



## Design and Technology

Through creativity, innovation and practical learning, we empower students to design, make and evaluate solutions confidently, developing the skills and knowledge needed for healthy, successful and responsible futures.

### Key Stage 3 Long-Term Plan

#### Year 7

#### Year 8

#### Year 9

#### Autumn

This unit aims to develop students' confidence, independence, and understanding of basic food preparation and nutrition. It introduces essential knowledge of hygiene, safety, and food handling to ensure students can work responsibly in a kitchen environment. Throughout the unit, students build practical skills such as knife work, food preparation, and baking, while applying safe and hygienic practices. In addition, the unit develops their understanding of healthy eating, including the Eatwell Guide, food provenance, and the role of fruit and vegetables in a balanced diet. By the end of the unit, students should be able to prepare simple dishes safely, make informed

This unit builds on prior learning by deepening students' understanding of nutrition, food science, and cooking skills. Students explore how nutrients function in the body, how food choices affect health, and how to interpret food labels. Practical lessons develop more advanced preparation and cooking skills, including working with dough, sauces, and raw meat. The unit also introduces evaluation and sensory analysis, encouraging students to reflect critically on their work. By the end of the unit, students will have a greater understanding of how diet, health, and food preparation are connected.

This unit develops students' understanding of food safety, dietary needs, and wider issues surrounding food in society. Students explore contamination, allergies, and intolerances to understand how food can impact health. The unit also introduces the role of food professionals and regulations in maintaining safety standards. In addition, students investigate ethical and environmental issues such as Fairtrade, food waste, and sustainability. Practical lessons allow students to apply their knowledge through more advanced cooking techniques. By the end of the unit, students will have a deeper understanding of how food choices

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|                    | food choices, and demonstrate a clear understanding of how food, nutrition, and safety are linked.                                                                                                                                                                                                                                                                                                                                                                                                                    |                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                          | affect health, society, and the environment.                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                    |
| Autumn Assessment: | Students' progress will be assessed through short retrieval activities, in-class discussion, and ongoing monitoring of their work in books.                                                                                                                                                                                                                                                                                                                                                                           | Students' progress will be assessed through short retrieval activities, in-class discussion, and ongoing monitoring of their work in books.                                                                                                                                                                                                                                                                                                                                                                                                                                                                              | Students' progress will be assessed through short retrieval activities, in-class discussion, and ongoing monitoring of their work in books.                                                                                                                                                                                                                                                                                                                                                                                                                                                                                     |
| Spring             | This unit will focus on the specialist materials area of timbers and will lead to a design and make task. Learning will begin with developing knowledge of wood types, properties and sources. Students will use this knowledge to help understand the importance of material selection by property when designing and making using timbers. This leads onto a design and make activity where students will manufacture a wooden trinket box with a multi material laminated lid that push fits into the box carcass. | Students will learn the fundamentals of producing technical drawings by hand using traditional drafting skills that is required learning for GCSE Design Technology. New learning will begin with building a conceptual understanding of 3D form through the layout of Isometric drawing. This will introduce students to a way of communicating in 3 Dimensions using a standard form. Students will practise freehand and develop further onto Isometric grid. This will lead onto learning how to apply render through colour, tone, and shading techniques. Students will develop skills converting 3D drawings into | This unit will introduce students to electricity and electronics. Students will gain knowledge into what electricity is, how it is generated through fossil and alternative energies and the dangers associated with mains electricity. Students will learn the difference between electricity and electronics by exploring a range of discrete components alongside their function and use. Simple series and parallel circuits will be prototyped onto breadboards and simulated on a computer which will also give the opportunity to see how components work in a circuit. This knowledge will be developed further through |

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|                    |                                                                                                                                                                                                                                                                                                                                                                                                                    | working drawings (Orthographic) and building 1 and 2 point perspective drawing. An understanding of papers and board type, properties and commercial use will be built around the practical skill associated with drawing, scoring, cutting, and assembling nets with appropriate links to mathematics.                                                                                                      | the assembly of a PCB that uses a 555 integrated circuit to produce a monostable timing device.                                                                                                                                                                                                                                                                                                |
| Spring Assessment: | Students' progress will be assessed through short retrieval activities, in-class discussion, and ongoing monitoring of their work in books.                                                                                                                                                                                                                                                                        | Students' progress will be assessed through short retrieval activities, in-class discussion, and ongoing monitoring of their work in books.                                                                                                                                                                                                                                                                  | Students' progress will be assessed through short retrieval activities, in-class discussion, and ongoing monitoring of their work in books.                                                                                                                                                                                                                                                    |
| Summer             | This unit teaches students how to use CAD/CAM to solve a real design problem by taking a product from initial idea through research, specification and creative design, into accurate digital modelling using CAD software, and finally into manufacture using CAM processes such as laser cutting, while developing their understanding of user needs, technical drawing skills, and the importance of evaluating | This unit will focus on the specialist materials area of Metals and will lead to a design and task. Learning will begin with developing knowledge of metal types, properties and sources. Students will use this knowledge to help understand the importance of material selection by property when designing and making using metals. This leads to a design and make activity where students will design a | This unit introduces students to user-centred product design by focusing on creating an accessible controller. It begins by developing an understanding of empathy and ergonomics, helping students consider the needs of different users, particularly those with reduced hand mobility. Students then analyse existing products using structured frameworks to understand what makes designs |

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|                    | and refining designs to ensure they are fit for purpose.                    | small piece of jewelry that would be suitable for casting using pewter. Students will be expected to apply their prior experience of designing by drafting and CAD so that a mould can be laser cut ahead of casting. Once cast, students will learn how to refine and finish metals in the workshop. | successful. The unit moves on to human factors, where students learn about anthropometrics and how body measurements are used to design products that are safe, comfortable, and practical. They then define a clear design problem and generate a range of creative ideas to solve it. Students develop their ideas through modelling, both physically and digitally, using materials like plasticine and CAD software such as SolidWorks. They gradually build more advanced skills in 3D modelling and prepare their designs for manufacture using processes like 3D printing. Finally, students test, evaluate, and refine their designs, learning how designers improve products through iteration. Overall, the unit guides students through the complete design process, from understanding user needs to creating and improving a functional product. |
| Summer Assessment: | Students' progress will be assessed through short retrieval activities, in- | Students' progress will be assessed through short retrieval activities, in-                                                                                                                                                                                                                           | Students' progress will be assessed through short retrieval activities, in-                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                   |

|                                                        | class discussion, and ongoing monitoring of their work in books.                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                              | class discussion, and ongoing monitoring of their work in books.                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                   | class discussion, and ongoing monitoring of their work in books.                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                   |
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| What will a student know by the end of each year? Why? | <p>Year 7</p> <p>By the end of Year 7, students will understand the basics of food safety, hygiene, and healthy eating, and be able to prepare simple dishes using a range of fundamental food preparation skills. In Design &amp; Technology, they will understand the properties and uses of timbers, apply basic workshop skills safely, and use technical drawing techniques to communicate design ideas and manufacture simple products.</p> <p>Why?</p> <p>These foundations develop confidence, independence, and safe working practices, while introducing students to the core principles of designing, making and evaluating that underpin future learning in Food &amp; Nutrition and Design &amp; Technology.</p> | <p>Year 8</p> <p>By the end of Year 8, students will understand the relationship between nutrition, health and food choices, applying more advanced cooking techniques and evaluating food products effectively. In Design &amp; Technology, they will understand the principles of electricity and electronics, create and manufacture products using CAD/CAM technologies, and apply the design process to solve real-world problems from concept through to production.</p> <p>Why?</p> <p>This enables students to build on their foundational knowledge, develop greater technical competence and begin applying their learning to increasingly complex design challenges, preparing them for the demands of Key Stage 4.</p> | <p>By the end of Year 9, students will understand how food choices impact health, society and the environment, including issues surrounding allergies, food safety, sustainability and ethics. In Design &amp; Technology, they will understand the properties and applications of metals, develop products using a user-centred design approach, and apply advanced design, modelling, manufacturing and evaluation skills to create functional solutions that meet specific user needs.</p> <p>Why?</p> <p>This prepares students for GCSE study by developing independence, critical thinking and problem-solving skills, while helping them understand the wider social, environmental and economic impact of design and food choices in the modern world.</p> |

#### Extra-Curricular Opportunities

- Practical experiences
- Drop-down Day practical activities

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|  | <p style="text-align: center;"><b>Design and Technology</b></p> <p>Through creativity, innovation and practical learning, we empower students to design, make and evaluate solutions confidently, developing the skills and knowledge needed for healthy, successful and responsible futures.</p>                                                                                                                                                                                                                                                                               |                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                    |
| <p>Key Stage 4<br/>Long-Term<br/>Plan</p>                                        | <p>Year 10</p>                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                  | <p>Year 11</p>                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                     |
| <p>Autumn 1</p>                                                                  | <p>During Autumn Half Term 1, students are introduced to the fundamental concepts that underpin GCSE Design and Technology. The curriculum begins with New and Emerging Technologies, providing learners with an understanding of how technology has evolved from early innovations to modern automated systems. Students explore the Industrial Revolution, the Digital Revolution, automation, robotics and the changing nature of manufacturing and workplaces. Building on this foundation, students investigate how technology influences people, culture and society,</p> | <p>Autumn Term 1 – NEA: Identifying, Investigating and Developing Design Opportunities</p> <p>During Autumn Term 1, students begin the AQA GCSE Design and Technology Non-Exam Assessment (NEA) by exploring the contextual challenges released by the examination board. Learners investigate the chosen context in depth, identifying design opportunities, analysing problems and developing an understanding of the users, clients and environments connected to their project.</p> <p>Students undertake a range of primary and secondary</p> |

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|  | <p>including the concepts of technology push and market pull, changing job roles, inclusive design and the need to consider diverse users when designing products. Learners then examine the ethical and environmental implications of design decisions through the study of planned obsolescence, sustainability, Life Cycle Assessment (LCA) and the Six Rs of Sustainability. Students consolidate their understanding through a structured retrieval lesson before being introduced to product analysis using ACCESS FM. They learn how designers analyse existing products to inform future design decisions and conduct both practical and digital product analysis activities.</p> <p>The term then moves into a practical exploration of engineering through the Dyson Engineering Box, allowing students to reverse engineer commercial products and investigate how designers and engineers solve problems. This is followed by a study of mechanical systems, specifically gears and mechanisms, linking design theory to real-world products. Students also begin to investigate the work of influential designers through an independent research project, developing an understanding of how designers shape products, industries and society.</p> <p>The second half of the term focuses on design communication skills. Students are introduced to sketching techniques, progress to marker rendering and visual presentation methods, and finally revisit</p> | <p>research activities, including context analysis, user research, client interviews, product analysis and investigations into the work of designers and companies. Learners are encouraged to avoid focusing on a specific product too early and instead develop a thorough understanding of a genuine problem that requires a design solution. Through structured research and analysis, students identify client needs, user requirements and wider social, economic and environmental considerations that may influence future design decisions.</p> <p>The second half of the term focuses on translating research into design requirements. Students produce a design brief and detailed specification before generating a wide range of imaginative design ideas. Learners apply sketching, rendering, annotation and graphical communication skills developed throughout the GCSE course to communicate potential solutions. Design ideas are continuously evaluated against user needs and specification criteria, encouraging students to avoid design fixation and develop creative, innovative responses to the chosen design problem. By the end of the term, students should have completed Sections A, B and C of the NEA portfolio, demonstrating a clear understanding of their design problem, the needs of their client and a range of well-developed design proposals ready for further development and modelling in the Spring Term.</p> |
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|                      | isometric drawing through a structured refresher that introduces the technique of crating. These graphical skills establish the foundations required for future design development and NEA work.                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                             |                                                                                                                                                                                                                                           |
| Autumn 1 Assessment: | <p>Students will complete a 40-mark end-of-unit assessment designed to evaluate both knowledge and practical Design and Technology skills.</p> <p>The assessment consists of:</p> <p>Section A: Knowledge Test (20 marks) – short-answer and multiple-choice questions covering new and emerging technologies, sustainability, product analysis, designers, engineering and mechanisms.</p> <p>Section B: Product Analysis (10 marks) – analysis of an unfamiliar product using the ACCESS FM framework.</p> <p>Section C: Graphic Communication (10 marks) – an annotated isometric sketch demonstrating drawing and communication skills.</p> <p>This assessment reflects the balance of knowledge, analysis and design communication skills developed throughout the half term and provides a foundation for future GCSE Design and Technology study.</p> |                                                                                                                                                                                                                                           |
| Autumn 2             | During Autumn Term 2, students develop their understanding of design communication, digital design and practical manufacturing. The term builds upon the foundations established in the first half of the year by moving from product analysis and engineering theory                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                        | <p>Autumn Term 2 – NEA: Developing Design Ideas and Preparing for Manufacture</p> <p>During Autumn Term 2, students focus on the development and refinement of their chosen design concept, building upon the research, design brief,</p> |

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|  | <p>into the graphical and manufacturing skills required by designers and engineers.</p> <p>Students begin by revisiting a range of graphical communication methods used within Design and Technology. They develop sketching skills through structured drawing exercises, progressing from tracing and refinement activities to the use of rendering techniques that communicate form, materials and depth. Learners then revisit isometric drawing, crating, orthographic projection and perspective drawing, strengthening their ability to communicate design ideas using professional graphical techniques.</p> <p>Alongside graphical communication, students continue to investigate modern manufacturing technologies through the study of Computer Aided Design (CAD) and Computer Aided Manufacture (CAM). Learners explore the advantages and limitations of digital design and manufacturing systems, including CNC technology, Flexible Manufacturing Systems (FMS), Lean Manufacturing and Just in Time (JIT) production. Students then apply this knowledge through a practical CAD/CAM project using TechSoft Design and a TechSoft MDX-30 CNC milling machine. Learners design and manufacture personalised dog tags, gaining experience of the complete digital manufacturing process from CAD modelling to CNC production. The final part of the term focuses on a substantial practical project in which students design and</p> | <p>specification and initial ideas produced during the first term. Learners engage in an iterative design process, using feedback, testing and evaluation to improve their proposed solutions and ensure they effectively address the identified design problem.</p> <p>Students develop their ideas through a range of communication techniques, including annotated sketches, modelling, CAD and graphical presentations. Learners investigate materials, components, manufacturing processes and construction methods, justifying their decisions using evidence gathered throughout their research. Physical and digital modelling activities allow students to test functionality, ergonomics, aesthetics and usability, whilst client feedback helps inform further modifications and refinements.</p> <p>As designs progress, students produce detailed development work demonstrating how and why ideas have evolved. Learners create manufacturing specifications, research appropriate materials and components, and prepare accurate technical information for production. Emphasis is placed on demonstrating iterative design, supported by testing, evaluation and ongoing analysis, reflecting the requirements of Section D of the AQA NEA. By the end of the term, students should have completed Section D of their portfolio, producing a thoroughly developed final design proposal supported</p> |
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|                      | <p>manufacture a folding wooden stool. Learners revisit SolidWorks to create digital models before moving into the workshop environment. Throughout the project, students develop practical manufacturing skills including measuring, marking out, cutting, shaping, drilling, assembly and finishing timber components. During manufacture, students are introduced to industrial manufacturing concepts such as jigs and templates, quality control, accuracy and repeatability. They learn to use a range of workshop tools and machinery safely and develop an understanding of how professional manufacturing processes are used to ensure consistency and efficiency.</p>     | <p>by modelling, testing and justification. They will be fully prepared to move into the manufacturing stage of the project in the Spring Term.</p> |
| Autumn 2 Assessment: | <p>Students will complete a 50-mark end-of-term assessment designed to assess their understanding of design theory, product analysis, graphical communication and manufacturing processes. The assessment consists of:</p> <p>Section A: Knowledge Recall (15 marks) – multiple-choice and short-answer questions covering product analysis, designers, gears and mechanisms, graphical communication, CAD/CAM and manufacturing systems.</p> <p>Section B: Product Analysis (10 marks) – analysis and evaluation of an unfamiliar product using the ACCESS FM framework.</p> <p>Section C: CAD/CAM Workflow (10 marks) – explanation of the stages involved in manufacturing a</p> | NEA                                                                                                                                                 |

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|          | <p>product using CAD software, toolpaths and CNC machinery.</p> <p>Section D: Design Communication (10 marks) – an annotated isometric sketch demonstrating graphical communication skills.</p> <p>Section E: Manufacturing Reflection (5 marks) – evaluation of the practical stool project, including workshop skills, accuracy, jigs and templates, and safe working practices.</p> <p>This assessment reflects the balance of theoretical knowledge, design communication and practical manufacturing skills developed throughout the term and provides preparation for both the written examination and future NEA work.</p>                                                                    |                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                             |
| Spring 1 | <p>During Spring Term 1, students transition from design communication and product analysis into a deeper exploration of materials, engineering and manufacturing. Building upon the practical and digital skills developed during the autumn term, learners begin investigating the properties and applications of timber and metals, developing the specialist knowledge required for GCSE Design and Technology.</p> <p>The term begins with the study of timber, where students learn to distinguish between hardwoods and softwoods, examine manufactured boards and explore how material properties influence product performance and material selection. Learners then revisit and extend</p> | <p>Spring Term 1 – NEA: Realising Design Ideas</p> <p>During Spring Term 1, students move into the manufacturing stage of the AQA GCSE Design and Technology NEA. Learners use the design work, modelling activities and manufacturing specifications developed during Autumn Term 2 to produce a high-quality prototype that addresses the identified needs of their client and responds effectively to the chosen design problem.</p> <p>Students apply a range of practical skills and manufacturing processes to produce their final outcome. Learners select and use appropriate materials, components, tools and equipment whilst</p> |

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|  | <p>their CAD capabilities through SolidWorks assembly modelling and rendering, developing an understanding of how products are digitally assembled and communicated before manufacture.</p> <p>Students are subsequently introduced to metals, investigating their extraction, classification and properties. Through theory lessons and practical application, learners explore ferrous and non-ferrous metals, alloys and the working properties that influence material choice. This knowledge is reinforced through a workshop-based bottle opener project, where students develop practical metalworking skills including marking out, cutting, shaping, drilling, finishing and quality control whilst following safe workshop practices.</p> <p>The term concludes with an introduction to polymers and polymer manufacturing processes. Students investigate thermoplastics and thermosetting plastics, compare their properties and applications, and explore commercial manufacturing techniques such as injection moulding, extrusion, blow moulding and vacuum forming. Learners then apply their knowledge through a CAD-based chocolate mould design project, preparing digital models for manufacture using modern technologies.</p> <p>Across the term, students strengthen their understanding of material properties, manufacturing processes, CAD/CAM technologies and industrial practice whilst continuing to develop the analytical and</p> | <p>following detailed manufacturing plans developed during the design phase. Throughout manufacture, students are encouraged to work accurately and safely, maintaining high standards of quality control and ensuring that components are produced within appropriate tolerances.</p> <p>The term emphasises the importance of iterative making, allowing students to refine and improve their products as manufacture progresses. Learners record changes made during production, justify modifications and evaluate how these decisions improve the final outcome. Students also document manufacturing processes through photographic evidence and written records, ensuring that their portfolio clearly demonstrates the practical skills used throughout the project.</p> <p>As products move towards completion, students focus on assembly, testing, refining and finishing techniques to improve functionality, aesthetics and overall quality. Attention is given to the suitability of materials, construction methods and the effectiveness of the final solution in meeting client needs and specification requirements.</p> <p>By the end of the term, students should have completed the manufacture of their prototype and the majority of Section E of the NEA portfolio, producing a functional, high-quality outcome ready for final testing, evaluation and review during Spring Term 2.</p> |
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|                             | <p>practical skills required for GCSE success. Theory is consistently linked to real-world manufacturing contexts, ensuring learners understand how designers and engineers select materials and processes to create successful products.</p>                                                                                                                                                                                                                                                   |                                                                                                                                                                                                                                                                                                                                                                                                                                                     |
| <p>Spring 1 Assessment:</p> | <p>Assessment Focus:</p> <ul style="list-style-type: none"> <li>Timber properties and uses</li> <li>Hardwoods and softwoods</li> <li>Manufactured boards</li> <li>Sustainability and responsible material sourcing</li> <li>CAD modelling and assembly concepts</li> <li>Material selection and justification</li> <li>Section A: Knowledge Retrieval (20 marks)</li> <li>Section B: Material Selection (15 marks)</li> <li>Section C: Design and Manufacture Application (15 marks)</li> </ul> | <p>NEA</p>                                                                                                                                                                                                                                                                                                                                                                                                                                          |
| <p>Spring 2</p>             | <p>During Spring Term 2, students continue their study of materials, manufacturing and engineering by applying their knowledge of polymers in a practical design-and-make project before moving on to the study of modern materials, smart technologies and mechanical systems. The term combines theoretical understanding with practical application, enabling learners to see how materials and mechanisms are used to solve real-world design problems.</p>                                 | <p>Spring Term 2 – NEA: Analysing, Evaluating and Refining Outcomes</p> <p>During Spring Term 2, students complete the final stages of the AQA GCSE Design and Technology NEA by testing, analysing and evaluating their manufactured prototype. Learners reflect upon the entire design process, considering how successfully their final outcome addresses the original design problem, satisfies the needs and wants of the client and meets</p> |

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|  | <p>Students begin by completing the chocolate mould project, refining CAD models, preparing files for additive manufacture and using 3D printing technology to produce mould patterns. Learners then use vacuum forming techniques to manufacture chocolate moulds before producing and evaluating finished chocolate products. This sequence provides students with practical experience of modern manufacturing technologies and reinforces their understanding of thermoplastics, thermosetting plastics and commercial manufacturing processes.</p> <p>Following a formal assessment of polymer knowledge, students are introduced to modern materials and smart materials. Learners investigate developments such as graphene, nanomaterials, metal foams, shape memory alloys, thermochromic pigments and photochromic pigments, exploring how advances in material science have expanded the possibilities available to designers and engineers. Students evaluate the advantages and limitations of these materials and analyse their applications in contemporary products.</p> <p>The term then focuses on composite materials and technical textiles, allowing students to examine how materials can be engineered to achieve enhanced performance characteristics. Learners explore materials such as carbon fibre, Kevlar and glass reinforced plastic, considering how their properties make them suitable for demanding applications within industries including</p> | <p>the requirements of the design specification. Students carry out a range of testing activities to assess the performance, functionality, durability, usability and overall effectiveness of their product. Learners gather client and user feedback through interviews, observations and evaluations, using this information to judge the success of the final outcome. Particular emphasis is placed on producing evidence-based evaluations rather than personal opinions.</p> <p>Throughout the term, students compare their final prototype against their design brief and specification, identifying strengths, weaknesses and areas for improvement. Learners evaluate the decisions made throughout the project, including material selection, manufacturing processes, design developments and modifications made during production. They are encouraged to demonstrate how testing and feedback have influenced their conclusions and recommendations.</p> <p>Students also complete any remaining portfolio work, ensuring that evidence of analysis, evaluation and iterative improvement is clearly communicated. Learners present justified suggestions for future development and consider how the product could be improved if additional time, resources or technologies were available.</p> <p>By the end of the term, students should have completed Sections E and F of the NEA portfolio and</p> |
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|                      | <p>transport, sport and aerospace.</p> <p>Students conclude the term by studying mechanical devices, developing an understanding of how mechanisms are used to transmit and transform motion and force. Learners investigate levers, linkages, gears, gear trains, cams and followers, developing the knowledge required to analyse and design mechanical systems. The term finishes with a study of scales of production and a comprehensive retrieval lesson that revisits key knowledge from the materials and mechanisms units.</p> <p>Throughout Spring Term 2, students deepen their understanding of material selection, manufacturing processes, product performance and engineering principles. The combination of practical manufacturing activities and theoretical study helps prepare learners for the more independent design and manufacturing work that follows later in the year.</p> | <p>submitted a fully documented design-and-make project that demonstrates investigation, creativity, development, practical manufacturing skills and critical evaluation in line with the requirements of the AQA GCSE Design and Technology specification.</p> |
| Spring 1 Assessment: | <p>Spring Term 1 Assessment: Materials and Manufacturing</p> <p>Timing: Lesson 38 (Wednesday 27 January 2027)</p> <p>Duration: 45–60 minutes</p> <p>Assessment Focus:</p> <p>Timber properties and uses</p> <p>Hardwoods and softwoods</p> <p>Manufactured boards</p> <p>Sustainability and responsible material sourcing</p>                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                          | NEA                                                                                                                                                                                                                                                             |

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|          | <p>CAD modelling and assembly concepts</p> <p>Material selection and justification</p>                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                           |       |
| Summer 1 | <p>During Summer Term 1, students undertake a structured mini Non-Exam Assessment (NEA) style project focused on the design and manufacture of a low-power LED lighting product. This project provides learners with an opportunity to apply the knowledge, skills and design processes developed throughout the year in a realistic design context.</p> <p>The term begins with an investigation into low-power LED lighting, where students explore the design context, analyse existing products and consider the needs and wants of potential users. Learners carry out research activities including client profiling, user interviews and product analysis using the ACCESS FM framework. Through these investigations, students develop a clearer understanding of user-centred design and how research informs successful product development.</p> <p>Using the evidence gathered during the investigation stage, students produce a design brief and detailed specification that establish clear requirements for their product. Learners then generate a range of initial design ideas, applying graphical communication techniques such as sketching, rendering and annotation to communicate their concepts effectively. Students evaluate their ideas against the specification</p> | Exams |

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|  | <p>and seek client feedback before refining and developing their most successful solutions.</p> <p>As the project progresses, students create a final design proposal and use CAD software to produce digital models of their chosen designs. Learners explore the relationship between digital modelling and manufacture, considering assembly methods, material requirements and the integration of LED components. Prototype development allows students to test and evaluate their ideas before manufacture begins, reinforcing the iterative nature of the design process.</p> <p>During the second half of the term, students manufacture their low-power LED lighting product using appropriate materials, tools and processes. Learners apply safe working practices while developing practical skills in marking out, cutting, shaping, assembly, refining and finishing. Throughout manufacture, students carry out quality control checks, test their products and make improvements where necessary to ensure the final outcome meets the requirements of the design specification.</p> <p>By the end of Summer Term 1, students have experienced the complete design process from investigation through to manufacture and evaluation. The project prepares learners for the demands of the GCSE NEA by developing independence, creativity, problem-solving skills and a deeper understanding of how designers use iterative processes to create</p> |  |
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|                      | successful products.                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                     |  |
| Summer 1 Assessment: | <p>Summer Term 1 Assessment: Low-Power LED Lighting Design Project</p> <p>Timing: Lessons 60–74 (April–May 2027)</p> <p>Duration: 15 lessons</p> <p>Assessment Focus:</p> <ul style="list-style-type: none"> <li>Investigation and research</li> <li>Existing product analysis</li> <li>Client profiling and user interviews</li> <li>Design brief and specification writing</li> <li>Design communication</li> <li>CAD modelling</li> <li>Prototype development</li> <li>Product manufacture</li> <li>Testing and evaluation</li> </ul> |  |
| Summer 2             | <p>During Summer Term 2, students are introduced to the AQA Non-Exam Assessment (NEA) and begin the investigation phase of their GCSE coursework. The term focuses on developing the research, analytical and problem-identification skills required to successfully complete a substantial design project in Year 11. Students learn that successful design begins with understanding users and identifying genuine problems rather than immediately creating solutions. Learners begin by exploring the contextual challenges</p>      |  |

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|  | <p>set by the exam board and investigating the opportunities for design that exist within each context. Through mind mapping, context analysis and structured research activities, students develop an understanding of how design problems emerge from real-world situations, users and needs. They learn to distinguish between a design problem and a design solution, recognising the importance of evidence-based decision making.</p> <p>As the term progresses, students select and define a specific design problem for further investigation. They gather primary and secondary research to support their decisions, collecting evidence through observations, interviews, questionnaires and product research. Students analyse the needs of potential users and identify suitable clients whose experiences and feedback can inform future design decisions.</p> <p>A significant focus is placed on existing product research and the investigation of the work of other designers and companies. Using analytical frameworks such as ACCESS FM, students evaluate how existing products solve similar problems, identifying strengths, weaknesses and opportunities for innovation. Learners develop their ability to draw conclusions from research and use these findings to inform future design thinking. Students also investigate the wider social, economic and environmental factors linked to their chosen design problem. They consider issues such as</p> |  |
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|                                                        | <p>sustainability, accessibility, cost, manufacturing implications and the impact products can have on users and society. This encourages a broader understanding of responsible design and helps students appreciate the complex factors that influence professional design practice.</p> <p>The term concludes with students reviewing and refining their investigation work, ensuring that they have gathered sufficient evidence and developed a thorough understanding of their chosen problem and user needs. By the end of Summer Term 2, students will have completed a strong foundation for their NEA, entering Year 11 with a clearly defined design problem, detailed research and a well-developed understanding of the context that will support the next stages of the design process.</p> |                                                                                                                                                                                                                                                                                                                                                               |
| Summer 2 Assessment:                                   | N/A - NEA                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                 |                                                                                                                                                                                                                                                                                                                                                               |
| What will a student know by the end of each year? Why? | <p>By the end of Year 10, students will understand the core principles of GCSE Design and Technology, including the design process, materials, manufacturing processes, sustainability, emerging technologies and product design. They will be able to apply this knowledge through designing, modelling, manufacturing and evaluating products using both traditional workshop techniques and modern</p>                                                                                                                                                                                                                                                                                                                                                                                                 | <p>By the end of Year 11, students will be able to independently investigate, design, develop, manufacture and evaluate a product in response to a real-world design challenge. They will demonstrate a secure understanding of materials, manufacturing processes, design principles, sustainability and emerging technologies, while applying technical</p> |

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|                                                                                                                                                       | <p>technologies such as CAD/CAM, CNC machining and 3D printing. Students will also begin their GCSE NEA by developing research and investigation skills and identifying design opportunities.</p> <p>Why?</p> <p>This provides students with the knowledge, practical skills and confidence needed to successfully complete their GCSE coursework and examinations. It establishes a strong foundation in both design theory and practical application, preparing students for the increased independence and challenge of Year 11.</p> | <p>knowledge to justify design decisions and solve problems effectively.</p> <p>Why?</p> <p>This prepares students for success in GCSE Design and Technology and equips them with valuable creative, analytical and practical skills that can be applied in further education, apprenticeships and careers within design, engineering, manufacturing and the wider creative industries</p> |
| <p>Extra-Curricular Opportunities</p> <ul style="list-style-type: none"> <li>• Practical Opportunities</li> <li>• Drop-Down Day activities</li> </ul> |                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                         |                                                                                                                                                                                                                                                                                                                                                                                            |