



Enrichment and Personal Development		Links to Careers in Product Design	
KS3	Sustainability, the environment, social, moral and cultural issues, recycling, commercial viability of products, industrial manufacture. 3D printing workshop.	KS3	Pupils will have exposure to industrial manufacturing and be able to use industry standard CAD programmes to design and develop their ideas. Pupils will know how to design and make products to meet customer requirements whilst being commercially viable. Pupils will have some awareness of possible job prospects in the designing and manufacturing sector.
KS4	Social influences, the work of others, consideration of cultural influences, ethical factors, environmental concerns, product lifecycles. MBDA Missile System visit, Cadbury World, Land Rover Jaguar, 3D printing visit.	KS4	Pupils will have first-hand exposure to industrial manufacturing (MBDA, Cadbury World and LR Jaguar) and use industry standard CAD programmes and CAM machinery to design and manufacture products. Pupils will have frequent exposure to career options, KS5 and university options in the department.



**Key areas of focus
in this unit of
work**



**Subject specific
knowledge**



**Assessment
(including both
formative and
summative)**



**Progression of
learning**

KS2 Transferable Skills

Knowledge of subject specific vocabulary
Broadly accurate SPaG
Understanding of audience and purpose
Conscious control of sentence structure
Summarise and present a familiar story in their own words

Product Design Department Year 7, 8 and 9 Curriculum Plan



Holy Cross
CATHOLIC HIGH SCHOOL

Year 7	Year 8	Year 9
Carousel 8 Weeks	Carousel 8 Weeks	Carousel 8 Weeks
<p>Basic design technology knowledge, building on the elements that were covered in KS2.</p> <p>Pupils will complete a design and make project manufacturing a mood lamp using the steps of the iterative design process. Pupils will be required to analyse existing products, design, make models, manufacture a working product and evaluate it using appropriate QA and QC methods.</p>	<p>Developing design technology knowledge, building on the elements that were covered in Y7.</p> <p>Pupils will complete a design and make project manufacturing a USB and relevant packaging using the steps of the iterative design process. Pupils will be required to analyse existing products, design, make models, manufacture a working product and evaluate it using appropriate QA and QC methods. All elements will be more challenging than those in Y7. Scaffolding removed.</p>	<p>More advanced design technology knowledge, building on the elements that were covered in Y8.</p> <p>Pupils will complete a design and make project manufacturing a portable speaker using the steps of the iterative design process. Pupils will be required to analyse existing products, design, make models, manufacture a working product and evaluate it using appropriate QA and QC methods. All elements will be more challenging than those in Y8. Scaffolding removed and GCSE style tasks throughout.</p>
<ul style="list-style-type: none">Material properties and usesBasic electronic components and their usesCircuit diagramsPresentation drawingsCAD/CAMManufacturing skills (traditional hand skills)	<ul style="list-style-type: none">Writing a design briefIdea development and third-party opinion with data handlingPresentation drawings and idea developmentCAD/CAMModellingPackage design and manufactureVacuum forming	<ul style="list-style-type: none">Writing a design brief and specification based on product analysis and client needs and wantsIsometric/perspective/orthographic drawingPresentation drawingsIndustrial manufactureCAD/CAMElectronics (both theory and practical)Record of manufacture
<p>Summative: tests and quizzes each lesson. End of unit test (either online or paper form) Final assessment of practical work based on acquisition and application of new skills</p> <p>Formative: Command marking, verbal feedback, live marking, modelling and redrafting.</p>	<p>Summative: tests and quizzes each lesson. End of unit test (either online or paper form) Final assessment of practical work based on acquisition and application of new skills</p> <p>Formative: Command marking, verbal feedback, live marking, modelling and redrafting.</p>	<p>Summative: tests and quizzes each lesson. End of unit test (either online or paper form) Final assessment of practical work based on acquisition and application of new skills</p> <p>Formative: Command marking, verbal feedback, live marking, modelling and redrafting.</p>
<p>Pupils, in year seven, are introduced to the iterative design process enabling them to understand how products are designed and manufactured. Pupils begin to develop their designing skills, being able to apply colour and annotate effectively. Basic electronics knowledge and skills as well as basic manufacturing skills with both timber and polymers are explored. All of these skills will be built upon in Y8 and Y9.</p>	<p>Pupils, in year eight, will be expected to apply the skills and knowledge learnt in year seven to this project. Pupils will continue to develop their designing skills, be able to apply colour and annotate effectively with reference to ergonomics and industrial manufacture. Their practical skills and confidence in the workshop will develop and pupils will be expected to learn new CAD skills as well as vacuum forming.</p>	<p>Pupils, in year nine, will be expected to apply the skills and knowledge learnt in year seven and eight to this project. Pupils will continue to develop their designing skills, be able to apply colour and annotate. Pupils will be able to present their drawings using a variety of different techniques. Their practical skills and confidence in the workshop will further develop and pupils will be expected recall practical skills from both year seven and year eight to effectively complete this project.</p>

Product Design Department Year 10 Curriculum Plan



Holy Cross
CATHOLIC HIGH SCHOOL



Autumn 1	Autumn 2	Spring 1	Spring 2	Summer 1	Summer 2
Design and make a range of items for a child's party pack using the iterative design process. Relevant theory knowledge. (Product analysis, specification, brief, initial ideas, CAD, CAM, vacuum forming, mould manufacture, record of manufacture, evaluation)	Design and make a range of items for a child's party pack using the iterative design process. Relevant theory knowledge. (Product analysis, specification, brief, initial ideas, CAD, CAM, vacuum forming, mould manufacture, record of manufacture, evaluation)	Mock NEA (based on previous years GCSE context) Design and make a product using the iterative design process. (Product analysis, specification, brief, customer profile, initial ideas, idea development)	Mock NEA (based on previous years GCSE context) Design and make a product using the iterative design process. (CAD, CAM, electronics, manufacturing, record of manufacture, evaluation)	Completion of mock NEA project. (Manufacturing, record of manufacture, evaluation)	Introduction to NEA (Three contexts are given by the exam board, AQA, each June.) Pupils are to analyse each context and decide which they are going to focus on.
Selection of materials and components, forces and stresses, ecological and social footprint, sources and origins of materials. Printing processes, die cutting.	Using and working with materials, stock forms, types and sizes, scales of production, specialist processes. Paper and board theory with QC and QA.	Surface treatments and finishes, new and emerging technologies, energy generation and storage. Smart materials, modern materials	Developments in new materials, systems approach to designing, mechanical devices, materials and their working properties.	Environmental and social challenge, the work of others, design strategies, communication of design ideas, prototype development	Tolerances, specialist tools and equipment, specialist techniques and processes.
Summative: Exam questions each lesson. End of unit one test (either online or paper form) Final assessment of practical work based on acquisition and application of new skills Formative: Command marking, verbal feedback, live marking, modelling and redrafting.	Summative: Exam questions each lesson. Final assessment of practical work based on acquisition and application of new skills Formative: Command marking, verbal feedback, live marking, modelling and redrafting.	Summative: Exam questions each lesson. End of unit three test (either online or paper form) Formative: Command marking, verbal feedback, live marking, modelling and redrafting.	Summative: Exam questions each lesson. End of unit test (either online or paper form) Final assessment of practical work based on acquisition and application of new skills Formative: Command marking, verbal feedback, live marking, modelling and redrafting.	Summative: Exam questions each lesson. End of unit four test (either online or paper form) Final assessment of practical work based on acquisition and application of new skills Formative: Command marking, verbal feedback, live marking, modelling and redrafting.	Summative: Exam questions each lesson. End of unit three test (either online or paper form) Formative: Command marking, verbal feedback, live marking, modelling and redrafting.
Pupils will be able to use the skills and knowledge learnt in KS3 and apply them to both practical and theory tasks in autumn one and two. Pupils will learn and apply a vast range of knowledge (see autumn two)	Substantive and disciplinary knowledge relating to specific topics (see above) Hinterland knowledge in relation to SMSC issues, disciplinary literacy relating to the subject area that is essential in NEA and exams, developing schema to link new topics and KS3 topics together	Pupils will be able to apply their knowledge learnt in term one to their mock NEA. Pupils will be able to analyse a task, develop a client profile, analyse existing products, develop innovative and imaginative ideas that relate to their client requirements.	Pupils will be able to apply their knowledge learnt in term one to their mock NEA. Pupils will be able to develop an idea, explore manufacturing methods and techniques, identify correct tools and processes to make a working prototype.	Pupils will be able to apply their knowledge learnt in term one to their mock NEA. Pupils will be able to complete a record of manufacture that is detailed enough for a third party to understand and evaluate their products in depth against their manufacturing specification.	Pupils will be able to apply their knowledge of the structure of the NEA, to the investigation section. Pupils will use the component knowledge they have gained during term 1-5 to complete this successfully.

Year
11



Product Design Department Year 11 Curriculum Plan



Holy Cross
CATHOLIC HIGH SCHOOL



Autumn 1	Autumn 2	Spring 1	Spring 2	Summer 1
NEA (50% of final grade) Design and make a product, based on specific exam contexts, given by the exam board, using the iterative design process. (Product analysis specification, brief, initial ideas.)	NEA (50% of final grade) Design and make a product, based on specific exam contexts, given by the exam board, using the iterative design process. (Idea development, CAD/CAM)	NEA (50% of final grade) Design and make a product, based on specific exam contexts, given by the exam board, using the iterative design process. (Manufacturing, record of manufacture and evaluation)	Focus of revision in preparation for GCSE exam. This will form 50% of the final grade. All content will have been covered throughout the GCSE course so recall, retrieval and the ability to use knowledge and apply to exam style questions will be the main focus Spring two.	Focus on revision in preparation for GCSE exam. This will form 50% of the final grade. All content will have been covered throughout the GCSE course so recall, retrieval and the ability to use knowledge and apply to exam style questions will be the main focus of Summer One.
Investigation (primary and secondary data) Environmental social and economic challenge The work of others	Design strategies, communication of design ideas Prototype development Selection of tools, materials and components.	Tolerances Material management Specialist tools and equipment Specialist techniques and processes.	New and emerging technologies Energy generation and storage Developments in new materials Systems approach to designing Mechanical devices Materials and their working properties Designing and making principles	Selection of materials and components Forces and stresses Ecological and social footprint Source and origins Stock forms and types Scales of production Surface treatments and finishes
Summative: Quizzes each lesson. Ongoing assessment of practical work based on acquisition and application of skills and knowledge Formative: Command marking, verbal feedback, live marking, modelling and redrafting.	Summative: Quizzes each lesson. Ongoing assessment of practical work based on acquisition and application of skills and knowledge Formative: Command marking, verbal feedback, live marking, modelling and redrafting.	Summative: Quizzes each lesson. Ongoing assessment of practical work based on acquisition and application of skills and knowledge Formative: Final marking and submission of NEA.	Summative: Quizzes and exam style questions each lesson. Formative: Command marking, verbal feedback, live marking, modelling and redrafting.	Summative: Quizzes and exam style questions each lesson. Formative: Command marking, verbal feedback, live marking, modelling and redrafting.
Pupils will be able to apply their component knowledge learnt during Year 10 to their NEA. Pupils will be able to analyse a task, develop a client profile, analyse existing products, develop innovative and imaginative ideas that relate to their client requirements.	Pupils will be able to apply their component knowledge learnt during Year 10 to their NEA. Pupils will be able to develop an idea, explore manufacturing methods and techniques, identify correct tools and processes to make a working prototype.	Pupils will be able to apply their component knowledge learnt during Year 10 to their NEA. Pupils will be able to complete a record of manufacture that is detailed enough for a third party to understand and evaluate their products in depth against their manufacturing spec.	Pupils will link together all the knowledge and skills they have acquired over the GCSE course. A cumulation of this will be their GCSE exam that will be during summer one or two. Pupils will embed a range of knowledge. (See summer one)	Substantive and disciplinary knowledge relating to specific topics (see above) Hinterland knowledge in relation to SMSC issues, disciplinary literacy relating to the subject area that is essential for exam success. Building schema to link topics together.

