

DESIGN TECHNOLOGY Curriculum Map



Year 7

Rationale and Links to The National Curriculum

The NC at KS3 sets out the aim of Design Technology to be an inspiring, creative and practical subject driven by problem solving and real-life products and contexts. It links to maths, engineering, science and art and encourages students to develop critical understanding of the impact of products on their daily lives and the wider world. They learn to design, make and evaluate in a range of contexts and material types.

Our KS3 curriculum progressively develops students' knowledge and confidence through a series of projects which focus on different aspects of the design process. This is complemented by a broad enriched curriculum of topics that cover inclusivity, sustainability, history of design and many other aspects which develop their cultural capital related to design and manufacturing. Students build useful and transferrable knowledge and skills through the three years to become confident and more independent learners.

Year 7 focusses on introducing students to working safely in the workshop, woodworking skills, design drawing, design for people and social design issues including inclusive design and fairtrade.

	Half term 1	Half term 2	Half term 3
Key Topics	• Introduction to workshop skills – pencil holder project (Sept only) • Design for People – ergonomics & anthropometrics • Product design – child's spoon	• Woodworking skills & CAD - Swivel lid box project • Trees & timber	• Inclusive design • Globalisation & Fairtrade • Innovative clothing & smart materials • Structures (extension project)
Substantive Knowledge (The knowledge the students will develop)	• Definitions of ergonomics, anthropometrics and aesthetics related to products • Products can be sized or adjustable to different users • Leonardo da Vinci work as designer inventor	• Names and working properties of wood materials – softwood, plywood, hardboard • Conversion of trees in to stock form timber • Fixings & finishes for wood – nails, bolts, wood glue, wood stain, linseed oil • Names and use of wood working tools and m/cs – try square, tenon saw, screwdriver, drilling m/c, belt sander	• Meaning and scope of inclusive design - disabilities, mobility, sight and hearing issues • Identify inclusive design features of a modern pedestrian crossing • Understand globalisation and that products may be local or worldwide • Understand Fairtrade and how it supports communities in developing countries

		• Meaning of QC & QA to ensure high quality making • Understand the idea of sustainable resources, age of trees, importance of avoiding deforestation	• Understanding of the Rana Plaza textile building collapse in Bangladesh • Use of smart materials in fashion and engineering fabric design
Disciplinary Knowledge (The skills and approaches that students will develop)	• Analyse everyday products for key design criteria • Draw accurately using a grid • Identify and explain ergonomic design features - comfy and easy to use design • Collect anthropometric data and measure dimensions – hand sizes • Colour render and annotate design drawings • Understand importance of posture for a healthy back • Use maths to collect and analyse data	• Safety and use of PPE in workshop, including setting up tables wearing safety glasses • Construct a working drawing using rulers and measurement • Select and use wood working tools and m/cs – sawing, sanding, hammering • Use of 2D design to manipulate text and images (bitmaps) & use of laser cutter • Use of pencil crayons to colour render wood texture • Use of www / ebi to evaluate a product	• How to identify inclusive design features in everyday life situations • How to analyse the design of a logo - fairtrade logo • To read out loud and skim read texts to extract information • Crossword skills • To work together as a team to solve a practical challenge
Assessment (The methods that teachers will use to assess the progress of all students)	• Feedback + action - child's spoon drawing • Quick quiz – what have I learned so far?	• Parts & materials drawing – feedback + action • Quick quiz – what have I learned so far? Swivel lid box project	• Key word crossword • Self assessment against expected standards
Reading, Writing and Vocabulary	• Annotation of drawings • Consumer, ergonomics, aesthetics, anthropometrics	• Sketching parts & annotation of photo • Group reading of timber text (pp slide) • See tools and timber names above.	• Reading and scanning of extended text • Crossword completion • Inclusive & ethical design, globalisation, fairtrade, smart materials, Kevlar, thermochromic
Numeracy	• Measuring with rulers, decimal point (cm) • Mean, median, mode, range	• Measurement in marking out and creating working drawing • Use of templates	• Appreciation of distance in comparing local and global trade

Personal Development	• Appreciation of good design for well-being, health, safety, discussion and questioning skills	• Understanding of timber as a historical but also modern sustainable material • Developing hand skills with tools and confidence with workshop m/cs	• Empathy and understanding of globalisation and the inequality between developed and less developed worlds and the impact of commercially driven TNCs
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SUBJECT Curriculum Map



Year 8

Rationale and Links to The National Curriculum

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Year 8 focusses develops students workshop skills with a batch production, bird feeder project which introduces templates and jigs, flowchart design and cutting and shaping metals. In this year students also extend their drawing and design skills with 3D isometric drawing, looking at the work of Harry Beck (underground map) and biomimicry.

	Half term 1	Half term 2	Half term 3
Key Topics	• Drawing skills – technical & freehand and use of templates • Use of pencil crayon colour & rendering • Bird feeder project – wooden frame	• Bird feeder project – working with metals • Planning flowcharts • Orthographic drawing – squared paper	• Isometric drawing • Work of designers – Harry Beck and London underground map • Biomimicry • Weighted paper boat (extension project)
Substantive Knowledge (The knowledge the students will develop)	• Different drawing styles – freehand, technical & CAD • Types of design rendering used to enhance or clarify drawings: solid colour fill, cross hatching, graduated tone, stippling, outlining	• Names and working properties of common metals – copper, steel, brass. • Identify metal working tools – engineering vice, hack saw, tin snips, files, hammer, centre punch • Flowchart design and benefits for many production systems e.g. sandwiches	• Rules for isometric 3D drawing • Designer of London Underground map (Harry Beck) and impact on public transport map design • Biomimicry and its design application by engineers to help solve engineering challenge

	- Names and properties of fixings and metals used on bird feeder – dowels, screws, steel rod, copper sheet, galvanised mesh, acrylic cover - How templates and jigs are used to maintain quality (QC & QA) in batch production – link to BMW manufacturing		
Disciplinary Knowledge (The skills and approaches that students will develop)	- Draw everyday items accurately by understanding basic geometric shapes - Accuracy in freehand drawing – straight lines and rotating page - Rendering drawings to show material texture effects - Sketching and annotating components for design drawings - Developing woodworking skills (from Yr7) using drilling jigs & dowels	- How to cut and shape metals safely using jig, former or hammering in vice, engineering vice, clamping for drilling - Construct accurate working drawings including dimensioning using grid paper and templates - Work together in a batch production environment – identify efficiencies and bottlenecks - Convert plain text into a planning flowchart - include feedback loops and estimation of time - Evaluation of finished product and making processes	- Drawing 3D geometric shapes in isometric view – with / without grid paper scaffolding - Work in a team to solve a practical engineering challenge
Assessment (The methods that teachers will use to assess the progress of all students)	- Individual live feedback and scaffolding for drawing challenge - Feedback + action – colour rendering & texture of materials	- Quick quiz – drawing techniques & bird feeder materials - Planning flowchart – feedback + action	In class modelling, observation and feedback on isometric drawing skills
Reading, Writing and Vocabulary	CAD, freehand, technical, templates & jigs, rendering, solid colour full, cross hatching, graduated tone, stippling	Conversion of plain text into sequenced tasks for flowchart	- Isometric, topological, biomimicry. morphing - Extended writing to explain Harry Beck work - Keyword crossword
Numeracy	Names of common geometric shapes – ellipse parallelogram, rectangle etc	Measurement and fitting of metal components e.g. triangular hanger, fitting the mech.	Use of isometric grid paper

		• Interpretation of flowcharts and feedback cycles	
Personal Development	• Developing drawing & design skills with wider application e.g. rendering effects could be used on science charts	• Introduction to organisation of processes for efficiency and optimisation	• Cultural capital – development of London Underground and mass transport map design • How biologists can play a part in industrial design teams

SUBJECT Curriculum Map



Year 9

Rationale and Links to The National Curriculum

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Year 9 builds on the practical and drawing skills developed in earlier years and develops students creativity, understanding of business and manufacturing, marketing and negotiation skills through a competitive team based car manufacturing project. This is very engaging for Year 9, leans towards career and further education routes and develops their ability to work in a multidisciplinary team. Year 9 also looks at a Memphis as an influential design style and the industrial heritage of the Henry Ford Motor Company

	Half term 1	Half term 2	Half term 3
Key Topics	• Introductory 'wave' pencil holder to refresh making skills • Memphis design and graphic patterns • Henry Ford and origins of modern manufacturing	• Car manufacturing business simulation project	• Scale of production and Modern manufacturing approaches • Career skills audit and identification of employment roles in manufacturing
Substantive Knowledge (The knowledge the students will develop)	• Recap of wood materials and tools, m/cs from Yr 8 • Knowledge of the Memphis Design style - origins, key design features and social / cultural impact	• Function and use of engineering lathe and strip heater • Countersink, clearance and push fit drilling terms and drill sizes • How to read an accounts balance sheet to track sales and costs	• To know the 4 scales of production – one-off, batch, mass and continuous with examples of relevant products • To understand smart manufacturing and management methods – automation, flexible

	Henry Ford as an entrepreneur and his contribution to modern manufacturing		manufacturing, just in time production and Kaizen Knowledge of the social and technical drivers underlying design change
Disciplinary Knowledge (The skills and approaches that students will develop)	- Use templates to simplify manufacture of identical products - Draw finger joint - isometric grid paper - How to cut rebate joint, including use of scroll saw - Use pencil crayons and black pen for detailed pattern design - Develop discussion and debating skills (Henry Ford)	- Use of engineering lathe, strip heater, countersink drill bit, acrylic, dowel, screws - How to change drills in drilling machine and adjusting height - Use of the engineering lathe hole drilling - Working independently but within a co-ordinated team - Choosing and developing personal role in a team – manufacturing, marketing, leadership, negotiation	- To take notes during presentation of information by teacher and video clips - To self-audit likes and dislikes leading to an understanding of car project role and possible future career matches - To think about the age of products in their lives - Use product analysis (telephones) to explain societal and design change. - Use morphing as a creative design technique to create innovative product ideas.
Assessment (The methods that teachers will use to assess the progress of all students)	- Memphis design – feedback + action - Quick quiz on Memphis, Henry Ford and car materials	Team progress is recorded through weekly accounts – cars sold, materials bought, fines etc leading to profit	- Winning team based on maximised profit - individual progress based on their specific contributions to the project
Reading, Writing and Vocabulary	- Scanning extended text to extract answers to question - Presentation and discussion skills	Composition of 'customer complaint' letter, organisation chart and marketing information	- Note taking skills - Self-assessment of role taken in car project - possible match with industry career options.
Numeracy	- Use of templates - Use of isometric paper	- Measurement for marking out - Cost & profit calculations, understanding simple financial sheet, negotiating skills	Understanding accounts, identifying opportunities for increased profit.
Personal Development	Cultural capital in appreciation of societal change	- Opportunity to find and establish role in team project - Negotiation & leadership skills	Confidence and creativity in role play situations

DESIGN TECHNOLOGY Curriculum Map



Year 10

Rationale and Links to The National Curriculum

At KS4 students follow the AQA Design Technology specification. Through Year 10 students build a detailed knowledge of the different materials areas and experience working with all of the available tools and technology. Over the year the projects gradually introduce a greater component of design as the students competence and independence with choosing and working with different materials develops. Alongside this are a series of theory units on materials, designing for people, manufacturing approaches etc and sections of a previous exam paper which are completed using notes and text books as required. This prepares students for their Yr 11 NEA project for which the AQA contexts are released in June. The aim is that, by the end of Year 10, students have adequate confidence and skills to approach their Yr 11 project with a high level of independence and a sound practical knowledge of a breadth of technology materials and processes areas. NEA work is completed shortly following Feb half term and thereafter the focus shifts to exam preparation and revision.

	Term 1	Term 2	Term 3
Key Topics	- Working with wood – (turtle toy / wood joints / wood lathe) - Designing for people / people culture & society (ergonomic handle modelling project) - Properties of materials - Working with metals – (bracket project / casting / riveting) - Energy - Practice exam – sections B & C	- Plastics & composites (tea light) - Smart & modern materials - Finishes for materials - Modelling skills (bird box / feeder model) - Practice exam - section C	- Sustainability & environment - DT Drawing skills - Yr 10 exam + feedback - Team design challenge (gravity racer) - Start Yr 11 NEA (after work experience)
Substantive Knowledge (The knowledge the students will develop)	Timber: sources, types, conversion (felling seasoning etc) to stock forms, management of forests & deforestation - Specific examples and properties of hardwoods/softwoods and manufactured boards - Laminating & kerfing to produce curves	Plastics & composites: chemical composition, thermoplastic, thermoset & composites (specific examples and properties), history and development of plastics in society, reinforcement of materials as composites Smart & modern materials: to identify smart materials as ones that respond to their	- Sustainability and environment: responsible design (examples and environmental impact), life cycle assessment (source to disposal) linked to single use plastics, circular economy, pollution and CO2, 6 Rs of sustainability - Drawing skills: freehand sketching and colour enhancement, line styles and dimensioning,

	- Joining timber: wood joints, screws/nails and knock-down fittings Designing for people: ergonomic design e.g. handles and furniture, collecting and applying anthropometric data, importance of ergonomics at work - Case study of Dieter Rams – Braun designer Properties and working characteristics of different materials (hardness, ductility, durability, conductivity, elasticity etc) Metals: sources extraction and refining into stock forms (steel and aluminium), ferrous, non-ferrous and alloys, oxidation and finishes for metals, heat treatment (tempering annealing, hardening) - Metal forming & joining: casting, welding, brazing, rivets, mechanical fixings, tools used Energy: Renewable & fossil fuel energies, CO2 and climate change, nuclear energy, energy storage solutions	environment e.g. thermochromic or photo chromic, to understand the advantages of some modern (post WW2) materials and their advanced properties Finishes for materials: to know the stages involved in preparing surfaces for a finish, examples of finishes for different materials, and why some materials require a finish and others don't Modelling skills: to develop research, specification and design drawing skills before creating of a realistic working prototype model in card and other materials	drawing with grid paper, isometric, perspective (1 & 2 point), orthographic – working drawings, conversion between drawing forms - Revision and exam techniques for Yr 10 exam - Gravity racer: prototype modelling using drawings and card, selection of materials and construction techniques, fitting wheels / axles, understanding friction, steering, momentum etc. - Yr 11 NEA use of power point for portfolio, mind mapping, research
Disciplinary Knowledge (The skills and approaches that students will develop)	- Explaining raw material conversion from source to stock forms (e.g. wood or steel) - Using notes and sketches to explain manufacturing processes - Drawing in 3D to explain construction details - Applying ergonomic principles to own designs and product analysis - To compare or suggest appropriate materials for a specific function according to their properties - To evaluate the environmental effects of different energy sources - To know how to work with timber and metals using relevant processes and tools	- To know how to work with plastics using relevant processes and tools - To develop a specification based on research and a design brief - To use modelling to develop an idea from a sketch and identify suggestions for further improvements	- Impact and importance of design on societal and environmental issues - How to use drawing skills to present their own ideas in a range of formats and to build exam skills for the drawing question - Working as a team, planning ahead, problem solving, iterative design, testing and modifications - Building exam skills, use of mark schemes - Independent extended project work using power point with scanned in drawings, photos, CAD designs

Assessment (The methods that teachers will use to assess the progress of all students)	• Timber quiz • Practical project & booklet assessment – turtle toy, ergonomic handle, steel bracket • Practice exam – sections A & B + feedback	• Practical project & booklet assessment – tea-light, bird box model • Practice exam - section C + feedback	• Yr 10 exam (full 2hour paper) • Gravity racer booklet and performance including team presentation of design features.
Reading, Writing and Vocabulary	• Note taking, using work booklet and accessing information from text books • Exam technique & analysis of mark schemes	• Note taking, using work booklet and accessing information from text books • Exam technique & analysis of mark schemes •	• Note taking, using work booklet and accessing information from text books • Exam technique & analysis of mark schemes • Using internet and other sources to search and select relevant information
Numeracy	• Measuring & marking out • Exam questions	• Measuring & marking out • Exam questions •	• Measuring & marking out • Exam questions
Personal Development	• Understanding of how design affects society and importance of inclusion and accessibility in everyday life • Understanding of the environmental consequences of the materials and products we choose to buy and use	• Appreciation of the relative newness of plastics in society and the issues that surround our future use of single use plastics.	• Developing teamwork skills • Building independent study skills for extended NEA project

DESIGN TECHNOLOGY Curriculum Map



Year 11

Rationale and Links to The National Curriculum

Students have gained knowledge and skills across the range of materials and making processes available to them in school and now apply this to their Yr 11 NEA project. AQA sets the contexts in June, students choose and develop their own ideas, research complete by Oct half term, models and drawings by Christmas and the final projects and power points completed shortly after Feb half term. A focus on the exam is maintained through the year largely through starter and plenary tasks and specific links to NEA work then a detailed programme of revision begins before Easter.

	Term 1	Term 2	Term 3
Key Topics	NEA project – research, specification, design & modelling, material selection and testing	NEA project – manufacturing specification & drawings/CAD, practical making of project, testing and evaluation	- Revision for June exam - Final GCSE exam
Substantive Knowledge (The knowledge the students will develop)	- Meaning and application of the following in design process: analysis of context, mind map, work of others, design brief specification - How to use creative design strategies - Revision for mock 1 – recap of key subject knowledge & concepts via lesson starters - Mock 1 exam specific revision	- Meaning and application of the following in the design process: development, modelling, CAD, selection & testing of materials, working and final design drawings. - Revision for mock 2 – recap of key subject knowledge & concepts via lesson starters - Mock 2 exam specific revision	- Revision for exam structured around the following topics plus exam questions, use of mark schemes, glossary definitions: - Materials – sources, conversion to stock forms, properties, tools & processes - Manufacturing, production systems & enterprise - Designing for people – ergonomics, culture & ethics - Product analysis – designing and making principles - Communicating design & styles of drawing - Work of others – Alessi, Apple, Dyson - Materials - properties, smart & modern - Textiles, paper & board - Forces and mechanisms

Disciplinary Knowledge (The skills and approaches that students will develop)	• How to manage and present design portfolio work in a power point presentation on One Drive • How to research a context and identify and present ideas through mind mapping, product analysis users survey • How to write a design brief and specification • To use creative design and modelling strategies to develop a range of innovative design ideas. • Development of an idea through iterative design using sketching, modelling and testing of materials / construction • To know how to manage an extended project incorporating power point, hand drawings & photos • To plan time and prioritise aspects of project which gain marks • To use a specification to frame the scope of their designing	• Work independently and skilfully to develop and manufacture a quality, finished and useable product. • Make a final manufacturing plan through, detailed modelling, test pieces, CAD and working drawings • Functional product testing & evaluation	• To build confidence in subject knowledge and common exam question format in preparation for the final exam
Assessment (The methods that teachers will use to assess the progress of all students)	• Mock 1 exam (1hr) + feedback • Week by week monitoring of individual progress • Half termly review, feedback & intervention	• Mock 2 exam (2hrs) + feedback • Week by week monitoring of individual progress • Half termly review, feedback & intervention	• Final exam (2hrs)
Reading, Writing and Vocabulary	• Production of a well written, coherent and concise design portfolio in power point	• Production of a well written, coherent and concise design portfolio in power point including testing and evaluation	• Understanding of key question terminology and interpretation of mark allocation in marks schemes
Numeracy	• Measuring and marking out for modelling and drawing work	• Measuring and marking out for practical work	• Practical application of mathematics in exam questions

	• Maths content in mock 1 exam	• Maths content in mock 2 exam	
Personal Development	• Planning and management of an extended NEA project – opportunity for independent work at home or in offered intervention sessions	• Planning and management of an extended NEA project – opportunity for independent work at home or in offered intervention sessions	• Independent study skills alongside school revision.

[4 July 2025]