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 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 – 6 lessons **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: *You are working as a designer for a local design company who concentrate and specialise in helping local communities.* *Your task is to research, plan, design and make a prototype of a product that will help the local area and its people.* 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, such as the study of different cultures, 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 Metal and Plastic – 5x2 lessons	Contextual project – Cultures – 10 lessons	Mechanisms 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? What are metals? What is the source? What tools and equipment are used with metals?	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 the 4 types of motion? What are mechanisms and why do we use them? How do you change the direction of motion? -linkages -cams	£1.57 torch = £243 *https://kitronik.co.uk/collections/electronic-project-kits/products/2114-led-torch-kit-with-battery*
Skills	Product analysis Drawing Developing Prototyping Evaluating	Manufacturing skills Accurate and safe use of tools and equipment	*Be able to redesign an everyday household product in the style of a chosen designer.* Research & investigation Product analysis	Testing and modelling	Manufacturing skills Accurate and safe use of tools and equipment

			Product development Evaluation		
Assessment	Project assessment	Assessment of practical products – self / teacher Core material test – ALL materials inc. Y7	Assessment of contextual folder – teacher assessment	Mechanisms test	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 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 understand and use the properties of materials and the performance of structural elements to achieve functioning solutions	select from and use specialist tools, techniques, processes, equipment and machinery precisely, including computer-aided manufacture	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 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	understand how more advanced mechanical systems used in their products enable changes in movement and force	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 can be powered and used in their products

	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 - Bike light 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	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	A02 Design and make prototypes that are fit for purpose - how to communicate ideas - refining and developing ideas - selection of materials - manufacturing prototypes A03 Analyse and evaluate - testing - modifications - fit for purpose		
Skills	Investigation and research skills. Communication with a client. Iterative design and drawing skills. Development skills. Prototyping and modification skills. Evaluation skills.		
Assessment	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/specification-at-a-glance		

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** • Performance • Application • Recycling CAD/CAM	Material Properties **Polymers** • Characteristics • Application • Stockform • Elastomers • Biodegradable	Material Properties **Timbers** • Stock form • Performance • Testing • Finishing	Material Properties **Metals** • 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. • Forming • Shaping • Finishing	Plastic bowl – heat forming, hand tools, testing and experimenting, sublimation printing. • Forming • Shaping	Deck Chair – modelling, tools and machinery • 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	**NEA portfolio** AO1 Section A – identifying design possibilities (20 marks)	**NEA portfolio** AO1 Section A – identifying design possibilities (20 marks) AO1 Section B – Design Brief and Specification (10 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** 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**	Health and safety Manufacturing maintenance, repair and disposal		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 Assessement		
Link to A 'level specification	https://filestore.aqa.org.uk/resources/design-and-technology/specifications/AQA-7552-SP-2017.PDF					

FOOD PREPARATION AND NUTRITION CURRICULUM MAPPING 2020/21

- To provide a curriculum built on the principles of nutrition, with a clear understanding of healthy eating and the Eatwell guide.
- To develop confidence and independence at selecting and modifying recipes, allowing them to plan, prepare, cook, and present a range of dishes.
- To provide opportunities to explore and investigate different ingredients, where they come from, their properties and functions.

Students will have 1 hour of food or ICT throughout the year. This will be on a rotation, half a year in food and the other half in ICT.

	Autumn 1	Autumn 2	Spring 1	Spring 2	Summer 1	Summer 2
Year 7 – Food preparation and nutrition						
Topic	Healthy Balanced lifestyle			ICT rotation * students will spend 3 half terms on the food rotation and then rotate to ICT		
Knowledge	Safety and Hygiene inc. the 4 C's The Eatwell Guide 8 tips for a healthy lifestyle Macro nutrients Micro nutrients Fibre & Hydration The digestive system			*ICT rotation is extended in this rotation system, compare with 2020/21. The extra 5 weeks will be used for CAD CAM development What is CAD CAM Advantages and disadvantages of CAD CAM		
Skills	Knife skills Weighing and measuring Routines of the food room – practical Use of oven and hob Boiling and simmering Testing for readiness Combining ingredients Dividing and shaping mixtures	**PRACTICALS:** Fruit Salad Quesadilla Anzac biscuits Pasta Salad Scone based pizza Stir fry		Use of 2D design / sketch up Output to laser cutter / 3D printer		
Assessment	Practical observation – Stir-fry End of rotation assessment /32					
Links to NC	• understand and apply the principles of nutrition and health • cook a repertoire of predominantly savoury dishes so that they are able to feed themselves and others a healthy and varied diet • become competent in a range of cooking techniques [for example, selecting and preparing ingredients; using utensils and electrical equipment; applying heat in different ways; using awareness of taste, texture and smell to decide how to season dishes and combine ingredients; adapting and using their own recipes].			investigate new and emerging technologies		

Year 8 – Food preparation and nutrition			
Topics	Special diets and food origins		ICT rotation * students will spend 3 half terms on the food rotation and then rotate to ICT
Knowledge	Life stages Dietary disease Healthy teeth Food choices Religious Diets *Vegans & vegetarians* Organic vs intensive farming Food miles Seasonality		*ICT rotation is extended in this rotation system, compare with 2020/21. The extra 5 weeks will be used for programming development What are programmable components?
Skills	Handling raw meat Use of temperature probe Cooking with eggs - coagulation Gelatinisation – roux sauce Ragu's Frying Shaping – puff pastry	Use of 2D design / sketch up Output to laser cutter / 3D printer	
Assessment	Practical observation – ragu sauce End of rotation test /32		
Link to NC	• understand and apply the principles of nutrition and health • cook a repertoire of predominantly savoury dishes so that they are able to feed themselves and others a healthy and varied diet • become competent in a range of cooking techniques [for example, selecting and preparing ingredients; using utensils and electrical equipment; applying heat in different ways; using awareness of taste, texture and smell to decide how to season dishes and combine ingredients; adapting and using their own recipes]. • understand the source, seasonality and characteristics of a broad range of ingredients		apply computing and use electronics to embed intelligence in products that respond to inputs, and control outputs, using programmable components.

	Autumn 1	Autumn 2	Spring 1	Spring 2	Summer 1	Summer 2
Year 9 Food Preparation and Nutrition OCR						
Topics	Section A – Nutrition		Section A – Nutrition	Section B: Food (food provenance and food choice)	Section B: Food (food provenance and food choice)	Section D: Skills requirements (preparation and cooking techniques)
Knowledge	**Eatwell guide** **Protein** – types, functions and sources. HVP and LVP, protein complementation, excess and deficiency. **Fat** – types, functions and sources. Saturated and unsaturated, excess and deficiency. **Carbohydrate** – types, functions and sources. Starches and sugars, excess and deficiency. Recommended daily amounts of macro-nutrients (DRV's) **Vitamins** - types and functions and sources -Fat-soluble vitamins: A (retinol and carotene), D, E, K Fibre -Water soluble vitamins: B1 (thiamine), B2 (riboflavin), B3 (niacin), B9 (Folate/Folic acid), B12 (cobalamin), C (ascorbic acid) Functions and deficiency **Minerals** - types and functions and sources -fluoride, calcium, iron, iodine, phosphorus, sodium Functions and deficiency Recommended daily amounts of micro nutrients (DRV's) Importance of **water**; functions and deficiency Importance of **Fibre**; functions and deficiency		Nutritional content of the main commodity groups The relationship between diet and health – *dietary related diseases* Nutritional and dietary needs of different groups of people Nutritional needs when selecting recipes for different groups of people	Food provenance: source and supply Food processing and production Food security Technological developments to support better health and food production Factors influencing food choice: cost, enjoyment, preference, seasonality, availability, time of day, activity, celebration or occasion, medical reasons	Ethical and moral beliefs: Vegetarians (lacto-ovo, lacto, ovo and vegans), animal welfare, local produce, organic food Related beliefs of major religions: Buddhism, Hinduism, Islam, Judaism, Rastafarianism and Sikhism Features and characteristics of individual cuisines Development of culinary traditions (students study British cuisine and a minimum of two international cuisines)	Cooking methods and techniques. Heat transfer – convection, conduction & radiation Food processing and preserving methods: industrial and domestic High temperatures: pasteurisation, sterilisation (ultra heat treated (UHT) and canning) Cold temperatures: chilling, freezing, cook-freeze/blast chilling and accelerated freeze-drying (AFD) Using acids, salt and sugar Drying and smoking Controlled atmosphere packaging (CAP)/modified atmosphere packaging (MAP) and vacuum packing and vacuum packing

Skills	Fresh pasta. (carbohydrate) Marinating meats – kebabs (protein) inc. use of the grill. Coconut milk curry (fats) Spring rolls (veg)		Product for a specific target group Healthy salad / buddha bowl	Seasonal pie - pastry making and product development. Deboning meat dish. Filleting a fish. Fish based product.	Fajitas. Risotto Shepherds pie Vegetable curry	Testing different cooking methods on a food to evaluate the changes – fry/microwave/boil/roast carrot Microwave sponge cake
Assessment	Practical self-assessments	Practical self-assessments End of unit test – Nutrition	Practical self-assessments Practical self-assessments	Practical self-assessments End of unit test – Food provenance	Practical self-assessments	End of year test
Link to GCSE Specification	https://www.ocr.org.uk/qualifications/gcse/food-preparation-and-nutrition-j309-from-2016/specification-at-a-glance/					

Year 10 Food Preparation and Nutrition OCR

Topics	Section C: Cooking and food preparation	Section C: Cooking and food preparation	Section C: Cooking and food preparation	Mock NEA 1	Mock NEA2
Knowledge	**Food Safety** - Key temperatures - labelling law - Cross contamination - Food poisoning - Preserving food - Buying, storing & cooking food - Food production with microorganisms (bread, cheese, yoghurt) - Enzymic browning	**Food Science** Carbohydrates – Gelatinisation Dextrinization Caramelisation **Protein** Coagulation Denature Foams **Fats** Shortening Plasticity	**Raising agents** - physical - biological - chemical **Sensory analysis** -What are the 5 main senses? -How do senses affect our food? - Styles and forms of rating, ranking and profiling systems with the use of appropriate descriptive terminology	Food investigation	High iron or calcium dishes
Skills	Meat based product - focusing on cross contamination. Shaping and forming bread dough (yeast).	Pastry - quiche. (plasticity and coagulation) Meringue nests. (foam)	Whisked sponge (whisking) Chocolate eclairs - choux pastry. (steam) Soda bread & Honey comb (bicarb) Savoury muffin (baking powder)	Food experiment practical's	Practical's based on a given brief linked to NEA 2. Product development.

Assessment	Practical self-assessments End of unit test – Food safety	Practical self-assessments End of unit test – Food science	Practical self-assessments End of unit test – sensory analysis	Mock NEA1 assessment	Mock NEA2 assessment Year 10 mock exam
Link to GCSE specification	https://www.ocr.org.uk/qualifications/gcse/food-preparation-and-nutrition-j309-from-2016/specification-at-a-glance/				

Year 11 Food Preparation & Nutrition					
Topics	NEA 1 15%.	NEA 2 35%.	Exam revision 50%.	N/A.	N/A.
Knowledge	Food science 7 weeks / 14 lessons	Nutrition Food provenance Cooking & food preparation 12 weeks – 24 lessons including 3 hour practical exam	ALL AREAS		
Skills	Researching. Investigating. Evaluating.	Research. Trialling dishes. Dish development. Planning. Evaluating.	Covering the OCR criteria.		
Assessment	Tracking and self-assessment of NEA. (No specific individual feedback allowed). Practical investigations. Marking of NEA 1 Mock exam (autumn 1)	Tracking and self-assessment of NEA. (No specific individual feedback allowed). Practical 3 hour food exam Marking of NEA 2	Mock exam (Spring 1) FINAL GCSE WRITTEN EXAM		
Link to GCSE specification	https://www.ocr.org.uk/qualifications/gcse/food-preparation-and-nutrition-j309-from-2016/specification-at-a-glance/				