of at least 2 parts.</p> <p>Skills Use of advanced machines Use of CAM Sketching CAD drawings</p>	<p>must be documented, either virtual or physical. Students will also conduct research into the 6 R's and how they can minimise the ecological social footprint of their product.</p> <p>Skills Problem solving Design thinking Prototyping Hand manufacturing Sketching.</p>	<p>created products, pros and cons for each. Look more in detail at job vs. batch vs. mass production and where each of them are most commonly used in modern industry.</p> <p>Skills Measuring and accuracy Tolerances Rapid prototyping Industrial design planning</p>	
End Point	End Point	End Point	End Point	End Point	End Point
<p>Students will have made use of design and planning skills to create a moving rover that runs off a micro controller and has basic controllable functions. This will also make use of some type of</p>	<p>To develop an understanding of how wood can be shaped into interesting and intricate shapes and designs rather than a simple box project. Use of CAD and CAM to create interesting shapes</p>	<p>Further develop students' comprehension of advanced wood manufacturing techniques in particular turning through the creation of the students first own product under</p>	<p>To develop students' ability to identify bigger problems and make use of discarded materials to create a product that solves a specific problem using minimum waste. Students will better</p>	<p>To develop an understanding of different manufacturing processes and how CAM and CAD software's are shaping the future of design.</p>	<p>To produce primary and secondary research based upon chosen brief.</p>

Use of Technology Cultural Capital Inclusiveness Diversity

Stage 4 Subject Timeline Year 9 to 11
Subject: Design and Technology (9-1)
Exam Board: AQA

mechanism to achieve a task.	and design through the creation of a headphone stand.	the constraints of supplied materials.	understand their own ecological and social footprint.		
Assessment	Assessment	Assessment	Assessment	Assessment	Assessment
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	Formative assessment Summative assessment Verbal feedback	Formative assessment Summative assessment Verbal feedback

Stage 4 Subject Timeline Year 9 to 11
Subject: Design and Technology (9-1)
Exam Board: AQA

Year 11					
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>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>	

Stage 4 Subject Timeline Year 9 to 11
Subject: Design and Technology (9-1)
Exam Board: AQA

End Point	End Point	End Point	End Point	End Point	
<p>To develop an understanding of the design context.</p> <p>Produced a specification with design ideas and a chosen design.</p>	<p>Produce prototypes modelled through CAD and by hand.</p>	<p>Create a 20 page 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>		