DESIGN & TECHNOLOGY

CURRICULUM OVERVIEW – KEY STAGE 3 - 5

OUR CURRICULUM INTENT

Our curriculum is designed to develop the fundamental skills, technical knowledge, and practical expertise in Key Stage 3 (KS3) that empower students to succeed in Key Stage 4 (KS4) and Key Stage 5 (KS5). Across KS3 Design & Technology (D&T), there is deliberate cross-curricular alignment: students master essential hand-crafting, CAD/CAM, graphics, and schematics skills, alongside foundational electronics and materials knowledge (timber, plastics, mechanisms). These shared foundations directly feed into our KS4 pathways—offering both AQA GCSE 3D Design and AQA GCSE Engineering—as well as our AQA A-Level 3D Design provision at KS5.

CURRICULUM JOURNEY

Year 7 builds workshop foundations: health and safety, hand tools, timber, plastics, graphics and simple electronics. Year 8 adds mechanisms and motion, a cam mechanical toy and advanced graphical communication. Year 9 applies these skills through the Bauhaus movement, from architectural drawing and modelling to product design. GCSE study in Years 10–11 follows either AQA 3D Design (8205) or AQA Engineering (8852), building towards non-exam assessment and final examinations. At Key Stage 5, AQA A-Level 3D Design (7205) develops personal investigation, experimentation and high-level making through to a final exhibition.

YEAR 7–8 | KEY STAGE 3 DESIGN & TECHNOLOGY

YEAR	TERM 1 | AUTUMN	TERM 2 | SPRING	TERM 3 | SUMMER
YEAR 7	**Health & Safety, Timber & Plastics** • Workshop health and safety protocols. • Material properties and classification of timber and plastics. • **Practical Projects:** Phone Holder (Timber & Plastic). • **Skills Developed:** Basic hand tools (try square, coping saw, marking gauge, hand files), CAD/CAM introduction, and strip heater operation.	**Creature Feature & Graphics** • Design brief analysis and user-centred design. • **Practical Project:** Hand-crafted "Creature Feature". • **Skills Developed:** Iterative designing, hand-crafting techniques, and introductory graphic communication skills.	**Electronics & Pocket Torch** • Introduction to simple electronic circuits, components, and schematic symbols. • **Practical Project:** Pocket Torch. • **Skills Developed:** Circuit construction using a switch, LED, and cell battery; basic assembly techniques.
YEAR 8	**Mechanisms & Motion (Theory)** • Mechanical systems: Types of motion (linear, rotary, reciprocating, oscillating). • Linkages, levers, gears, and cams. • **Mathematical Skills:** Calculating simple Mechanical Advantage (MA).	**Cam Mechanical Toy** • Application of mechanical principles. • **Practical Project:** Cam Mechanical Toy. • **Skills Developed:** Precision cutting, joining, alignment, and testing of mechanical movement.	**Graphical Communication** • Advanced visual communication techniques. • **Skills Developed:** Isometric drawing, 1-point and 2-point perspective drawing, rendering, and spatial presentation.

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CURRICULUM OVERVIEW – PROGRESSION INTO GCSE

YEAR 9 | BAUHAUS: FROM ARCHITECTURE TO PRODUCT DESIGN

Drawing, modelling and prototyping skills come together through the Bauhaus movement, preparing students for GCSE.

YEAR	TERM 1 | AUTUMN	TERM 2 | SPRING	TERM 3 | SUMMER
YEAR 9	**Architecture & The Bauhaus** • History and influence of the Bauhaus design movement. • Architectural drawing techniques. • **Skills Developed:** 1-point & 2-point perspective, floor plans, bubble diagrams, orthographic projections, and elevation views.	**Architectural Modelling** • Translating 2D visual ideas into 3D structural forms. • **Practical Project:** Design and physical scale-modelling of a Bauhaus-inspired house. • **Skills Developed:** Model-making, material testing, precision cutting, and scale representation.	**Product Design** • Applying Bauhaus design principles (*form follows function*) to consumer products. • **Practical Project:** Design and prototyping of a Bauhaus-inspired product. • **Skills Developed:** Design synthesis, ideation, iteration, and refined presentation.

YEAR 10 | GCSE PATHWAYS: 3D DESIGN AND ENGINEERING

Students follow either AQA GCSE 3D Design (8205) or AQA GCSE Engineering (8852).

YEAR	TERM 1 | AUTUMN	TERM 2 | SPRING	TERM 3 | SUMMER
YEAR 10 3D DESIGN	**Ideation, Rendering & Contextual Brief (*Teenage Engineering*)** • **Skills Focus:** Perspective drawing, observational drawing, rendering. • **Research:** Contextual analysis of *Teenage Engineering*. • **Project:** Design and physical modelling of a consumer product for the brand.	**CAM & Presentation / Component 1 NEA Launch** • CAD/CAM preparation (laser cutting software and tolerance planning). • **January Launch:** Component 1 NEA (Non-Exam Assessment). • **Project Choice:** Art Deco inspired lamp **OR** themed pop-up shop.	**Component 1 NEA Progress** • Research, contextual exploration, ideation, and initial 3D modelling for chosen brief.
YEAR 10 ENGINEERING	**Engineering Materials, Processes & Drawing** • **Section 3.1 & 3.2:** Ferrous/non-ferrous metals, polymers, composites, and smart materials. • **Engineering Drawing:** Systems diagrams, circuit schematics, orthographic drawing, and dimensioning standards (BS 8888). • **Practical Workshop:** Machining, fitting, hand tools, and workshop safety.	**Mechanisms, Electronics & Systems** • **Section 3.3:** Mechanical systems (gears, cams, pulleys, levers, mechanical advantage calculations). • **Section 3.4:** Electrical/electronic systems (Ohm's law, circuit logic, input/process/output components, switch circuits, LEDs). • **Practical Skills:** Soldering, circuit assembly, and testing.	**CAD/CAM, Testing & NEA Preparation** • **Section 3.5:** Computer-Aided Design (CAD), Computer-Aided Manufacture (CAM), CNC machining/laser cutting. • Testing & investigation techniques. • **June 1st:** AQA releases the NEA context/brief. Initial analysis and engineering brief definition.

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CURRICULUM OVERVIEW – KEY STAGE 4

YEAR 11 | NEA COMPLETION, EXTERNALLY SET ASSIGNMENT AND EXAMINATIONS

Students complete their non-exam assessment, then prepare for and sit their final assessments: the Component 2 ESA practical exam in 3D Design and the written exam in Engineering.

YEAR	TERM 1 | AUTUMN	TERM 2 | SPRING	TERM 3 | SUMMER
YEAR 11 3D DESIGN	**Component 1 NEA Completion** • Advanced explorations, final iterative refinements, and workshop manufacture of the practical response. • **Deadline:** Complete Component 1 portfolio and final outcome.	**Component 2 ESA (Externally Set Assignment)** • **January:** AQA releases Component 2 exam briefs. • Research, ideation, iteration, material experimentation, and preparatory study.	**10-Hour Assessment & Moderation** • **Exam:** 10-hour supervised practical exam to realise final response. • Exhibition setup and final internal moderation.
YEAR 11 ENGINEERING	**Component 2: NEA (Engineering Brief)** • **Task (40% of GCSE):** Problem solving, engineering specification, generating design solutions, CAD modelling, structural/mechanical analysis. • **Practical:** Manufacture of working prototype using engineering tools/materials.	**NEA Finalisation & Written Exam Prep** • Complete NEA testing, evaluation, and documentation. • **Theory Revision (Component 1 - 60% Exam):** Applied maths, physics, material science, engineering processes, manufacturing technologies, and environmental impact.	**Written Exam & Final Moderation** • Final revision, past-paper practice, and exam technique. • **AQA 2-Hour Written Exam:** Section A (Multiple Choice) & Section B (Short/extended response).

GCSE QUALIFICATIONS | AQA 3D DESIGN (8205) AND ENGINEERING (8852)

3D DESIGN • COMPONENT 1	3D DESIGN • COMPONENT 2	ENGINEERING • WRITTEN EXAM	ENGINEERING • NEA
Portfolio (NEA) | 60%	Externally Set Assignment | 10-hour supervised practical exam | 40%	2 hours | Section A multiple choice, Section B short/extended response | 60%	Engineering brief and working prototype | 40%

OFFICIAL GCSE SPECIFICATION LINKS

AQA GCSE Art and Design: Three-dimensional design (8205) — qualification specification

AQA GCSE Engineering (8852) — qualification specification

AQA GCSE Art and Design (8205) — full specification (PDF)

AQA GCSE Engineering (8852) — full specification (PDF)

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CURRICULUM OVERVIEW – KEY STAGE 5

YEAR 12–13 | AQA A-LEVEL 3D DESIGN (7205)

Students deepen their research, experimentation and making through short projects, a Component 1 personal investigation with a written element, and the Component 2 externally set assignment.

YEAR	TERM 1 | AUTUMN	TERM 2 | SPRING	TERM 3 | SUMMER
YEAR 12	**Skill Enhancement & Short Projects** • Advanced research, ideation, iteration, and physical prototyping. • **Project 1:** Gaudí-inspired architectural project. • **Project 2:** Postmodernism kitchen utensil project.	**Component 1 Personal Investigation Launch** • **February:** Launch of Component 1 NEA (Personal Investigation & Written Essay). • Defining personal briefs, literature reviews, contextual research, and initial concept development.	**Component 1 Iteration & Experimentation** • Material testing, structural experiments, CAD visualisations, scale modelling, and design refinement.
YEAR 13	**Component 1 Manufacture & Portfolio** • Advanced explorations, high-level modelling, and practical fabrication. • **Part 2 of Term 1:** Manufacture of final practical outcomes. • Integration of the 1,000–3,000-word continuous written element.	**Component 1 Hand-in & Component 2 ESA Launch** • **February:** Final submission of Component 1. • **February:** Release of AQA Component 2 ESA briefs. • Research, exploration, ideation, iteration, and preparatory work for chosen brief.	**15-Hour Assessment & Final Exhibition** • **Assessment:** 15-hour supervised practical exam to realise the outcome. • Final assessment, internal moderation, and end-of-year exhibition setup.

A-LEVEL QUALIFICATION | AQA 3D DESIGN (7205)

COMPONENT 1 • PERSONAL INVESTIGATION

Practical work with a 1,000–3,000-word continuous written element | 60%

COMPONENT 2 • EXTERNALLY SET ASSIGNMENT

Preparatory work and a 15-hour supervised practical exam | 40%

OFFICIAL A-LEVEL SPECIFICATION LINK

AQA A-Level Art and Design: Three-dimensional design (7205) — qualification specification

AQA A-Level Art and Design (7205) — full specification (PDF)

OFFICIAL GCSE SPECIFICATION LINK Pearson Edexcel GCSE Mathematics (1MA1) qualification specification