

## **Design & Technology**

## Curriculum Intent and Long Term Plan – 2024-25

## **Subject Intent Statement**

Design and technology is an inspiring and aspirational subject. We aim to encourage increasingly independent learning, teamwork and leadership skills through practical participation. Students are encouraged to design and make products to solve real world problems within a variety of contexts. Studying design technology helps to prepare students for living and working in a rapidly changing technological world. Students are encouraged to take risks throughout the design process to become effective and innovative problem solvers whilst creating unique designs. Students will develop a wider understanding of environmental impacts including those relating to the manufacture of products and an understanding of sustainable choices such as: the sourcing of materials, product life cycle, the 6 R's in design. We aim to improve their wellbeing by allowing students to develop an appreciation of working in a workshop to build; a deep and broad understanding of tools and machine operations, as well as instilling a love of creating and production. Learning how products are made and where products come from is a crucial life skill everyone should be taught. Through the analysis of past and present technology we aim to develop an enriched understanding of positive design on the world that we live in. We have high expectations of student's intellectual, creative and practical abilities during problem solving activities, whilst developing the personal skills they will need when entering employment, in order to become a successful and positive member of the local community.

Key Concepts			Кеу	Language/Terminology	y	
Key Stage 3	Key Stage 4	Key St	age 5	Key Stage 3		Key Stage
<ul> <li>Independent problem solving through design a practical participation.</li> <li>Workshop safety.</li> <li>Understanding materials and their properties.</li> <li>Design communication.</li> <li>Sustainability.</li> <li>Materials and their origin</li> <li>Design &amp; Technology Principles; Design, Technology, Critique, Do</li> </ul>	<ul> <li>Core Technical Prin broad understandir materials, processe manufacture.</li> <li>Specialist Technica Principles – In depth understanding of; R Materials, Graphics Electronics, Enginee sectors.</li> <li>Design &amp; Make Prin Aspects that influer design and manufo products.</li> </ul>	Not Currently taugh ng of; s and I n Resistant s, ering nciples – nce the acture of	nt. • • • •	<ul> <li>Research; Primary and secondary research.</li> <li>Design Brief and Specifications.</li> <li>Design; Isometric, orthographic, perspective drawing, exploded diagrams.</li> <li>Prototype Development.</li> <li>Realisation/Manufacture</li> <li>Product testing and Evaluation.</li> </ul>		Jonomic/Anth Ita and Analy cial, moral an Isign. Inction (Utilitar Iproach), Aes Inotional appr elief/cultural a Isign. AD/CAM/CNC ales of produce ctronic and r stems. Jality Control i anufacture. aterial manag
	Curriculum Coherence					
Year 7	Students are introduced to the s concepts and principles are too design-and-make creations.	subject of Design and Technolo Is which pupils can use to deve	gy and will look into the fo lop their understanding o	our main principle sections; Des of the designed and made work	ign, Technol d. Pupils car	logy, Critique 1 apply these
Medium Term Plan Title/Topic	Themes/Concepts	Key Core Knowledge Foci	Application/Skil	Is Foci Ambitious Ti Vocabula	er 2/3 Iry	Ass

Medium Term Plan Title/Topic	Themes/Concepts	Key Core Knowledge Foci	Application/Skills Foci	Ambitious Tier 2/3 Vocabulary	Assessment	Independent Learning
<b>Term 1</b> – Design and Technology Principles.	<b>Design</b> – Designing for people.	How we design and communicate ideas.	Design and design development of a restaurant menu.	T2 – User, communication T3 – Typography, visualisation		Design development task sheet
	<b>Technology</b> – Making things.	Workshop safety and understanding materials. Introduction of CNC Laser cutter for the logo.	Notepad/Photo holder/Xmas decoration practical. Producing and following a production plan.	T2 – Manufacture, safety T3 – Prototype, production plan, CNC; Computer Numerically Controlled	Production plan and quality made project outcome.	
	Critique - Analysis	Analysing and understanding client and user wants and needs.	Analysis of Design Brief and user needs.	T2 – Analysis T3 – Design Brief		

4	Key Stage 5
nropometric vsis. nd ethics of	Not currently taught.
rian thetics roach), User approach) to	
C ction. mechanical	
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gement.	

and Data. In each of these sections, the key tools as and where appropriate to their own

	Data – Collecting data	From own and others investigations.	Sources of research and investigation and their reliability.	T2 – Source, investigation, research, reliability T3 -	End of topic assessment.	
<b>Term 2</b> – Global Problems; Waste and recycling	Origins of Plastics, pollution and sustainability. (Critique – Life cycle analysis)	Plastics product lifecycle, the impact on our planet, 6 R's of sustainability.	Review of lifecycle and environmental impact.	T2 – Fossil fuel, oil, recycle, reuse, reduce, refuse, rethink, repair T3 – Polymers, distillation,		
	Designing for Function (Design – Generating/communicating ideas)	Isometric drawing and exploded diagrams	Introduction to technical drawing. Enable students to understand how things are put together and work.	T2 – Function, assemble T3 – Isometric drawing, exploded diagram	End of topic assessment.	
	Enhancing the environment (Critique/Data – Analysis of local effects, own investigation)	Introduction to machine use and safety.	Bird feeder practical from reused/upcycled materials.	T2 – Creativity, observing T3 – innovation, prototype	Practical Assessment point – Peer/Self assess against criteria.	The great British bird watch Jan '25
<b>Term 3</b> – Marketing and Branding; LEGO	The importance of product/brand recognition - Designing for Aesthetics (Design – Generating/communicating ideas, Exploring Market Opportunities)	2D and Perspective drawing, rendering. Visual identity, brand loyalty.	Designing of a new LEGO logo (interleave with typography Term 1)	T2 – Marketing and Branding T3 – Perspective drawing	End of topic assessment.	
	Traditional V's Modern methods of manufacturing. (Technology – Processing and shaping materials)	Thermoforming plastics. Introduction to CAD/CAM and the impact on manufacture.	LEGO block desk tidy - Tool handling technique and improving accuracy.	T2 – Traditional, modern T3 – Thermoforming plastic, thermoset plastics, strip heater, CNC Laser cutter, new emerging technology	Practical Assessment point – Peer/Self assess against criteria.	Production plan for the stages of manufacture.
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	Curriculum Coherence			ornolging locimology		
Year 8	Curriculum Coherence In year 8 students will build on the be applied across the topics to	ne knowledge, understanding an develop well rounded individuals	d application of the key concept s aware of the designed and mad	s and principles of; Design, Techr de world around them.	nology, Critique and Data. These	concepts and principles should
Year 8 Medium Term Plan Title/Topic	Curriculum Coherence In year 8 students will build on the applied across the topics to Themes/Concepts	ne knowledge, understanding an develop well rounded individuals Key Core Knowledge Foci	d application of the key concept s aware of the designed and mac Application/Skills Foci	s and principles of; Design, Techr de world around them. Ambitious Tier 2/3 Vocabulary	nology, Critique and Data. These Assessment	concepts and principles should Independent Learning
Year 8 Medium Term Plan Title/Topic Term 1 – Biomorphic Design	Curriculum Coherence         In year 8 students will build on the be applied across the topics to         Themes/Concepts         Understanding         Biomorphic/Biomimicry in         Design for inspiration (Design – Generating Design Ideas)	ne knowledge, understanding and develop well rounded individuals <b>Key Core Knowledge</b> <b>Foci</b> Use tools for generating ideas. Converting an idea into reality in converting abstract design into workable 2D scaled drawing	d application of the key concept s aware of the designed and mac Application/Skills Foci Looking in to the work of others, design discussions, mind mapping, mood board generation. Manipulation of form to create geometric shape.	s and principles of; Design, Techr de world around them. Ambitious Tier 2/3 Vocabulary T2 – Scale, Abstract T3 – Bio-morphic, Bio-mimicry	Assessment End of topic assessment.	concepts and principles should Independent Learning Student to generate a mood board of images of natural forms. Case study of Iconic designer – Georg Jenson Art Nouveau.
Year 8 Medium Term Plan Title/Topic Term 1 – Biomorphic Design	Curriculum CoherenceIn year 8 students will build on the be applied across the topics toThemes/ConceptsUnderstanding Biomorphic/Biomimicry in Design for inspiration (Design – Generating Design Ideas)Origins of Metals – Properties of Aluminium, comparisons to other metals in relation to this project. (Technology – Understanding Materials and their properties)	<ul> <li>knowledge, understanding and develop well rounded individuals</li> <li>Key Core Knowledge Foci</li> <li>Use tools for generating ideas. Converting an idea into reality in converting abstract design into workable 2D scaled drawing</li> <li>Understanding materials and their properties, and how their selection is based on the characteristics.</li> </ul>	d application of the key concept s aware of the designed and mac Application/Skills Foci Looking in to the work of others, design discussions, mind mapping, mood board generation. Manipulation of form to create geometric shape. Metal Key Fob project/Xmas decoration. Students translate their ideas onto a blank stock form material before manipulating this to form a shape based on natural forms	s and principles of; Design, Techr de world around them. Ambitious Tier 2/3 Vocabulary T2 – Scale, Abstract T3 – Bio-morphic, Bio-mimicry T2 – Manipulate, natural, translate T3 – Stock form material, Alloy, ferrous, non-ferrous,	Assessment Assessment End of topic assessment point – Peer/Self assess against criteria.	concepts and principles should Independent Learning Student to generate a mood board of images of natural forms. Case study of Iconic designer – Georg Jenson Art Nouveau.

	Effective data analysis (Data – Investigation of others)	Interpreting information from Articles, Technical Data, appropriate packaging, historic design.	Use the analysis of information to inform design thinking. Develop skills in effective data analysis through; ACCESSFM, SWOT analysis, average dimensions, application of maths for circumferences.	T2 – Interpret, technical, average, dimensions, circumference. T3 – SWOT/ACCESSFM Analysis		
	Practical experiment; prototype a card egg package <b>(Technology –</b> <b>Making things work)</b>	Combine materials to create desired structural and other properties. Understanding structures.	Use of 2D nets to create 3D structures; Cube, cylinder, triangular/square based pyramids, annulus) Small egg package project	T2 – pyramid, annulus, structure T3 – Tesselate, nesting	End of topic assessment.	
<b>Term 3a</b> – Orthographic Drawing	Manipulate geometric forms through translation, reflection, rotation. (Design – Generating Design Ideas)	Use tools to communicate ideas to the manufacturer. Scale, proportion, tolerance, and accuracy.	Students to gain the core knowledge through modelling 3 <sup>rd</sup> Angle Orthographic drawings to later use in practical experiment.	T2 – Tolerance, accuracy, rotate, proportion. T3 – Orthographic,		Orthographic design and support sheet.
	Processing and shaping materials. <b>(Technology –</b> <b>Making things)</b>	Understand an increasing range of processes to enable students to realise their design; measuring, hand and machine cutting tools, finishing of woods.	Pencil Sharpener Desk Tidy – use Orthographic drawing to support manufacture. Direct links made to stock form & standard tooling to aid in production.	T2 – Guide, clamp, grain T3 – Routing, Forstner bit	Practical outcome against Orthographic drawing.	
<b>Term 3b</b> – Widening Participation; Architecture	Using data to inform the design of a house layout; including standard measurements to inform floor plans. (Data – Interpreting data) Links made to typical housing estate design, wider national housing demand.	Collect Data from other projects to interpret size, graphic communication links made to local planning/regulations/wider career links.	Use articles, floor plans, building regulation data to form a floor plan to scale using layout paper to create multi-layered room. Followed by a Planometric drawing of one floor.	T2 – Regulations, plans, layers T3 – Layout paper, Planometric drawing.	Self/Peer assess overall scale of rooms designed and their fit for purpose for a user, how they have interpreted data to inform their design.	Students use data sheet to answer questions and research into career path.
	Triangulation to improve structural integrity. (Technology – Understanding structures)	Work with a range of structural elements e.g. roofing truss, beams, plates and how they might be joined to create desired structures.	Practical experiment using a range of materials to create various structural elements. CAD/CAM Laser cut House/Light project	T2 – Integrity, stability T3 – Truss, beams, triangulation		
	Curriculum Coherence					
Year 9	As students prepare for their GC the sub-disciplines within the sub and Data to enable students to	CSE option choices the curriculum oject; Resistant Materials, Enginee gain a holistic view whilst mainto	at this stage should provide a sole ering, Electronics, Graphics, Textile anining a core knowledge base and	lid integrated understanding of these technology. Further support the d links to STEM.	ne key concepts and principles of e work in previous years around; E	f design and technology across Design, Technology, Critique,
Medium Term Plan Title/Topic	Themes/Concepts	Key Core Knowledge Foci	Application/Skills Foci	Ambitious Tier 2/3 Vocabulary	Assessment	Independent Learning
<b>Term 1</b> – Passive/Mechanical Amplifier (Part 1)	Origins of timber; using lifecycle analysis to track the effect of a product on the environment (Critique – Stewardship)	From the source material to store. Looking at how the material is processed into a workable form. Looking at Quality control, costing, material management, environmental impact.	Students record evidence in a revision card format, with the use of GCSE exam-based questions to support their understanding.	T2 – Environmental impact, T3 – Softwood, Hardwood, Manufactured boards, composite	End of topic assessment.	Product Lifecycle Learning Mat 1
	Supporting practical experiment (Design)	Materials, tools, sample techniques, skills-based work, Manufacture specification,	Mobile phone amplifier Prototype and Modelling including 3D CAD Model;	T2 – prototype, mood board, product analysis		

assessment.	
	Orthographic design and support sheet.
tcome against c drawing.	
sess overall scale signed and their fit for a user, how terpreted data to design.	Students use data sheet to answer questions and research into career path.

		identifying a client and user to profile and design for.	Practical lessons; Demonstrations of Vacuum forming, strip heating, materials manipulation, joining and fixing, CNC Laser cutting, to produce a prototype of their product.	T3 – Vacuum forming, drape forming, Fusion 360 3D CAD,		
<b>Term 2</b> - Passive/Mechanical Amplifier (Part 2)	Supporting practical experiment (Technology – Understanding materials and their properties)	Identify and work with different Materials, tools, machine, CAD/CAM, Production planning,	Mobile phone amplifier; Practical lessons; Demonstrations of CNC router, manual router, hand/power tools, machines, to support the manufacture of their mobile phone amplifier.	T2 – Production, amplifier, Adhesive T3 – Router, Mortiser	Practical Assessment point – Peer/Self assess against criteria.	Product Lifecycle Learning Mat 2
<b>Term 3</b> – Systems approach to Electronics	Storing, sourcing and producing power. Electronic systems.	Breadboard modelling of a circuit, how PCBs are produced, inputs/process/outputs. Ergonomics of the torch handle.	Produce a model hand held torch operated via a simple LDR circuit.	T2 – resistance, parallel, series, current, amp, voltage T3 – LDR, ergonomics, transistor,	End of topic assessment. Practical Assessment point – Peer/Self assess against criteria.	Product Lifecycle Learning Mat 3
	Curriculum Coherence					
Year 10	Students understanding will now to how these concepts link acro element of the course, where g element).	v expand in line with the specifico oss the sub-disciplines; Resistant N reater emphasis will be placed o	ation requirements of AQA. Maint Naterials, Graphics, Engineering, El n; Core technical principles, Spec	taining a focus on the key conce lectronics, Textiles technology. St cialist technical principles, Designi	pts and principles from previous y udents will begin to apply this to b ing and Making principles (The 3 s	rears students will be introduced both the NEA and examined sections within the examined
Medium Term Plan Title/Topic	Themes/Concepts	Key Core Knowledge Foci	Application/Skills Foci	Ambitious Tier 2/3 Vocabulary	Assessment	Independent Learning
HT1 – Resistant Materials Exam Focus Section A&B	Core & Specialist technical principles that underpin Resistant Materials as a sub- discipline of D&T. (Design/Critique/Data)	<ul> <li>Sourcing Materials</li> <li>Traditional V's CAD/CAM</li> <li>Joining and Finishing</li> <li>Working with plastics</li> </ul>	Taught lessons, Q&A, workbook, revision cards, research and analysis,	T2 – Painting, waxing, varnish. T3 -Seasoning, monomer, polymer, polymerisation, cracking, injection moulding, blow moulding	Resistant Materials assessment booklet	Weekly revision plan for weekly assessments in their booklets.
	Supporting practical experiment; Processing and shaping materials (Technology)	Develop a broad range of how materials can be joined and fixed both through chemical and mechanical methods. Appreciate the value between handmade and computer-based manufacture.	Revision Card storage case – students to select a suitable joining technique for the frame, followed by the use of a JIG to line up the outer case, CAD/CAM to personalise their product.	T2 – Drilling, adhesive T3 – Ergonomics, control devise,	Practical Assessment point – Peer/Self assess against criteria.	Students to take home revision cards to answer the questions.
<b>HT2</b> – Engineering Exam Focus Section A&B	Core & Specialist technical principles that underpin Engineering as a sub-discipline of D&T.	<ul> <li>Engineering Metals</li> <li>Joining/Cutting metals</li> <li>Mechanisms &amp; Forces</li> </ul>	Taught lessons, Q&A, workbook, revision cards, research and analysis,	T2 – linear, oscillating, rotary, reciprocate, T3 – MIG, TIG, Arch welding, oxy acetylene, Tap & Die, Torsion, tension, shear	Engineering assessment booklet	Weekly revision plan for weekly assessments in their booklets.
	Supporting practical experiment (Technology)	Industrial practices; introduction of Pewter casting, welding, plastic powder	Students to engineer a letter stamp/wax seal. (later to be used to identify coursework.	T2 – seal, surface finish. T3 – Powder coating, Lathe, sprue, die,	Practical Assessment point – Peer/Self assess against criteria.	

<b>HT3</b> – Graphic Exam Focus Section A&B	Core & Specialist technical principles that underpin Graphics as a sub-discipline of D&T. <b>(Design/Critique/Data)</b>	<ul> <li>Design Considerations</li> <li>Communicating ideas</li> <li>Printing processes</li> <li>Paper, board and Finishes</li> </ul>	Taught lessons, Q&A, workbook, revision cards, research and analysis,	T2 – Client, customer T3 – Lithographic, flexographic, gravure, digital, screen printing	Graphics assessment booklet	Weekly revision plan for weekly assessments in their booklets.
	Supporting practical experiment <b>(Technology)</b>		Desk Light Project student to design and model a prototype desk lamp. Practical lessons; Demonstrations of Vacuum forming, strip heating, materials manipulation, joining and fixing, CNC Laser cutting, to produce a prototype of their product.	T2 –Prototype, manipulation, T3 – Vacuum forming,	Practical Assessment point – Peer/Self assess against criteria.	
<b>HT4</b> – Electronics Exam Focus Section A&B	Core & Specialist technical principles that underpin Electronics as a sub-discipline of D&T.	<ul> <li>Systems approach</li> <li>Input/Process/outputs</li> <li>Creating a circuit/PCB production</li> </ul>	Taught lessons, Q&A, workbook, revision cards, research and analysis,	T2 – Programming, input, process, output T3 – PCB, Microcontroller, DIL, PIC chip	Electronics assessment booklet	Weekly revision plan for weekly assessments in their booklets.
	Supporting practical experiment (Technology)		Breadboard modelling of a circuits; skills-based to develop the circuit for the Desk light	T2 – Wire, components T3 – Breadboard, Circuit	Practical Assessment point – Peer/Self assess against criteria.	
HT5 – Broad D&T Theory	Core & Specialist technical principles that underpin D&T.	<ul> <li>Modern, smart materials</li> <li>Powering systems</li> <li>Textiles technology</li> <li>Manufacturing systems</li> </ul>	Taught lessons, Q&A, workbook, revision cards, research and analysis,	T2 – Turbine, Nuclear, Storage systems. T3 – JIT, Cooperative, crowd funding, SMA, graphene, GRP, CRP, Kevlar	Multiple choice assessment booklet	Weekly revision plan for weekly assessments in their booklets.
<b>HT6</b> – NEA Criterion 1 Exam Focus Section C	NEA Research into Project Brief provided by AQA <b>(Critique)</b>	1.Potential project ideas; 5Ws. 2.Questionnaire and Client survey. 3.Product Analysis and Technical Data. 4.Social, Ethics and Environmental Impacts.	Use a range of methods to gather and analyse information leading to a justified Design Brief and Specification.	T2 – Cost, labour, energy, waste disposal T3 – Anthropometric, iterative design, market pull	Ist Round Mock Examinations 2hr GCSE paper. Assessed against AQA Specification use of RAG tracker.	Incomplete NEA based on RAG document.
NEA Criterion 2 Exam Focus Section C	NEA Design Brief and Specification (Data interpretation)	1.Design Brief. 2.Specification. Using the information and data collected to inform their design proposal.	Writing to inform a user of the product requirements. Reflecting on the user needs and wants.	T2 – Target market, market research, product development T3 – Planned obsolescence	Assessed against AQA Specification use of RAG tracker.	Incomplete NEA based on RAG document.
	Curriculum Coherence					
Year 11	With commencing the NEA con sections; Research, Design Brie/ examined element where stude	nponent on 1 <sup>st</sup> June, students will Specification (Critique/Data), De ents focus will be on recall of K&U	work through their independent s sign and Design Development (D and exam preparations, allowing	study combining and showcasing esign), Realisation (Technology), g for post-16 further study.	their knowledge understanding o Evaluation (Critique). This is befor	and skill within 6 assessed re the final preparations for their
Medium Term Plan Title/Topic	Themes/Concepts	Key Core Knowledge Foci	Application/Skills Foci	Ambitious Tier 2/3 Vocabulary	Assessment	Independent Learning
HT1 – NEA Criterion 3 Exam Focus Section C	NEA Generating Design Ideas (Design)	Using tools to communicate how their design is functional, creative and innovative, responding to the client needs and wants set out in the specification.	Combination of 2D and 3D designing using; isometric, perspective drawing to detail ergonomic and design features.	T2 – Justification, innovation, creativity, consideration T3 – Design fixation,	Assessed against AQA Specification use of RAG tracker.	Incomplete NEA based on RAG document.
<b>HT2</b> – NEA Criterion 4 Exam Focus Section C	NEA Design and Prototype Development. <b>(Design)</b>	Use tools for modelling performance and evaluating	Use of 2D/3D sketches, photograph editing, structural exploration on paper, card,	T2 – Exploration, hypothesis	Assessed against AQA Specification use of RAG tracker.	Incomplete NEA based on RAG document.

		their designs against a specification.	and the use of CAD for materials development.	T3 – Manufacture specification, Gantt chart, production plan, cutting list.	Potential 2 <sup>nd</sup> mock examination 2hr GCSE paper.	
<b>HT3</b> – NEA Criterion 5 Exam Focus Section C	NEA Realisation. (Technology)	Understanding materials and their properties/Processing and shaping materials.	Use a range of tools and processes along with their K&U of materials and their working characteristics for students to independently realise their design.	T2 – Health and safety, T3 – Control devise, Quality control, composite, Alloy, ferrous.	Assessed against AQA Specification use of RAG tracker.	Incomplete NEA based on RAG document.
<b>HT4</b> – NEA Criterion 6 Exam Focus Section C	NEA Testing and Evaluation. (Critique/Data)	Using product life cycle analysis to track the effect of the product on the user and environment.	Testing product against all aspects of the specification. Client/customer feedback given with justified moderations made.	T2 – Comprehensive, extensive, requirements T3 – Iteration,	Assessed against AQA Specification use of RAG tracker/NEA moderation and standardisation.	Incomplete NEA based on RAG document.
HT5/6 – GCSE Examination Preparations sections A/B/C	Focus on exam technique, structuring extended written response to questions.	Section A – Core Technical Principles. Section B – Specialist Technical Principles Section B – Designing and making principles	Use a range of revision techniques; past paper questions, review previous responses, learning mats, revision cards, timed questioning, model answers.		Potential 3 <sup>rd</sup> mock examination 2hr GCSE paper.	