Curriculum Knowledge Map

CHS Computing and Technology 2024/2025

AQA GCSE Design and Technology (8552)

GCSE Design and Technology Exam Paper 1	Non-exam assessment (NEA)
Written exam: 2 hours **100 marks - 50% of GCSE** • Core technical principles • Specialist technical principles • Designing and making principles In addition: • at least 15% of the exam will assess maths • at least 10% of the exam will assess science. Questions: **Section A – Core technical principles (20 marks)** A mixture of multiple choice and short answer questions assessing a breadth of technical knowledge and understanding. **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. **Section C – Designing and making principles (50 marks)** A mixture of short answer and extended response questions	**Non-exam assessment (NEA): 30–35 hours approx.** **100 marks - 50% of GCSE** **Practical application of:** • Core technical principles • Specialist technical principles • Designing and making principles • Substantial design and make task **Assessment criteria:** • Identifying and investigating design possibilities • Producing a design brief and specification • Generating design ideas • Developing design ideas • Realising design ideas • Analysing & evaluating 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

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Year 10 (Design and Technology)

Year 10	AUTUMN		SPRING		SUMMER	
	Materials & there working properties	**Forces and Stresses and Production**	**The Work of Others**	**New & Emerging Technologies**	**Design, Modelling and Prototyping**	**NEA – identification and investigating design possibilities**
Declarative *What should they know?*	*Students should know the different types of material properties and the correct terms used to describe these.* **Paper and boards** • Students should know the primary source of materials for producing paper and boards • Students should be able to recognise and characterise different types of paper and boards • Students should understand how the physical and working properties of a range of paper and board products affect their performance **Natural and manufactured timbers** • Students should know the primary sources of materials for producing natural and manufactured timbers • Students should be able to recognise and characterise different	**Forces and stresses on materials and objects** • Students should be able to recognise and characterise tension, compression, bending, torsion and shear forces and stresses. • Students should understand the impact of different forces and stresses on materials **Mechanical devices** • Students should be able to recognise and identify a range of movements • Student should understand the functions of mechanical devices to produce linear, rotary, reciprocating and oscillating movements. • Students should understand how mechanisms can be used to change magnitude and direction of force, including levers, linkages and rotary systems **Sustainability**	**The work of others** • Students should know how to investigate, analyses and evaluate the work of others • Students should understand how investigating the work of other designers and design companies can inform designing **Design strategies** • Students should be able to use a range of design strategies to help produce imaginative and creative design ideas • Students should understand how to explore and develop design ideas • Explore and develop their own ideas using an iterative process including: ○ sketching ○ modelling ○ testing ○ evaluation of their work to improve outcomes.	**New and emerging technologies** • Students should know that it is important to consider scenarios from different perspectives and considering: ○ planned obsolescence ○ design for maintenance ○ ethics ○ the environment **Energy generation** • Students should understand how power is generated from fossil and nuclear fuels • Students should understand how power is generated from renewable energy sources such as: wind, solar, tidal, hydroelectric and biomass • Students should be aware of the arguments for and against the selection of fossil fuels, renewable energy and nuclear power **Energy storage**	**Communication of design ideas and prototype development** • Students should understand how to develop, communicate, record and justify design ideas • Students should be aware of a range of techniques to support clear communication of design ideas • Students should know how to design and develop prototypes in response to client wants and needs • Students should be able to critically evaluate prototypes and suggest modifications **Design strategies** • Students should be able to use a range of design strategies to help produce imaginative and creative design ideas • Students should understand how to explore and develop design ideas	**Students will be completing their NEA Tasks in GCSE Design and Technology.** Their contexts will be released by the exam board on the 1st June and released to students at the start of the summer term. • Students should complete Section A and B by the summer break: • Identify, investigate and outline design possibilities This will be evidences through: • Identifying & investigating design possibilities • Producing a design brief & specification Student should know to identify design possibilities from a given context Students should know a variety of analytical skills that can be applied to a given context

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	types of natural and manufactured timbers • Students should understand how the physical and working properties of a range of natural and manufactured timbers affect their performance **Metals and alloys** • Students should know the primary sources of materials for producing metals and alloys • Students should be able to recognise and characterise different types of metals and alloys • Students should understand how the physical and working properties of a range of metals and alloys affect their performance **Polymers** • Students should know the primary sources of materials for producing polymers • Students should be able to recognise and characterise different types of polymers • Students understand the physical and working properties for arrange of thermosetting and thermoforming polymers **Textiles**	• Students should be able to understand the impact of resource consumption on the planet: o finite o non-finite o disposal of waste • Students should be able to take into consideration the ecological and social footprint of materials. **Environment** • Students should know the positive and negative impacts new products have on the environment: o continuous improvement o efficient working o pollution o global warming. **Ecological issues in the design and manufacture of products** • Students should know the impact of: o Deforestation, mining, drilling and farming. o Mileage of product from raw material source, manufacture, distribution, user location and final disposal. o That carbon is produced during the manufacture of products. **The 6 R's**	**Communication of design ideas** • Students should know how to develop, communicate, record and justify design ideas using a range of appropriate techniques such as: o freehand sketching, isometric and perspective o 2D and 3D drawings o annotated drawings that explain detailed development or the conceptual stages of designing o exploded diagrams to show constructional detail or assembly o working drawings: 3rd angle orthographic, using conventions, dimensions and drawn to scale **Production techniques and systems** • Students should know: the contemporary and potential future use of: o automation o computer aided design (CAD) o computer aided manufacture (CAM) o flexible manufacturing systems (FMS) o just in time (JIT) o lean manufacturing. **Modern materials**	• Students should be able to identify mechanical power and understand how it is stored • Students should understand pneumatics and hydraulics as examples of kinetic pumped storage systems • Students should understand the functional properties of alkaline and rechargeable batteries **Electronic systems processing** • Students should understand the difference between analogue and digital signals • Students should understand how microcontrollers are programmed as counters, timers and for decision making to provide functionality to products and processes • Students should understand the use of buzzers, speakers and lamps to provide functionality to products and process. **Mechanical devices** • Students should be able to recognise and identify a range of movements • Student should understand the functions of mechanical devices to	**Communication of design ideas** • Students should know how to develop, communicate, record and justify design ideas using a range of appropriate techniques such as: o freehand sketching, isometric and perspective o 2D and 3D drawings o annotated drawings that explain detailed development or the conceptual stages of designing o exploded diagrams to show constructional detail or assembly o working drawings: 3rd angle orthographic, using conventions, dimensions and drawn to scale o computer based tools o modelling: working directly with materials and o components, e.g., card modelling, producing a toile when designing garments **Selection of materials and components** • Students should be able to select and use materials and components appropriate to a specific task	Students should know how to conduct primary and secondary research relating to a given context Students should know how select relevant work from other to assist with design development and research Students should know how to be concise with research and how to relate this to their contexts. **Investigation, primary and secondary data** • Students should understand primary and secondary data can be collected to assist the understanding of client and user needs • Students should know how to write a design brief and produce a manufacturing specification • Students should understand how the environment, and social and economic challenge influence designing and making.

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	• Students should know the primary source of materials for producing textiles • Students should be able to recognise and characterise different types of textile • Students should understand how the physical and working properties of a range pf textiles affect their performance **Forces and stresses on materials and objects** • Students should be able to recognise and characterise tension, compression, bending, torsion and shear forces and stresses. • Students should understand the impact of different forces and stresses on materials **Improving functionality** • Students should understand how materials may be enhanced to resist and work with forces and stresses to improve functionality. **For one or two of three material areas above students should**	• Students should know the 6 R method for consideration when designing and making products (Reduce, Refuse, Re-Use, Repair, Recycle and Rethink). **Social issues in the design and manufacture of products** • Students should know the safe working conditions; reducing oceanic/atmospheric pollution and reducing the detrimental (negative) impact on others. **Scales of production** • Students should know how products are produced in different volumes. • The reasons why different manufacturing methods are used for different production volumes: ○ prototype ○ batch ○ mass ○ continuous. **The use of production aids** • Students should know how to use measurement/reference points, templates, jigs and patterns where suitable. **Tolerances and allowances**	• Students should be able to recognise a range of modern materials • Students should be able to describe developments made through invention of new or improved processes involving modern materials • Students should be able to explain how modern materials can be used to alter functionality. **Smart materials** • Students should be able recognise a range of smart materials • Students should understand how the functional properties of a range of smart materials can be changed by external stimuli **Composite materials and technical Textiles** • Students should understand how material properties can be enhanced by combining two or more materials • Students should recognise a range of composite materials and technical textiles • Students should understand how fibres can manipulated to create technical textiles. **People**	produce linear, rotary, reciprocating and oscillating movements. • Students should understand how mechanisms can be used to change magnitude and direction of force, including levers, linkages and rotary systems **Production techniques and systems** **CAD/CAM** • Students should be able to understand The contemporary and potential future use of: ○ automation ○ computer aided design (CAD) ○ computer aided manufacture (CAM) ○ flexible manufacturing systems (FMS)	• Students should understand how functionality, availability and cost affect the selection of materials and components • Students should know the different types of material properties and the correct terms used to describe these. **Students must be able to apply the following mathematical skills.** • Arithmetic and numerical computation ○ Recognise and use expressions in ○ decimal and standard form. ○ Use ratios, fractions and percentages. ○ Calculate surface area and volume. • Handling data ○ Presentation of data, diagrams, bar charts and histograms. • Graphs ○ Plot, draw and interpret appropriate graphs. ○ Translate information between graphical and numeric form. • Geometry and trigonometry ○ Use angular measures in degrees. ○ Visualise and represent 2D and 3D	

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	• Know how primary sources are converted into products
	• Understand ecological issues in the manufacture and recycling of the material
	• How different properties of the material make them suitable for use in commercial products
	• Understand the commercial stock forms, types and sizes of materials in order to calculate quantities
	• Understand wasting and abrading techniques for the material
	• Be aware of school-based cutting, forming and process techniques tools and equipment
	• Understand how the properties of the material affect there use in commercial appliances
	• Be aware of commercial processing techniques
	• Understand the use of specialist quality control methods
	• Understand how the application of surface treatments and finishes can modify the functional and aesthetic properties of the material.
		• Students should understand the use of tolerances to ensure accuracy is considered when making a product
		• Students should understand how a range of materials are formed to designated tolerances
		• Students should understand why tolerances are applied during making activities
		
		Quality control
		• Students should know the application and use of quality control to include measurable and quantitative systems used during manufacture
			• Students should know how technology push/market pull affects choice.
			• Changing job roles due to the emergence of new ways of working driven by technological change.
			
			Culture
			• Students should know how changes in fashion and trends in relation to new and emergent technologies.
			• Respecting people of different faiths and beliefs.
			
			Society
			• Students should know wow products are designed and made to avoid
			• having a negative impact on others:
			  ○ design for disabled
			  ○ elderly
			  ○ different religious groups.
					forms including two dimensional representations of 3D objects.
					○ Calculate areas of triangles and rectangles, surface areas and volumes of cubes.	

Procedural	Student should be able to Apply their theoretical knowledge to complete	Students should be able to use math and science knowledge to answer	Students should be able to describe the main features of iterative design, user	Students should be able to describe the main stages that make up an electronic system	Students should be able to write a design brief and design specification for a product or system.	Students should be able to apply their knowledge and understanding to a given context/scenario.

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What should they be able to do?	examination style questions.
	
	Students should be able to discuss the potential effects of new designs on culture and society
	
	Students should be able to describe the characterises, properties and commonly used for the following material areas: Paper and board, metals and alloys, polymers, Textiles, Timber, and manufactured boards
	
	Students should be able to describe the stock forms for the following material areas: Paper and board, metals and alloys, polymers, Textiles, Timber, and manufactured boards
	
	Students should be able to explain how the following materials areas are converted into workable forms: Paper and board, metals and alloys, polymers, Textiles, Timber and manufactured boards
	
	Students should be able to explain why standard components are used
	
	Students should be able to identify and select appropriate standard components for a variety of different materials
		questions related to design and technology
		
		Students should be able to explain how designing and making is affected by ecological, environmental and social issues.
		
		Students should be able to discuss the benefits of Fairtrade for producers and consumers.
		
		Students should be able to explain the benefits of Computer base design and manufacture tools
		
		Students should be able to describe how computer-based tools can be used to share and present ideas and technical information
		
		Students should be able to describe the characteristics and give examples of different scales of manufacture
		
		Students should be able to explain why the equipment used changes with the scale of manufacture.
		
		Students should be able to use reference points in measurements
		
		Students should be able to explain why production aids are used
			centred design and systems approach to designing
			
			Students should be able to explain the advantages and disadvantages to different design strategies
			
			Students should be able to analyse and evaluate the work of at least two different designers and companies
			
			Students should be able to use the work of past and present designers to aid their own designing.
			
			Students should be able to describe the main methods of conducting research and investigation
			
			Students should be able to explain the difference between primary and secondary data
			
			Student should be able to describe the use of ergonomic and anthropometric data and use this data effectively in designing.
			
			Students should be able to describe the main stages in developing a design idea
			
			Students should be able to use card models, toiles and breadboards to create
				Students should be able to select and use appropriate input, process and out put components in a circuit and product.
				
				Students should be able to describe the four types of motion
				
				Students should be able to describe the basic principles of a lever and the different classes of levers
				
				Students should be able to describe how linkages, cams, gears and pulleys transfer motion
				
				Students should be able to explain how these mechanical devices are used to change the magnitude and direction of forces.
				
				Students should be able to describe how energy is stored and generated
				
				Students should be able to explain he advantages and disadvantages of using renewable energy sources to power products and systems.
				
				Students should be able to describe the characterises of a variety of new materials
					Students should be able to modify a design brief because of user feedback
					
					Students should be able to produce a manufacturing specification for a product or system
					
					Students should be able to explain the meanings of the properties of materials
					
					Students should be able to describe the typical properties of different types of materials
					
					Students should be able to describe a range of examples of how product designs can be modified to improve the performance of a product.
					
					Students must be able to apply the following mathematical skills.
					• Arithmetic and numerical computation
					  ○ Recognise and use expressions in
					  ○ decimal and standard form.
					  ○ Use ratios, fractions and percentages.
					  ○ Calculate surface area and volume.
					• Handling data
					  ○ Presentation of data, diagrams, bar charts and histograms.
						Students should be able to successful identify and explore design possibilities linked to a contextual challenge
						
						Students should be able to generate client and user profiles relevant to a contextual challenge
						
						Students should be able to research and analyse work by other designers and companies in relation to their context.
						
						Students should be able to identify economic and social impacts of products and materials in relation to research.

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	Students should be able to explain the purpose of surface treatments and finishes for a range of materials Students should be able to describe and apply surface treatments and finishing techniques to a range of materials Students should be able to describe and consider a range of factors that can influence the choice of material for a product. Students should be able to explain the important properties required for commercial products Students should be able to explain why reinforcement is used in products Student should be able to describe and reinforce different materials to enhance their properties	Students should be able to explain the impact of new and emerging technologies on industry and enterprise Students should be able to discuss the potential effects of the use of new and emerging technologies on employment Students should be able to explain the impact of CAD and CAM on production Students should be able to Explain how production techniques and systems improve manufacturing efficiency Students should be able to explain the impact of new and emerging technologies on sustainability	prototypes successfully and explain why. Students should be able to produces sketches in perspective, isometric, exploded and orthographic styles. Students should be able to use annotation to enhance design communication Students should be able to describe how mathematical modelling and computer-based tools are used to communicate design ideas Students should be able to physically model ideas. Students should be able to explain the considerations that are considered when designing prototypes	Student should be able to explain what is meant by smart and composite material Students should be able to list specific technical textiles, modern, smart and composite materials and their typical uses. Students should be able to explain reasons why accuracy is important in manufacture Student should be able to explain the importance of quality control and types of quality control and assurance Students should be able to explain tolerance and use it effectively	• Graphs ○ Plot, draw and interpret appropriate graphs. ○ Translate information between graphical and numeric form. • Geometry and trigonometry ○ Use angular measures in degrees. ○ Visualise and represent 2D and 3D forms including two dimensional representations of 3D objects. ○ Calculate areas of triangles and rectangles, surface areas and volumes of cubes.	
Disciplinary Literacy (Tier 3 Vocab)	• Toughness • Component • Properties • Ferrous • nonferrous • Polymer • Thermosetting • Thermoplastic	• Forces and Stresses • Mechanical Systems • Bending • Compression • Shear • Tension • Torsion • Gears	• Just in time • Kaizen • Lean manufacturing • Market pull • Technology push • Nanomaterials • Society • Culture	• Automation • Batch production • Bespoke • Biopolymers • CAD • CAM • Carbon footprint • Carbon offsetting	• Product analysis • Prototype • Quality control • Tolerance • Models • Manufacture • Variance • Adaptation	• Questionnaire • Investigation • Primary data • Secondary data • Research • Analysis • Focus group • Product analysis

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	• Monomer • Ore • Veneer • Wasting • Abrading • Absorbency • Density • Fusibility • Electrical conductivity • Thermal conductivity • Strength • Hardness • Toughness • Malleability • Ductility • Elasticity	• Magnitude • Movement • Oscillating, Linear, Reciprocating, Rotary • Pivot • Pulley • Ecological Footprint • Social Footprint • The 6 R's • Scales of Production • Production Aids • Jig/Former • Commercial processes • Surface Treatment • Consumer • End of life disposal • Fossil fuels • Fracking • Planned obsolescence	• Biomass • Biofuel • Composite • e-textiles • hydroelectric • Kinetic • Nuclear • Renewable • Fibre optics • Innovation • Pneumatics	• Emerging Technologies • Finite • Fairtrade • Input • Output • Process • Microcontroller • Influence • Brand	• Development • 3D Communication • Inclusive design • Modification	• Evaluation • Summary • Client profile • Ergonomics • Anthropometrics
Assessment	**Key Assessed Piece:** End of topic assessment. Students will be assessed on knowledge of materials, their working properties, selection of materials, stock forms and processing. **Key Assessed Piece:** Students will be assessed on their practical application skills relating to the manufacturing of a product using a range of materials.	**Key Assessed Piece:** Extended writing assesses students' knowledge and understanding of sustainability issued in the context of D&T. **Key Assessed Piece:** End of topic assessment Students will be assessed on their knowledge and understanding of manufacturing processes, forces and stresses, scales of production.	**Key Assessed Piece:** The work of others presentation, students will be assessed on their knowledge of designers and their influence, quality of presentation, and presenting skill **Key Assessment Piece:** Progress Test - Students will be assessed on their knowledge and understanding of: • Materials & their working properties • Forces and Stresses • Production • The Work of Others	**Key Assessed Piece:** Design Assessment Students will be assessed on design and drawing techniques applied to a range of drawing techniques applied to their learning (isometric, perspective and orthographic). **Key Assessed Piece:** End of topic assessment. Students will be assessed on their knowledge and understanding or new and emerging technologies, energy generation and energy storage and electronic systems.	**Key Assessed Piece:** Extended writing assessment Evaluation of practical techniques including modifications Students will be assessed on suitability of their design, and justification for development works. **Key Assessed Piece:** Students will be assessed on Math GCSE questions demonstrating and correctly using Math and Science skills relevant to the D&T course.	As coursework (NEA) is an ongoing process, feedback and assessment will be continuous throughout the half term. NEA section A review and feedback. **Key Assessment Piece:** **Year 10 Summer Exams** Progress Test - Students will be assessed on their knowledge and understanding of the full Design & Technology course. Students will sit a full exam paper worth 100 marks.

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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 *What should they know?*	**NEA Section C** • Students should complete Section C by the End of Autumn Term 1. • Design and make prototypes that are fit for purpose This will be evidenced through: Generating Design Ideas **Students should know:** • 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.	**NEA Section D** • Students should complete Section C by the End of Autumn Term 2. • Design and make prototypes that are fit for purpose This will be evidenced through: Developing Design Ideas **Students should know:** • 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	**NEA Section E** • Students should complete Section C by the End of Spring Term 1. • Design and make prototypes that are fit for purpose This will be evidenced through: Realising the Product (manufacture) **Students should know:** • 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.	**NEA Section F** • Students should complete Section C by the End of Spring Term 2. • Analyse and evaluate This will be evidenced through: Analysing and Evaluating **Students should know:** • 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.	**Revision** The knowledge, understanding that all students must develop are separated into: • Core Technical principles • Specialist Technical principles • Designing and making principles In preparation for the exams student's knowledge and understanding will be reviewed in the following areas: **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. **Specialist technical principles:** Selection of materials or components, Forces and stresses, Ecological and	

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	• 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 strategies for different purposes and as part of a fully integrated approach to designing.	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.	• 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.		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) **Designing and making principles:** Investigation, primary and secondary data, Environmental, social and economic challenge, The work of others, Design strategies, Communication of design ideas, Prototype development, Selection of materials and components, Tolerances, Material management, Specialist tools and equipment, Specialist techniques and processes	
Procedural *What should they be able to do?*	**NEA Section C** • 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.	**NEA Section D** • 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	**NEA Section E** • 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	**NEA Section F** • 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.	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: • Section A - A mixture of multiple choice and short answer questions assessing a breadth of technical knowledge and understanding	

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	• 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. **Revision strategy** Students should be able to evidence their knowledge and understanding of the following topics: • 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	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. **Revision strategy** Students should be able to evidence their knowledge and understanding of the following topics: • 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	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. **Revision strategy** Students should be able to evidence their knowledge and understanding of the following topics: • 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	• To be able to test the product against a set of criteria including to gain judgement and opinions from a client or user. **Revision strategy** Students should be able to evidence their knowledge and understanding of the following topics: • 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	• 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. Preparations to also include: • Extended writing • Competing tables and graphs • Descriptive writing • Revision techniques • Reading questions • Sketching and designing	
Disciplinary Literacy (Tier 3 Vocab)	Specific Tier 3 Vocab covered through this part of the academic year and in relation to NEA tasks includes: • Iterative • Design idea • Client review	Specific Tier 3 Vocab covered through this part of the academic year and in relation to NEA tasks includes: • Technical • Working properties • Prototype	Specific Tier 3 Vocab covered through this part of the academic year and in relation to NEA tasks includes: • Schematic diagram • Lean manufacturing • Construction	Specific Tier 3 Vocab covered through this part of the academic year and in relation to NEA tasks includes: • Evaluate • Modification • Market pull	During this term students will be introduced to key command words as used in AQA written examination papers. Examples are: • Apply • Calculate	

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	• Feedback • 3D communication • Annotate	• Continuous improvement • Development	• Prototype • Tolerance • Quality control • Quality assurance • Finishing technique	• Functionality • Ethics • Ecological	• Consider • Identify • Justify • Outline • Describe • Evaluate	
Disciplinary Literacy	Coursework and NEA tasks are an opportunity for learners to evidence and communicate their projects with various literacy styles. For <u>Section C</u> this will include: • 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.	Coursework and NEA tasks are an opportunity for learners to evidence and communicate their projects with various literacy styles. For <u>Section D</u> this will include: • 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.	Coursework and NEA tasks are an opportunity for learners to evidence and communicate their projects with various literacy styles. For <u>Section E</u> this will include: • 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.	Coursework and NEA tasks are an opportunity for learners to evidence and communicate their projects with various literacy styles. For <u>Section F</u> this will include: • 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.	For examinations there will be different writing approaches needed to support assessment: 6- and 8-Mark Questions • Analysis and evaluation These will be practiced and technique shown to students to support outcome based on their knowledge and understanding.	
Assessment	As coursework (NEA) is an ongoing process, feedback and assessment will be continuous throughout the half term. **Key Assessment Piece:** **Classwork piece –**	As coursework (NEA) is an ongoing process, feedback and assessment will be continuous throughout the half term. **College Entry Mock examination:** Students will have a Mock exam during the exam window for Year	As coursework (NEA) is an ongoing process, feedback and assessment will be continuous throughout the half term. **Classwork piece –** NEA Section E: Realizing Design Ideas (20 Marks) initial submission.	As coursework (NEA) is an ongoing process, feedback and assessment will be continuous throughout the half term. **NEA Deadline** **Spring Mock examination:** Students will have a Mock	**Key Assessment Piece:** **Classwork piece –** Section B/C exam question: Ecological and social footprint, Sources and origins of materials **Key Assessment Piece:** **Classwork piece –**	

Curriculum Knowledge Map

	NEA Section C: Producing Design Ideas (20 Marks) initial submission.	11 students. This will be a full exam paper worth 100 marks. **Key Assessment Piece: classwork piece –** NEA Section D: Developing Design Ideas (20 Marks) initial submission.	**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.	exam during the exam window for Year 11 students. This will be a full exam paper worth 100 marks. **Key Assessment Piece: Classwork piece –** Section B/C exam question: Energy generation and storage	Section B/C exam question: Specialist techniques and processes	