

Design Technology

KS3

Year 7		Year 8		Year 9	
<p>HT1: Click or tap here to enter text.</p>	<p>HT2: Planning, Marking Out and Measuring</p> <p>Planning, marking out and measuring links with KS2 expectation. This unit will cover patterns and templates, analysing fabrics, natural Vs manufactured and basic wasting and addition processes.</p> <p>Design and make activity: Fabric Doorstop</p>	<p>HT1: Timber Assembly Methods, Mechanical Components</p> <p>Interleaving with timbers, natural and man-made. Pupils will be introduced to traditional joining methods (mitre), and jigs as a means of marking out. We will start to develop an understanding of different types of natural timber and how to select based on their physical properties.</p> <p>Design and make activity: CAM Toy</p>	<p>HT2: CAD/CAM- 3D Printing</p> <p>Model to be developed through Onshape with interleaving opportunities to all CAD projects covered through KS3 while laying the foundations for rapid prototyping in Year 9 and GCSE. Interleave with plastics and build on foundation by introducing biodegradability and choice.</p> <p>Design and make activity: CAD Architectural model</p>	<p>HT1: Electronic Systems and Timber Joins</p> <p>Interleaving with previous design skills, pupils are encouraged to think outside the box and design a light out of limited materials. Pupils will use their drawing skill developed during HT2 Year 8 to accurately communicate their design before transferring it onto soft wood and 2D Design.</p> <p>Design and make activity: LED lighting</p>	<p>HT2: CAD, CAM and Electronics</p> <p>Pupils cover electronics, soldering, traditional manufacturing methods and standard fixing. Intervening with Input, process, and output from HT5 year 7. Pupils hone manufacturing skills, with their independent solutions to the design brief.</p> <p>Design and make activity: LED lighting</p>
<p>HT 3: Introduction to the Design Process - The Design Brief and Specification</p> <p>Introduction to the design process through the design brief and design specification. These will inform initial design idea generation. Introduction to plastics as a material area including the process of vacuum forming. Functions of Packaging.</p> <p>Design and make activity: Cast Chocolate Mould</p>	<p>HT 4: CAD and CAM - 2D Design and Laser Cutting</p> <p>Introduction to CAD and CAM, understanding types and differences between the two. 2D Design navigation to teach introductory CAD skills and a laser cutter driving licence to further understanding of how the CAD and CAM merge.</p> <p>Design and make activity: Plywood Mobile Phone</p>	<p>HT 3: Initial Ideas, Traditional Manufacturing Methods and CAD/CAM</p> <p>Interleaving opportunities with CAM toy and 2D Design. Build on social and ecological understanding when making engineering choices. Make connections between local, national and international architecture. Careers links through Gatsby principles.</p> <p>Design and make activity: Architectural Light Box</p>	<p>HT 4: Traditional Manufacturing Methods, Soldering a Circuit CAD/CAM</p> <p>Pupils cover electronics, soldering, traditional manufacturing methods and standard fixing. They will build on their understanding of input, process, output from HT5 Year 7. Pupils hone manufacturing skills, with their independent solutions to the design brief.</p> <p>Design and make activity: Architectural Light Box</p>	<p>HT 3: Iterative Design and Metal Casting Process</p> <p>Pupils revisit the iterative design process. Metal as a material area is taught in detail and mastered including types, categories, properties and finishes. Casting is taught as new process, similar to the moulding and forming pupils have explored in Year 7 and 8 respectively.</p> <p>Design and make activity: Pewter Cast Keyring</p>	<p>HT 4: CAD, CAM and Metal Casting Process</p> <p>Pupils refine their final design in accordance with the constraints of the process. Pupils begin to think about their work in an industrial context linking with the scales of production, responsibilities as designers and concepts like automation. Rapid prototyping mastered.</p> <p>Design and make activity: Pewter Cast Keyring</p>
<p>HT 5: Smart and Modern Materials</p> <p>Introduction to smart and modern materials; recognising and separating 21st Century materials: thermochromic, photochromic, hydro chromic, polymorph, shape memory alloys, microencapsulation and smart fibres. Interleaves with fabrics.</p> <p>Design and make activity: Polymorph Handle</p>	<p>HT 6: CAD and CAM - Onshape</p> <p>Interleave CAD/CAM through 2D Design in Year 7 with a view to creating a platform for teaching 3D development software through Onshape and Cura – 6 lessons. Pupils will work through the channel of collaborative design, with a first taste of scales of production.</p> <p>Design and make activity: 3D Printed Keyring</p>	<p>HT 5: Plastics and the Six R's</p> <p>Interleave with manufactured fabrics and their raw source of crude oil being non renewable. Recap the 6 R's and how we can apply these in DT as well as in our everyday lives. Pupils will recap 2D Design from Year 7.</p> <p>Design and make activity: Plastic Coaster made from bottle caps.</p>	<p>HT 6: Plastics, Biodegradability and the Environment</p> <p>Interleave with manufactured fabrics and their raw source of crude oil being non renewable. Recap the 6 R's and how we can apply these in DT as well as in our everyday lives. Pupils will recap 2D Design from Year 7.</p> <p>Design and make activity: Keyring Moulds and Poppy/ flower made from bottle caps.</p>	<p>HT 5: Rotation</p> <p>Pupils complete two full terms in DT therefore pupils will complete Pewter cast jewellery and LED lighting detailed above.</p>	<p>HT 6: Rotation</p> <p>Pupils complete two full terms in DT therefore pupils will complete Pewter cast jewellery and LED Lighting detailed above.</p>

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Design Technology

KS4 – Design Technology GCSE

Year 10		Year 11	
<p>HT1: CAD and CAM</p> <p>Pupils revisit Onshape and enhance their skills developed during KS3. Pupils complete a range of tutorials and then move on to designing and 3D printing a small hand-held product. Pupils learn how to create a technical drawing on Onshape and what a technical drawing includes, this is a requirement for pupils NEA. Pupils explore other CAD/CAM and robotics in mass and continuous manufacturing.</p>	<p>HT2: Model Making</p> <p>Pupils master mechanical components and systems. They become confident in naming, rationalising and applying formulae for a range of mechanisms.</p> <p>Design and make task: Model making and disassemble</p>	<p>HT1: NEA A01a and b</p> <p>NEA A01a and b: Investigation through collaborative design. Pupils consider primary Vs secondary sources of research and the role of the client profile. Working independently, pupils develop their own project by proving the problem within a context and writing their own specification and brief.</p>	<p>HT2: A02c:</p> <p>Returning to the iterative process, pupils now apply their understanding through the constraints of the NEA. Pupils develop a solution to their problem by developing their design ideas and constructing models and prototypes, until a viable submission is determined.</p>
<p>HT 3: Mock NEA</p> <p>Pupils advance through the topic of DT in our world and 21st century design with a focus on their responsibilities as designers. They interleave the previous projects to reflect on their sociological decisions. Pupils will cover sustainability and eco-design. They expand their repertoire of design and making by considering different target markets and understand deeper the role of the design specification</p> <p>Design and make task: Mock NEA</p>	<p>HT 4: Mock NEA</p> <p>Advancing through 21st century design pupils consider smart, modern and interactive materials and their role within design. Pupils begin to consider how the choices, materials and technology they have available to them now and in the future, can be best applied. Pupils use the iterative design process and model making to develop and test their design.</p> <p>Design and make task: Mock NEA</p>	<p>HT 3: A02d</p> <p>Pupils manufacture a functional prototype, within the demands of their specification. They apply traditional and CAD / CAM skills. They will also demonstrate planning and the creation of working drawings, in both isometric and orthographic. They use communication skills to present a viable working solution.</p>	<p>HT 4: A02d and A03e</p> <p>Pupils finish and assemble their prototype. Pupils evaluate the success of the final prototype using the design specification and through rigorous testing. Pupils suggest modifications to further apply the iterative process and demonstrate an understanding of where the project aligns with industry.</p>
<p>HT 5: Design and Manufacture</p> <p>Pupils revisit and master electronic systems; applying an understanding of inputs, processes and outputs, types of systems and the language of systems. For the first time pupils are introduced to micro-controllers and micro-processors. Pupils are exposed to a range of manufacturing methods; steam bending, line bending, vacuum forming and 3D printing. Pupils must create a design for their LED light using at least two of these manufacturing methods.</p> <p>Design and make task: LED Lighting</p>	<p>HT 6: Design and Manufacture</p> <p>Pupils are given freedom of choice in terms of material and manufacturing process to design and manufacture a LED light. Pupils must make decisions based on material properties and their desired outcome.</p> <p>Design and make task: LED Lighting</p>	<p>HT 5: Section A Technical Principles</p> <p>Pupils consider and revisit the full range of section A and the technical principles in preparation for the external examination. This will include: Design Technology in Our World, Smart Materials, Mechanical Components, Electronics and Materials. Pupils will develop further their chosen specialism in the core principles of DT.</p>	<p>HT 6:</p> <p>Summer examinations</p>

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KS4 – Graphics NCFE Technical Award

Year 10		Year 11	
<p>HT1: CA1 Components of Graphic Design</p> <p>Pupils will explore the first key components of Graphic Design (Line, Colour, Tone, and Composition) through a range of theory and practical lessons. Vocabulary development is included in lessons 1–15, pupils will learn new subject specific terminology in each lesson. Lesson 11-15 pupils will complete a mini project creating a flyer.</p>	<p>HT2: CA1 Components of Graphic Design</p> <p>Pupils will continue to look at the components of graphic design, concentrating on typography, imagery, the visual language of graphic design and looking at graphic design in the world. Pupils will complete mini project two.</p>	<p>HT1: Experimenting with Tools, Materials and Techniques</p> <p>Pupils will understand experimental application of tools, materials, and techniques to create the components of graphic design through a range of experimental tasks supported by theory.</p>	<p>HT2: CA5 Graphic Design production</p> <p>Pupils will cover the following CA topics through a range of theory and practical lessons: digital technical skills, effective use of resources, summative evaluation, and display, present and promote graphic design work.</p>
<p>HT3: CA2 Work of Graphic Designers</p> <p>We will look at the work of graphic designers, and different types of this work including visual identity, packaging design, marketing and advertising, layout and print. Pupils will complete a variety of theory and practical tasks to study the above topics.</p>	<p>HT4: CA2 continued</p> <p>Pupils will cover the following topics; cover artwork, illustration and typography. CA2.2 covers employment opportunities in graphic design. We will investigate the above topics through a range of theory and practical tasks.</p>	<p>HT3: NEA - Tasks 1-3</p> <p>Pupils begin to investigate the design brief provided by the examination board. They will complete preparation and research tasks. Task 1 - carry out primary and secondary research to inform your initial design ideas. Task 2 – develop design ideas through the use of traditional techniques and Photoshop, illustrator and Canva. Task 3 - review of development work: review the development of your ideas before you move on to planning and creating your final graphic design solution.</p>	<p>HT4: NEA - Tasks 4-7</p> <p>Task 4 - planning, development, and experimentation Task 5 – production – graphic design tools materials and techniques Task 6 - presentation of final graphic design Task 7 – evaluation.</p>
<p>HT5: CA3 Requirements of Graphic Design</p> <p>Over the course of this term pupils will investigate types of graphic design briefs, graphic design brief requirements, and design constraints. Pupils will complete a range of theory and practical lessons to support this.</p>	<p>HT6: CA4 4 Planning, Development and Experimentation</p> <p>Pupils will come to understand development processes in realizing graphic design ideas, and the stages of the development process. Pupils will explore techniques, components and properties.</p>	<p>HT5: Exam Preparation</p> <p>Pupils will revisit the CA1 – CA6. This will include components of graphic design, work of graphic designers, requirements of graphic design and graphic design productions. Pupils will complete practise examination question in preparation for the summer exams.</p>	<p>HT6:</p> <p>Summer examinations.</p>

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