

DESIGN AND TECHNOLOGY CURRICULUM MAPPING 2022/23

To provide a curriculum that inspires creativity, innovation and resilience. Units of knowledge will:

- investigate where materials come from and their properties
- develop understanding of manufacturing techniques enabling students to select appropriate tools and materials
- engage in an iterative process of designing and making to meet the user's needs within a context
- develop understanding of past and present designers, social, moral, environmental and cultural influences


By the end of their journey at Christ the King students will be equipped to progress onto further education and a professional career within the design industry.

Students at KS3 will have 1 hour a week of DT for a whole year. They will stay in the same group, with the same teacher, but will rotate rooms if needed.

	Autumn 1	Autumn 2	Spring 1	Spring 2	Summer 1	Summer 2
Year 7 Design and Technology – 1 hour per week						
Topic	Baseline – 1 lesson Graphics skills – 4 lessons Safety – 1 lesson	FPT's & core materials Textiles and Timber – 6 x 2 lessons	Contextual project – 10 lessons Local Communities	FPT's & core materials Graphics – 5 lessons Smoothie packaging	Sustainability and the environment – 5 lessons End of year assessment – 1 lesson The 6 R's	
Knowledge	What is D&T? What is isometric, oblique, perspective drawing? How do you work safely in a workshop? What are the names and uses of a variety of tools and equipment?	What are textiles? What is the source? How are textiles produced? What tools and equipment are used with textiles? What are timbers? What is the source? How are timbers produced? What tools and equipment are used with timbers?	The Context: <i>You are working as a designer for a local design company who concentrate and specialise in helping local communities.</i> <i>Your task is to research, plan, design and make a prototype of a product that will help the local area and its people.</i> How do you research? What are peoples needs and wants? What is product analysis? What is ACCESS FM? How do you produce design ideas? What is a prototype?	What are papers and boards? What is the source? How are they made? How do you cut and shape papers and boards? What are nets? What is tessellation?	What are the 6R's Why do we need to consider the environment? What happens to products when we have finished using them?	

Skills	Graphics skills and presentation 3D drawing and rendering	Manufacturing skills Accurate and safe use of tools and equipment	Research and investigation Graphic and design skills Communication – drawing / annotation Modelling Evaluation	Manufacturing skills Accurate and safe use of tools and equipment	Recycling / upcycling
Assessment	Baseline Assessment Test – teacher assessed.	Assessment of practical products – self / teacher Core material test	Assessment of contextual folder – teacher assessment	Assessment of practical products – self / teacher Core material test	End of year test
Links to NC	develop and communicate design ideas using annotated sketches, detailed plans, 3-D and mathematical modelling, oral and digital presentations and computer-based tools	select from and use specialist tools, techniques, processes, equipment and machinery precisely, including computer-aided manufacture – wood & textiles	use research and exploration, <i>such as the study of different cultures</i> , to identify and understand user needs identify and solve their own design problems use a variety of approaches [for example, biomimicry and user-centred design], to generate creative ideas and avoid stereotypical responses develop and communicate design ideas using annotated sketches, detailed plans, 3-D and mathematical modelling, oral and digital presentations and computer-based tools analyse the work of past and present professionals and others to develop and broaden their understanding test, evaluate and refine their ideas and products against a specification	select from and use specialist tools, techniques, processes, equipment and machinery precisely, including computer-aided manufacture – Graphics analyse the work of past and present professionals and others to develop and broaden their understanding – design styles	understand developments in design and technology, its impact on individuals, society and the environment, and the responsibilities of designers, engineers and technologists

Year 8 Design and Technology – 1 hour per week

Topics	Structures – Chair project 8 lessons	FPT's and core materials Mechanisms and Plastic – 5x2 lessons	Contextual project – Cultures – 10 lessons	Metals 5 lessons	FPT's & core materials Multi material/Electronics? (cost) – 6 lessons
Knowledge	Forces and stresses ACCESS FM Anthropometrics and Ergonomics Paper and card joining	What are polymers? What is the source? What tools and equipment are used with polymers? *for 2022/23 this will be the graphics rotation as Y7 have already done the plastics. What are the 4 types of motion? What are mechanisms and why do we use them? How do you change the direction of motion? -linkages -cams	Research the work of designers and cultures Writing a design specification Know different designers and iconic products Product analysis Understand what collaborative design is Form v's function Iterative design	What are metals? What is the source? What tools and equipment are used with metals?	£1.57 torch = £243 https://kitronik.co.uk/collections/electronic-projects/products/2114-led-torch-kit-with-battery 
Skills	Product analysis Drawing Developing Prototyping Evaluating	Manufacturing skills Accurate and safe use of tools and equipment Testing and modelling	<i>Be able to redesign an everyday household product in the style of a chosen designer.</i> Research & investigation Product analysis Product development Evaluation	Accurate and safe use of tools and equipment	Manufacturing skills Accurate and safe use of tools and equipment
Assessment	Project assessment	Assessment of practical products – self / teacher Mechanisms test	Assessment of contextual folder – teacher assessment	Core material test – ALL materials inc. Y7	End of year test all NC.
Link to NC	use research and exploration, to identify and understand user needs understand how to reformulate problems given to them	understand how more advanced mechanical systems used in their products enable changes in movement and force	use research and exploration, such as the study of different cultures , to identify and understand user needs develop specifications to inform the design of innovative, functional, appealing products that respond to needs in a variety of situations	select from and use specialist tools, techniques, processes, equipment and machinery precisely, including computer- aided manufacture	select from and use a wider, more complex range of materials, components and ingredients, taking into account their properties understand how more advanced electrical and electronic systems

	<p>use a variety of approaches [for example, biomimicry and user-centred design], to generate creative ideas and avoid stereotypical responses</p> <p>develop and communicate design ideas using annotated sketches, detailed plans, 3-D and mathematical modelling, oral and digital presentations and computer-based tools</p> <p>understand and use the properties of materials and the performance of structural elements to achieve functioning solutions</p>		<p>use a variety of approaches [for example, biomimicry and user-centred design], to generate creative ideas and avoid stereotypical responses</p> <p>develop and communicate design ideas using annotated sketches, detailed plans, 3-D and mathematical modelling, oral and digital presentations and computer-based tools</p> <p>analyse the work of past and present professionals and others to develop and broaden their understanding</p> <p>test, evaluate and refine their ideas and products against a specification</p>		<p>can be powered and used in their products</p>
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	Autumn 1	Autumn 2	Spring 1	Spring 2	Summer 1	Summer 2
Year 9 Design and Technology GCSE AQA – 2 hours per week						
Topics	What is good design? Structures and forces Bridge design Core theory – Energy generation and storage	Core theory – materials and their working properties Material FPT's	Core theory -New and emerging technologies CAD CAM project – merchandise	Core theory -developments in new materials -systems approach to designing FPT – Be Seen Be Safe https://kitronik.co.uk/products/2106-rear-bike-light-project-kit	Core theory - Mechanical devices FPT Graphics mechanisms?	Specialist areas - TIMBER
Knowledge	-how to use ACCESS FM for Product analysis - Different types of forces and stresses - Triangulation - Lamination - Fossil fuels vs renewable - Nuclear power	-Material properties -Timber -Metals -Fabrics and fibres -Polymers -Paper and boards	- industry - enterprise - sustainability - people/culture/society - New and emerging technology - CAD CAM advantages / disadvantages	- modern materials - smart materials - composites - technical textiles - input / process / output - systemic drawings	- movement - mechanisms - 3D drawing – Isometric / oblique	- sources and origins - selection of materials or component - ecological and social footprint
Skills	Product analysis Modelling and testing a structure Correct use of tools and equipment	Manufacturing skills Accurate and safe use of tools and equipment	- use of 2D design - CAD CAM - laser cutting - 3D printer	Manufacturing skills – soldering & electronics Accurate and safe use of tools and equipment	Manufacturing skills Accurate and safe use of tools and equipment Drawing skills	
Assessment	Bridge design self-assessment and end of unit test	Core material area test	Core theory mid unit test	Core theory mid unit test Bike light assessment	FINAL core theory assessment/ALL AREAS	
Link to GCSE Specification	https://www.aqa.org.uk/subjects/design-and-technology/gcse/design-and-technology-8552/subject-content/core-technical-principles https://www.aqa.org.uk/subjects/design-and-technology/gcse/design-and-technology-8552/subject-content/specialist-technical-principles					

Year 10 Design and Technology AQA – 2 hours per week

Topics	Design Ventura project & theory knowledge – Design and make	Treat dispenser & theory knowledge – Specialist knowledge TIMBER * for 2022 the FTP will be a toy	Mini NEA & theory knowledge - Design and Make	Start NEA worth 50% of GCSE 1st June.
Knowledge	-investigation, primary and secondary data -environmental, social and economic challenge -design strategies -communication of design ideas -prototype development	- using and working with materials -stock forms, types and sizes -scales of production -specialist techniques and processes -surface treatments and finishes.	-investigation, primary and secondary data -environmental, social and economic challenge -design strategies -communication of design ideas -prototype development -the work of others -selection of materials and components -tolerances -material management -specialist tools and equipment -specialist techniques and processes	AO1 Identify, investigate and outline design possibilities -Context analysis -Client identification -The work of others -Design brief and specification
Skills	Iterative design skills. Drawing skills. CAD skills. Communication & organisation. Independence.	Cutting and shaping. Using tools & equipment. Finishing skills. Designing skills. CAD/CAM skills.	Iterative design. Working with a client. Writing a design brief and a specification. Designing and developing. Prototyping. Testing and evaluating.	Investigation and research skills. Communication with a client. Iterative design and drawing skills. Development skills. Prototyping and modification skills. Evaluation skills.
Assessment	Self / Peer / Teacher.	Self / Peer / Teacher. Examination style questions.	Self / Peer / Teacher. Examination style questions.	Weekly quiz for exam prep & revision. Tracking and self-assessment of NEA. (No specific individual feedback allowed).
Link to GCSE specification	https://www.aqa.org.uk/subjects/design-and-technology/gcse/design-and-technology-8552/subject-content/specialist-technical-principles https://www.aqa.org.uk/subjects/design-and-technology/gcse/design-and-technology-8552/subject-content/designing-and-making-principles		https://www.aqa.org.uk/subjects/design-and-technology/gcse/design-and-technology-8552/specification-at-a-glance	

Year 11 Design and Technology GCSE AQA – 2 hours per week

Topics	NEA worth 50% of GCSE.	N/A.	N/A.
Knowledge	<p>A02 Design and make prototypes that are fit for purpose</p> <ul style="list-style-type: none"> - how to communicate ideas - refining and developing ideas - selection of materials - manufacturing prototypes <p>A03 Analyse and evaluate</p> <ul style="list-style-type: none"> - testing - modifications - fit for purpose 		
Skills	<p>Investigation and research skills. Communication with a client. Iterative design and drawing skills. Development skills. Prototyping and modification skills. Evaluation skills.</p>		
Assessment	<p>Weekly quiz for exam prep & revision. Tracking and self-assessment of NEA. (No specific individual feedback allowed).</p>		
Link to GCSE specification	<p>https://www.aqa.org.uk/subjects/design-and-technology/gcse/design-and-technology-8552/specification-at-a-glance</p>		

A 'level						
	Autumn 1	Autumn 2	Spring 1	Spring 2	Summer 1	Summer 2
Year 12 Design and Technology: Product Design AQA – 4 hours per week						
Technical Principles 2 hours	Material Properties Paper and board <ul style="list-style-type: none"> • Performance • Application • Recycling CAD/CAM	Material Properties Polymers <ul style="list-style-type: none"> • Characteristics • Application • Stockform • Elastomers • Biodegradable 	Material Properties Timbers <ul style="list-style-type: none"> • Stock form • Performance • Testing • Finishing 	Material Properties Metals <ul style="list-style-type: none"> • Stock form • Performance • Testing 	Material Properties Composites Smart materials Modern materials Scale of manufacture	Requirements for product design and development Enterprise and marketing in the development of products Design communication
Skills	Cassagami house – using paper and boards. CAD design, electronics & soldering. <ul style="list-style-type: none"> • Forming • Shaping • Finishing 	Plastic bowl – heat forming, hand tools, testing and experimenting, sublimation printing. <ul style="list-style-type: none"> • Forming • Shaping 	Deck Chair – modelling, tools and machinery <ul style="list-style-type: none"> • Working with timber • Forming timber • Shaping timber 			3D drawing Orthographic Perspective
Designing and Making Principles 2 hours	Design methods and processes. Design influences, styles and movements. Designers and their work. Socio-economic influences	Major developments in technology Social/moral/ethical Product lifecycle	Responsible design Design process Critical analysis and evaluation	Selecting tools Accuracy	Health and safety Manufacturing maintenance, repair and disposal	NEA portfolio AO1 Section A – identifying design possibilities (20 marks)
Assessment	Baseline Test (GCSE level) Paper board assessment	Polymers assessment	Timbers assessment	Metals assessment MOCK exam	Composites assessment	Assessment of section A
Link to A 'level specification	https://filestore.aqa.org.uk/resources/design-and-technology/specifications/AQA-7552-SP-2017.PDF					

A 'level						
	Autumn 1	Autumn 2	Spring 1	Spring 2	Summer 1	Summer 2
Year 13 Design and Technology: Product Design AQA – 4 hours per week						
NEA 3 hours	NEA Portfolio AO1 Section B – Design Brief and Specification (10 marks) AO2 Section C – Development of design proposal(s) (25 marks)	NEA Portfolio AO2 Section C – Development of design proposal(s) (25 marks) AO2 Section D – Development of design prototypes (25 marks)	NEA Portfolio AO2 Section D – Development of design prototypes (25 marks)	NEA Portfolio AO3 Section E – Analysing and Evaluation (20 marks)	External Exams	
Theory 1 hour	Maths		Exam revision Revision techniques PEEL Key terminology Exam question practice	Exam revision		
Assessment	NEA Assessment	Mock exam	NEA Assessment	Mock exam Hand in of NEA final Assessment		
Link to A 'level specification	https://filestore.aqa.org.uk/resources/design-and-technology/specifications/AQA-7552-SP-2017.PDF					