

Curriculum Knowledge Map



CHS Computing and Technology 2022/2023

AQA GCSE Design and Technology (8552)

GCSE Design and Technology Exam Paper 1	Non-exam assessment (NEA)
<p style="text-align: center;">Written exam: 2 hours 100 marks - 50% of GCSE</p> <ul style="list-style-type: none"> • Core technical principles • Specialist technical principles • Designing and making principles <p>In addition:</p> <ul style="list-style-type: none"> • at least 15% of the exam will assess maths. • at least 10% of the exam will assess science. <p>Questions:</p> <p>Section A – Core technical principles (20 marks) A mixture of multiple choice and short answer questions assessing a breadth of technical knowledge and understanding.</p> <p>Section B – Specialist technical principles (30 marks) Several short answer questions (2–5 marks) and one extended response to assess a more in-depth knowledge of technical principles.</p> <p>Section C – Designing and making principles (50 marks) A mixture of short answer and extended response questions</p>	<p style="text-align: center;">Non-exam assessment (NEA): 30–35 hours approx. 100 marks - 50% of GCSE</p> <p>Practical application of:</p> <ul style="list-style-type: none"> • Core technical principles • Specialist technical principles • Designing and making principles • Substantial design and make task. <p>Assessment criteria:</p> <ul style="list-style-type: none"> • Identifying and investigating design possibilities • Producing a design brief and specification • Generating design ideas • Developing design ideas • Realising design ideas • Analysing & evaluating <p>Contextual challenges to be released annually by AQA on 1 June in the year prior to the submission of the NEA. Students will produce a prototype and a portfolio of evidence, Work will be marked by teachers and moderated by AQA</p>

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Year 11 (Design and Technology)

Year 11	AUTUMN		SPRING		SUMMER
	NEA – Generating design ideas	NEA – Developing design ideas	NEA – Realising designs	NEA – Analysing and evaluating	Exam preparation
Declarative <i>What should they know?</i>	<p>NEA Section C</p> <ul style="list-style-type: none"> Students should complete Section C by the End of Autumn Term 1. Design and make prototypes that are fit for purpose. <p>This will be evidenced through: Generating Design Ideas</p> <p>Students should know:</p> <ul style="list-style-type: none"> How to produce Imaginative, creative, and innovative How to create ideas that have been generated, fully avoiding design fixation How to create designs with full consideration of functionality, aesthetics, and innovation. How to produce ideas that have been generated, that take full account of on-going investigation How to produce ideas that are is both fully relevant and focused. Understand how to create extensive experimentation and excellent communication when producing a design or range of ideas. Know how to use a wide range of techniques when producing ideas. Know how to use imaginative use of different design 	<p>NEA Section D</p> <ul style="list-style-type: none"> Students should complete Section C by the End of Autumn Term 2. Design and make prototypes that are fit for purpose. <p>This will be evidenced through: Developing Design Ideas</p> <p>Students should know:</p> <ul style="list-style-type: none"> Know how to produce very detailed development work. Know how to evidence design developments evidenced through a wide range of 2D/3D techniques (including CAD where appropriate). Know how to use CAD/CAM to produce prototypes. Know how to produce excellent models of ideas and developments using a wide variety of methods to test their design. Know how to produce designs and solutions that fully meeting all requirements. Know how to select materials/components with extensive research into their working properties and availability. Students should know how to produce a fully detailed manufacturing specification is produced with comprehensive justification to inform manufacture. 	<p>NEA Section E</p> <ul style="list-style-type: none"> Students should complete Section C by the End of Spring Term 1. Design and make prototypes that are fit for purpose. <p>This will be evidenced through: Realising the Product (manufacture)</p> <p>Students should know:</p> <ul style="list-style-type: none"> Know how to use the correct tools, materials, and equipment (including CAM where appropriate) Know how to use tools and equipment consistently used or operated safely with an exceptionally high level of skill. Know how to apply a high level of quality control which is evident in the practical outcome to ensure the prototype is accurately made/manufactured. Know how to check during manufacture for applying very close tolerances. Know how to produce a prototype that shows an exceptionally high level of making/finishing skills that are fully consistent and appropriate to the desired outcome. Know how to consider commercially viability when producing prototypes, ensuring they fully meet the needs of the client/user. 	<p>NEA Section F</p> <ul style="list-style-type: none"> Students should complete Section C by the End of Spring Term 2. Analyse and evaluate. <p>This will be evidenced through: Analysing and Evaluating</p> <p>Students should know:</p> <ul style="list-style-type: none"> Know that an outcome should show developments taken place throughout manufacture. Know how to test against a context, client requirements and against a design brief and specification. Students should know how to consider feedback from third parties alongside their own reflections. Know how to justify modifications based on feedback. Know how to use ongoing evaluation as part of iterative design process. 	<p>Revision</p> <p>The knowledge, understanding that all students must develop are separated into:</p> <ul style="list-style-type: none"> Core Technical principles Specialist Technical principles Designing and making principles <p>In preparation for the exams student's knowledge and understanding will be reviewed in the following areas:</p> <p>Core technical principles: New and emerging technologies, Energy generation and storage, Developments in new materials, Systems approach to designing, Mechanical devices, Materials, and their working properties.</p> <p>Specialist technical principles: Selection of materials or components, Forces and stresses, Ecological and social footprint, Sources and origins of materials, Using and working with materials, Stock forms, types and sizes, Scales of production, Specialist techniques and processes, Surface treatments and finishes, Materials (Relevant to NEA task being completed)</p> <p>Designing and making principles: Investigation, primary and secondary data, Environmental, social and economic challenge, The work of others, Design strategies, Communication of design ideas,</p>

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	strategies for different purposes and as part of a fully integrated approach to designing.				Prototype development, Selection of materials and components, Tolerances, Material management, Specialist tools and equipment, Specialist techniques and processes
<p>Procedural <i>What should they be able to do?</i></p>	<p>NEA Section C</p> <ul style="list-style-type: none"> Be able to generate ideas based on existing research and investigation. Be able to use client information to generate suitable and purposeful ideas for the NEA tasks. Create ideas using an iterative approach, using ongoing research to inform ideas and refine them. Evaluate ideas and suggest suitable areas for development. Engage with client feedback to support ideas and developments (Section D) Be able to present ideas suitably using appropriate design strategies. This could include using CAD. <p>Revision strategy Students should be able to evidence their knowledge and understanding of the following topics:</p> <ul style="list-style-type: none"> The Work of Other Designers Thermoforming Plastics and Thermosetting Plastics Textiles, Fabrics and Fibres Systems Approach to Designing Surface Treatments and Finishes Stock Forms, Types and Sizes Specialist Techniques and Processes 	<p>NEA Section D</p> <ul style="list-style-type: none"> Be able to develop ideas based on feedback and evaluations. Be able to detail manufacturing elements for ideas and select appropriate materials. Be able to present ideas with appropriate sizing and dimensions. Be able to use CAD/CAM to model and communicate ideas and developments. Be able to use modelling materials and equipment to create mock ups or 3D models of ideas, in part or in full. Be able to communicate manufacturing plans for the manufacture/ prototyping of a product. <p>Revision strategy Students should be able to evidence their knowledge and understanding of the following topics:</p> <ul style="list-style-type: none"> Sources and Origins Softwood, Hardwood, Manufactured Board Smart and Modern Materials Selection of Materials and Components Scales of Production and Quality Control Paper and Board New and Emerging Technologies 	<p>NEA Section E</p> <ul style="list-style-type: none"> Be able to use tools, materials, and equipment to develop a model or prototype for a designed product. To be able to use appropriate manufacturing methods to manufacture a finished item. To be able to use suitable tools and finishing techniques to manufacture a high-quality outcome. To be able to use measurements and tolerances to check the assembly of items. To be able to apply a suitable finish to a product that has been manufactured. To be able to evidence learning and work, taking photographs and writing up information relating to manufacturing. <p>Revision strategy Students should be able to evidence their knowledge and understanding of the following topics:</p> <ul style="list-style-type: none"> Mechanical Devices Shape and Form using Cutting, Abrasion and Addition Forces and Stresses Ferrous and Non-Ferrous Metals Energy Generation and Storage Ecological and Social Footprint Designing and Making Principles 	<p>NEA Section F</p> <ul style="list-style-type: none"> Write and produce a summative evaluation based on the design and manufacture of a product. Be able to justify where the product meets the needs of the context, client and user for the product. To identify the commercial viability of the outcome. To be able to test the product against a set of criteria including to gain judgement and opinions from a client or user. <p>Revision strategy Students should be able to evidence their knowledge and understanding of the following topics:</p> <ul style="list-style-type: none"> Materials and their Properties Systems Design (Electronics) Industry and Automation Production techniques Sustainability User centred design CAD/CAM Maths in D&T Formulas and Equations 	<p>As well as exploring a range of revision strategies and techniques in Design and Technology students will be looking at developing their ability to answer a range of examination questions and question styles including how to answer:</p> <ul style="list-style-type: none"> Section A - A mixture of multiple choice and short answer questions assessing a breadth of technical knowledge and understanding. Section B - Several short answer questions (2–5 marks) and one extended response to assess a more in-depth knowledge of technical principles. Section C - A mixture of short answer and extended response questions. <p>Preparations to also include:</p> <ul style="list-style-type: none"> Extended writing Competing tables and graphs Descriptive writing Revision techniques Reading questions Sketching and designing

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<p>Disciplinary Literacy (Tier 3 Vocab)</p>	<p>Specific Tier 3 Vocab covered through this part of the academic year and in relation to NEA tasks includes:</p> <ul style="list-style-type: none"> • Iterative • Design idea • Client review • Feedback • 3D communication • Annotate 	<p>Specific Tier 3 Vocab covered through this part of the academic year and in relation to NEA tasks includes:</p> <ul style="list-style-type: none"> • Technical • Working properties • Prototype • Continuous improvement • Development 	<p>Specific Tier 3 Vocab covered through this part of the academic year and in relation to NEA tasks includes:</p> <ul style="list-style-type: none"> • Schematic diagram • Lean manufacturing • Construction • Prototype • Tolerance • Quality control • Quality assurance • Finishing technique 	<p>Specific Tier 3 Vocab covered through this part of the academic year and in relation to NEA tasks includes:</p> <ul style="list-style-type: none"> • Evaluate • Modification • Market pull • Functionality • Ethics • Ecological 	<p>During this term students will be introduced to key command words as used in AQA written examination papers. Examples are:</p> <ul style="list-style-type: none"> • Apply • Calculate • Consider • Identify • Justify • Outline • Describe • Evaluate
<p>Disciplinary Literacy</p>	<p>Coursework and NEA tasks are an opportunity for learners to evidence and communicate their projects with various literacy styles.</p> <p>For <u>Section C</u> this will include:</p> <ul style="list-style-type: none"> • Using annotations and labelling to communicate ideas with key terms. • This will also be reflective writing, evaluating ideas as they are produced. • Questioning will take place to garner support and feedback from a client. 	<p>Coursework and NEA tasks are an opportunity for learners to evidence and communicate their projects with various literacy styles.</p> <p>For <u>Section D</u> this will include:</p> <ul style="list-style-type: none"> • Explaining and justifying ideas and developments based on feedback. • Communicating with technical language the manufacturing process. • Using the metric system to communicate ideas with suitable dimensioning. • 3D communication and presenting ideas using CAD systems. • This will also be reflective writing, evaluating ideas as they are produced. 	<p>Coursework and NEA tasks are an opportunity for learners to evidence and communicate their projects with various literacy styles.</p> <p>For <u>Section E</u> this will include:</p> <ul style="list-style-type: none"> • Explain and justifying, using technical language the manufacturing they are undertaking. • Using the technical language for materials, tools, equipment and finishing techniques to record and evidence and manufacturing plan. • Questioning will take place to garner support and feedback from a client. 	<p>Coursework and NEA tasks are an opportunity for learners to evidence and communicate their projects with various literacy styles.</p> <p>For <u>Section F</u> this will include:</p> <ul style="list-style-type: none"> • Using evaluation writing techniques to write a summative evaluation for the NEA task. • This is a more extended written task, so will require students to apply their knowledge and understanding to a reflective document, explaining areas of strength, areas for developments and justifications for these. • Questioning will take place to garner support and feedback from a client. 	<p>For examinations there will be different writing approaches needed to support assessment:</p> <p>6- and 8-Mark Questions</p> <ul style="list-style-type: none"> • Analysis and evaluation <p>These will be practiced and technique shown to students to support outcome based on their knowledge and understanding.</p>
<p>Assessment</p>	<p>As coursework (NEA) is an ongoing process, feedback and assessment will be continuous throughout the half term.</p> <p>Key Assessment Piece: Classwork piece – NEA Section C: Producing Design Ideas (20 Marks) initial submission.</p>	<p>As coursework (NEA) is an ongoing process, feedback and assessment will be continuous throughout the half term.</p> <p>College Entry Mock examination: Students will have a Mock exam during the exam window for Year 11 students. This will be a full exam paper worth 100 marks.</p> <p>Key Assessment Piece: classwork piece – NEA Section D: Developing Design Ideas (20 Marks) initial submission.</p>	<p>As coursework (NEA) is an ongoing process, feedback and assessment will be continuous throughout the half term.</p> <p>Classwork piece – NEA Section E: Realizing Design Ideas (20 Marks) initial submission.</p> <p>Key Assessment Piece: NEA Submission – Section F (Reflecting and Evaluating) Reviews of their NEA projects will form part of this assessment to ensure teacher feedback can be provided prior to final submission.</p>	<p>As coursework (NEA) is an ongoing process, feedback and assessment will be continuous throughout the half term.</p> <p>NEA Deadline</p> <p>Spring Mock examination: Students will have a Mock exam during the exam window for Year 11 students. This will be a full exam paper worth 100 marks.</p> <p>Key Assessment Piece: Classwork piece – Section B/C exam question: Energy generation and storage</p>	<p>Key Assessment Piece: Classwork piece – Section B/C exam question: Ecological and social footprint, Sources and origins of materials</p> <p>Key Assessment Piece: Classwork piece – Section B/C exam question: Specialist techniques and processes</p>