



Key Stage: 4

Subject: Design & Technology

Aims of the subject:

We provide a high-quality design and technology education that should give pupils opportunities to create, innovate, design, make and evaluate a variety of well-crafted products that are fit for purpose. Pupils will be taught the technical skills and craftsmanship to execute practical tasks, thereby developing confidence to increase their skills, knowledge and competence in using materials, machinery, techniques and processes. Pupils should develop valuable practical skills and use these safely with a range of resistant and non-resistant materials, drawing media tools and equipment, in both 2D and 3D. They will be shown how to communicate their ideas and designs skilfully and accurately in 2D and 3D, using a variety of techniques, including digital technology, manufacture in a range of material areas, CAD and 3D Printing. They should know about good design, everyday products and use correct technical terminology with Design & Technology literacy. They will be allowed to investigate and analyse the rich history of design and technological innovation and the work of others, including iconic designs, to inform their own work. They will be shown developments in design and technology and the responsibilities of designers, including environmental responsibilities. Pupils should clearly enjoy the subject, whilst developing a mastery of Design & Technology. They will be guided by a teacher who themselves demonstrates a passion for Design & Technology.

Year 9

Year	What will I learn?	What will I do?
Year 9	<p>Term 1 – Sketching Skills & USB Project Analysis, Sketching Skills, Sketching skills for USB / USB lighting project, Research, Design Ideas generation & presentation skills, Development, Final Design, CAD, CAM / 3D Printing, Finishing & Assembly, Evaluation, Testing, Presentation & Evidencing – Photoshop / Illustrator</p> <p>Area of Focus: Sketching & Communication / Presentation techniques</p> <p>Sketching skills & USB Project Instruction regarding sketching equipment – blue pencil, fine line pens, markers & marker paper, Papermate flair, soft black pencil, Chinagraph</p> <p>Sketching skills to include: All freehand sketching - Sketching skills to include:</p>	<p>Analysis, Sketching & Presentation skills, Initial Design Ideas, Development, Final Design, CAD skills, Laser Cutting, Assembly, Testing and Evaluation, Manufacture & Quality of Finish – Formative & Summative assessment, Research, Design Ideas, 3D Sketching, Development, Final Design Solution, CAD, CAM / 3D Printing, Casting, Vacuum forming, Mould making, Finishing, Assembly, Components, Detailing, Testing and Evaluations, Manufacture & Quality of Finish</p>

	<p>Basic 2D shapes A3 sheet Basic Rendering using markers – 2D shapes Converting 2D to 3D basic shapes sheet (not isometric) Basic rendering using markers – 2D to 3D shapes (not isometric) 2D Marker Rendering – Whisk Aroma Fan sheet – Enhancement using range of techniques - add blue pencil weight of line, fine line pen, outline pen, markers – colouring in, wash, rendering (using light) 2D marker rendering - Kettles Basic Freehand 2D shapes to sketch a range of Children’s power tools (or alternative challenge) – use all techniques (symmetrical sketching, blue pencil, weight of line, fine line pen, outline pen, markers – colour wash / rendering) Isometric Sketching for examination only?? 2 Point Perspective sketching – boxes (demo) 2 Point Perspective sketching – crating boxes and forming into shapes i.e. sandwich layers, chamfer edge, curve edges, taper and curve 2 Point perspective sketching 3D forms – lamps / lights (P272) Addition of shadows / linking boxes 2 Point perspective organic shapes Styrofoam modelling of pre-set product / form – to learn modelling skills</p> <p>Term 2 – USB Project & Casting (Soap & Pewter) Evaluation, Testing, Presentation & Evidencing, Mould manufacture, Casting. Research, Design Ideas, Development, Modelling, CAD. Pewter casting, Batch manufacture. USB Pen project This can run concurrently with sketching techniques or as a new project. To understand Brief, user, client interview, product analysis, sketching & generating ideas, 3D sketching / development, integrated modelling, accurate drawing of final design in Orthographic projection (grid paper), 3D CAD modelling, laser cutting, batch manufacture, patterns (surface decoration of USB)</p> <p>Casting projects Soap & Pewter jewellery</p>	<p>Sketching & Presentation skills, generation of design ideas, research, Adobe Creative Suite (Photoshop / Illustrator), 3D sketching, Manufacture skills including laser cutting, hand stitching, Vacuum forming, Casting (Concrete), 3D Printing, CAD, multi material specialist technical skills.</p>
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	<p>Make a soap mould through Vacuum forming. Cast soap and release – skill here is actually mould making and vacuum forming. Optional extra – make soap dish using a hardwood and then split into sections and re-join using dowel / acrylic rod, turning brass?</p> <p>Pewter jewellery Create simple mould using MDF or Acrylic – show Pewter Casting video for Batch manufacture. Complete a step by step Batch manufacture flow chart / illustrated sheet with main stages – link to examination questions. Pewter cast shape and insert acrylic pieces, sand, polish, finish. Attach necklace, key ring, pin badge etc.</p> <p>Term 3 – Leather Notebook & start Mini USB 3 LED Task Light or Aroma Fan (wood jointed box) Hand sketching, Research, Inspiration boards, Photoshop / Illustrator, laser cutting of leather, hand stitching. Client research, inspiration for design, Analysis, Specification, 2D / 3D Design ideas, 2D / 3D development sketching using freehand sketching techniques, final design, casting (Concrete), 3D Printing, multi material project to continue to Yr10</p>	
Year 10	<p>Term 1: Advanced Sketching Techniques Advanced sketching. Continue with Mini USB 3 LED Task light project. Theoretical underpinning – Core technical principles. Or Aroma Fan with Wood Joints. Research & theory of Joints. Practical skills. Laser cutting. Soldering & Electronics. Jigs & Templates.</p> <p>Term 2: Theoretical underpinning Theoretical underpinning – Core technical principles and specialist technical principles (timbers – sources, origins, properties etc.). Aroma Fan (using Wood Joints – specialist technical principles). Research & theory of Joints. Practical skills. Laser cutting. Soldering & Electronics. Jigs & Templates.</p> <p>Term 3 Advanced Sketching Techniques / Major Project Coursework Theoretical underpinning – Core technical principles and specialist technical principles (timbers – sources, origins, properties etc.). Aroma Fan (using Wood Joints – specialist technical principles). Research & theory of Joints. Practical skills. Laser cutting.</p>	<p>Theoretical underpinning through working in a range of materials. Completion of working LED task light.</p> <p>Research, idea generation, Practical specialist skills, theoretical underpinning</p> <p>Complete practical manufacture of Aroma Fan Contextual challenge released on June 1st, AO1 Identifying & investigating design</p>

	Soldering & Electronics. Jigs & Templates. Major Project Coursework: ePortfolio, Research – book a single day off timetable (Controlled Assessment)	possibilities & Producing a Design Brief & Specification
Year 11	<p>Term 1 – Major Project Coursework Major Project Coursework: ePortfolio, Design Ideas, Development, Final Design, Modelling, CAD training / skills / procedural command knowledge, Further Development, Final Design concept, Modelling Final Design (CAD), Modelling (where applicable)</p> <p>Term 2 – Major Project Coursework Major Project Coursework: ePortfolio, Completion of CAD, Evidence of CAD, Manufacture of Coursework, Finishing, Spraying & Detailing of manufactured outcome, Submission of ePortfolio & manufacture, Examination Preparation (based on theme supplied by Examination Board)</p> <p>Term 3 – Examination Preparation Examination Preparation through test papers, questions, practise papers, use of textbook.</p>	<p>AO2 Generating Design Ideas, Developing Design Ideas, Realising Design Ideas, Modelling, Testing, Further Development, Final Design Solution, Planning for Manufacture, Introduction to CAD Advanced CAD skills, Design for CAD, Design for 3D Printing, 3D printed manufacture</p> <p>AO2 Realising Design Ideas AO3 Analysing and evaluating 3D printed manufacture, realisation, finishing, assembling, Testing & Evaluation, Submission of final ePortfolio & completed (working) manufactured work</p> <p>Test papers, research for Theme, examination practise, Theoretical underpinning</p>

Extra-curricular opportunities

Use of workshops with teacher supervision

How you can support your child's progress

Encourage all coursework to be completed to meet the set deadlines. Purchase of essential, advanced graphics equipment to ensure high quality presentation skills are developed. Purchase of core technical skills and specialist skills textbook (Publisher: Hodder Education, GCSE Design & Technology) is strongly recommended to support all aspects of the course but in particular to aid the development of theoretical underpinning knowledge. All work will be assessed and monitored through Firefly. If you wish to see examples of work, course content, what work has been set, supporting resources and the progress of your child then please ask to see the Firefly account of your son or daughter.

Assessment	Minimum expected standard	Excellence	Mastery Intervention
Yr9 Michaelmas ½ term (Sept – Nov)	<p>All pupils must:</p> <p>Develop confidence with advanced sketching & communication skills</p>	<p>Some pupils could:</p> <p>Quality and application of the use of techniques. Additional work utilising skills & techniques</p>	<p>Pupils who are unable to demonstrate the minimum expected standard will:</p> <p>Be asked to complete additional intervention sketching exercises & skills sheets to improve advanced communication & presentation techniques.</p>
Yr9 Michaelmas ½ term (Nov – Jan)	<p>Continue to develop sketching & communication skills for the USB and Casting projects including design ideas, modelling, development, 3D sketching, CAD.</p>	<p>Quality and application of the use of techniques. Additional work utilising skills & techniques. Complexity of ideas. Originality / Innovate</p>	<p>Be asked to complete additional intervention sketching exercises & skills sheets to improve advanced communication & presentation techniques, including Design Ideas and Development support. 3D modelling support</p>
Yr9 Spring ½ term	<p>Communicate effectively design ideas for their leather notebook utilising Adobe Illustrator and a variety of features and techniques to produce a file suitable for laser cutting and engraving.</p> <p>Develop a range of design ideas for the Task Lighting project</p>	<p>Use a greater variety of advanced features and skills in Illustrator (use tutorials). Complexity of design utilising a wider range of techniques.</p>	<p>Use of internet vector images to support the completion of a suitable design to be laser cut. Teacher intervention to support.</p>