Holy Cross
CATHOLIC HIGH SCHOOL

Technology Department

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 held for Year 8 pupils with Create Education. • Technology club is held once per week.	**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. Possible future careers could be: surveying, architecture, engineering, building management, product design, interior design.
KS4	Social influences, the work of others, consideration of cultural influences, ethical factors, environmental concerns, product lifecycles. MBDA Missile System visit. This gives pupils an insight into industrial manufacture and how the design process we use in school is used on an industrial scale. Pupils can see how products are produced from initial conception final manufacture and distribution. The Leyland DAF visit gives pupils a real-life insight into how trucks are designed and manufactured, with close attention paid to the engineering element of production. Runshaw masterclasses to give pupils the opportunity to see what courses are available after school, in further education. BAE apprenticeship events where pupils are given a tour of the training facility and advice on how to apply.	**KS4**	Pupils will have first-hand exposure to industrial manufacturing (MBDA and Leyland DAF) 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. Possible future careers could be: industrial design, set design, fashion, graphic design, CAD, technical illustration, any manufacturing industry.

Key areas of focus in this unit of work

Subject specific knowledge

Assessment (including both formative and summative)

Progression of learning

KS2 Transferable Skills

Being able to design a product based on 'client' needs and wants. This includes designing, modelling, developing ideas, make appropriate protypes, being able to select the correct tools and equipment. Pupils should also be expected to analyse products, complete evaluations and understand basic CAD/CAM (as well as other) systems.

Technology Department
Year 7, 8 and 9 Curriculum Plan

Holy Cross
CATHOLIC HIGH SCHOOL

Year 7	Year 8	Year 9
Carousel-8 Weeks **Design and Make a USB Mood Lamp**	**Carousel-8 Weeks** **Design and Make a Desk Tidy and Stationery Set**	**Carousel-8 Weeks** **Mini Makes**
Basic design technology knowledge, building on the elements that were covered in KS2. 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.	More advanced design technology knowledge, building on the elements that were covered in Year 7. Pupils will complete a design and make project manufacturing a desk tidy and stationery set 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 Year 7.	More advanced design technology knowledge, building on the elements that were covered in Year 7 and Year 8. Pupils will complete a design and make project manufacturing a range of items (phone stand, pin badge, fidget sphere and packaging) using the steps of the iterative design process. Pupils will be required to analyse existing products, design, make models, manufacture working products and evaluate them using appropriate QA and QC methods alongside a detailed record of manufacture. All elements will be more challenging than those in Year 8. Scaffolding will be removed and there will be GCSE style tasks throughout.
• Material properties and uses • Basic electronic components and their uses • Circuit diagrams • Presentation drawings • CAD/CAM • Manufacturing skills (traditional hand skills)	• Writing a design brief and specification based on product analysis and client needs and wants • Isometric/perspective drawing • Presentation drawings • Industrial manufacture (Blow moulding) • Packaging design including vacuum forming • CAD/CAM • Record of manufacture	• Product analysis • Modelling and prototyping (Physical and CAD models) • Presentation drawings • Packaging design and construction • CAD (2D Design and Tinkercad) • CAM (Laser cutting and 3D printing • Evaluation including 3rd party feedback
Summative: Low stakes quizzes each lesson based on previous, current and future learning. 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: Low stakes quizzes each lesson based on previous, current and future learning. 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: Low stakes quizzes each lesson based on previous, current and future learning. 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.
Pupils, in Year 7, 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 Year 8 and Year 9	Pupils, in Year 8, 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. 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 year seven to effectively complete this project. Pupils will also begin to develop their CAD skills and start to use other machines such as the 3D printers.	Pupils, in Year 9, will be expected to apply the skills and knowledge learnt in Year 7 and 8 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 using CAD programs and CAM machines will further develop and pupils will be expected recall practical skills and theory knowledge from both Year 7 and Year 8 to effectively complete this project.

Technology Department
Year 10 Curriculum Plan

Holy Cross
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Autumn 1	Autumn 2	Spring 1	Spring 2	Summer 1	Summer 2
Chair Challenge	**Party Pack**	**Mock NEA (Board Game)**	**Mock NEA (Board Game)**	**Mock NEA (Board Game)**	**NEA (50% of final grade)**
Design and make a cardboard chair to take their weight. (Product evolution, material research, materials testing, anthropometrics and ergonomics, industrial manufacture, school based manufacture, product analysis, 2D and 3D sketching, isometric and perspective.)	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: Design and make a board game Design and make a product using the iterative design process. (product analysis, specification, brief, customer profile, initial ideas, idea development)	Mock NEA: Design and make a board game 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. End of unit two 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.	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 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 five test (either online or paper form) Formative: Command marking, verbal feedback, live marking, modelling and redrafting. *All end of unit tests are based on the learning of that particular half term. They are a mixture of low stakes multiple choice questions alongside long answer high tariff questions
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 as 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 spec.	Pupils will be able to apply their knowledge of the structure of the NEA, to the investigation section. Pupil's will use the component knowledge they have gained during term 1-5 to complete this successfully.

Year 11

Technology Department
Year 11 Curriculum Plan

Holy Cross
CATHOLIC HIGH SCHOOL

Autumn 1	Autumn 2	Spring 1	Spring 2	Summer 1
NEA	**NEA**	**NEA**	**Revision**	**Revision**
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 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 a 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 a 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. (Printing process, plastic moulding processes, material sources etc)	• 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 in 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 in 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 in 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. The knowledge learnt over the GCSE course will be essential for KS5 learning and beyond. The skills and knowledge pupils have acquired will be built upon in any KS5 design and make courses. This will also apply to university courses and in the world of work.