The Hart School – Faculty of Design
Yr 11 GCSE Design and Technology (AQA 8552) Curriculum Overview

Curriculum intent: GCSE Design and Technology (AQA 8552) develops pupils who design and make prototypes that solve real problems, and who understand the materials, technologies and wider issues behind products. The written exam (2 hours, 100 marks) is 50% of the GCSE and covers core technical principles, specialist technical principles and designing and making principles, with at least 15% mathematics and 10% science. The non-exam assessment (NEA, about 30 to 35 hours, 100 marks) is the other 50%: a design and make project in response to a contextual challenge that AQA releases on 1 June in the year before submission.

All of the exam theory (core technical principles, specialist technical principles and designing and making principles) is taught in Year 10, alongside practical skills, and the NEA is launched when AQA releases the contexts on 1 June. Year 11 completes the NEA by the end of February (investigating, designing, developing, realising, and analysing and evaluating); from March, lessons focus entirely on the written exam.

Progress is tracked against the exam and NEA assessment criteria, and every test, mock and PPE is followed by question level analysis (QLA) by topic and cohort, with PP and SEND work reviewed first. Practical work is risk-assessed, access arrangements are in place, and JCQ regulations apply to the NEA.

Yr 11 end points: By the end of February in Year 11 pupils have completed a sustained design and make project for a client (NEA, 50%): investigating, specifying, generating and developing ideas, realising a high-quality prototype, and analysing and evaluating it with evidence. From March they focus on the written exam (50%), applying the core, specialist and designing and making principles under timed conditions.

Yr 11 key dates (LTP): PPE 1 w/c 23.11.26 · Year 11 reports home 7.1.27 · NEA complete by the end of February (w/c 22.2.27) · PPE 2 w/c 22.2.27 and 1.3.27 · Year 11 reports home 24.3.27 · NEA internally standardised and submitted for AQA moderation in May · written exam in the summer series

	Autumn 1	Autumn 2	Spring 1	Spring 2	Summer 1	Summer 2
Core Course Topic: Topics taught in this half term. Bold = summative assessment.	**NEA: Investigation, Brief and Ideas** NEA: investigation of the context, client and users NEA: design brief and specification NEA: generating design ideas Weekly exam retrieval	**NEA: Developing, Modelling and Final Design; PPE 1** NEA: developing the design through modelling and testing NEA: final design and manufacturing specification **PPE 1: full written paper** NEA: making begins	**NEA: Realising, Testing and Evaluating** NEA: making the prototype to tolerance NEA: quality control and recording the making process NEA: testing with the client and against the specification NEA: analysis, evaluation and justified improvements	**NEA Complete; Exam Focus Begins** **NEA complete and authenticated by the end of February** **PPE 2: full written paper** QLA-led revision of weakest topics Exam technique: extended and calculation questions	**Exam Preparation and NEA Moderation** Targeted revision from QLA Timed practice papers NEA internally standardised and submitted for AQA moderation (May) Written exam (summer series)	**Course Complete** Written exam (summer series); course complete
Additional support links: Topic-specific pages from trusted sources (links checked September 2026)	**AQA** GCSE Design and Technology 8552 at a glance **Seneca (GCSE preview)** Market research and clients	**Onshape** Free CAD for education **Seneca (GCSE preview)** Production techniques and systems	**Technology Student** CNC and CAM **Seneca (GCSE preview)** Sustainability and LCA	**AQA** GCSE Design and Technology 8552 at a glance **Seneca (GCSE preview)** Designers	**AQA** GCSE Design and Technology 8552 at a glance **Seneca (GCSE preview)** Design strategies	**National Careers Service** Product designer
Knowledge: The specific knowledge your child will learn in detail	The NEA begins by identifying and investigating design possibilities through primary and secondary research, then producing a design brief and a measurable specification. Pupils then generate a wide range of ideas using design strategies, communicated through sketches, CAD and annotation, with client feedback at each stage. Weekly retrieval keeps the Year 10 theory secure.	Development refines ideas through iterative modelling (card, foam, CAD, 3D printing) and client testing, recording what changed and why. The final design is fully communicated, and a manufacturing specification sets out materials, components, processes, tolerances and quality checks before making begins.	Realising the design means making a high-quality prototype with suitable materials, processes and tools (hand, machine and CAD/CAM), working accurately to tolerances with quality control, and recording each stage with photographs and notes. The prototype is then tested against every specification point and with the client, and the evidence is used to justify improvements.	The NEA is finished, signed off by pupils as their own work and marked in school by the end of February. From then on every lesson is exam preparation: revisiting the weakest topics from PPE QLA, practising calculation questions (at least 15% mathematics) and extended responses, and timed practice.	Revision is targeted at each pupil's weakest topics using QLA, with timed practice papers and mark-scheme review. The NEA is internally standardised and a sample is submitted to AQA for moderation by the May deadline. The 2-hour written exam covers core technical principles, specialist technical principles and designing and making principles.	The written exam is sat in the summer series. NEA work, marks and records are kept securely under JCQ retention rules.
Key vocabulary: Subject terms your child should know, spell and use	*investigation, design brief, specification, measurable, design strategy, client feedback*	*development, iterative modelling, final design, manufacturing specification, tolerance, quality control*	*realisation, prototype, CAD/CAM, tolerance, quality control, evidence, testing, evaluation, justification*	*authentication, declaration, QLA, command word, extended response, calculation*	*revision, QLA, timed practice, mark scheme, standardisation, moderation*	*results day, JCQ retention, post-16*
Exam & Practical Skills: Exam skills and practical techniques your child will develop	Analysing research; writing measurable specifications; generating and annotating ideas	Modelling and testing; CAD; producing a manufacturing specification; timed exam answers	Making to a high standard; safe use of machines; quality checks; testing and writing a justified evaluation	Timed exam practice; answering every question type; self-marking with mark schemes	Timed exam practice; using mark schemes to improve answers	NEA portfolio photographs kept for college and apprenticeship interviews
How it is assessed: Formative checks and summative assessments	NEA progress reviewed against the AQA criteria with written feedback; weekly retrieval quizzes with QLA.	PPE 1 (w/c 23.11.26): full written paper with QLA by topic and AO, PP and SEND first. NEA development reviewed against the criteria.	Live feedback on making and evaluation against the NEA criteria; completeness checks against the AQA criteria. Year 11 reports home 7.1.27.	NEA complete by w/c 22.2.27. PPE 2 (w/c 22.2.27 and 1.3.27): full written paper with QLA by topic and AO; revision targets set. Year 11 reports home 24.3.27.	Timed practice papers with QLA; NEA internally standardised and submitted for AQA moderation.	Course complete.
Builds on / leads to: How this topic connects to prior and future learning	Builds on: the Year 10 NEA launch. Leads to: development and modelling (Autumn 2).	Builds on: NEA ideas. Leads to: realising the prototype (Spring 1).	Builds on: the final design. Leads to: NEA completion by the end of February.	Builds on: Year 10 theory and PPE 1 QLA. Leads to: final exam preparation (Summer 1).	Builds on: the whole course. Leads to: A Level Design and Technology, engineering and design courses, apprenticeships and careers.	Leads to: results day and post-16 study.

PPE 1 w/c 23.11.26

NEA Deadline end of February · w/c 22.2.27

PPE 2 w/c 22.2.27 and 1.3.27

NEA Marks to AQA May deadline · moderation

Written Exam summer series

The Hart School – Faculty of Design
Yr 11 Engineering Design (OCR J822) Curriculum Overview

Curriculum intent: The OCR Cambridge National in Engineering Design (J822) develops pupils who design like engineers: identifying requirements, communicating ideas through sketches, engineering drawings and CAD, and testing ideas through product analysis and modelling. R038 Principles of engineering design is an exam (1 hour 15 minutes, 70 marks, 40%). R039 Communicating designs (30%) and R040 Design, evaluation and modelling (30%) are non-exam assessments: OCR sets the assignments, the school marks them and OCR moderates them.

Both non-exam units are completed in Year 10: pupils learn the design processes and requirements that underpin them, build the skills, then complete R039 (freehand sketching, engineering drawing and CAD) in Spring 1 and R040 (product analysis, modelling and evaluation) by the end of Summer 1. Year 11 focuses entirely on the R038 exam: designing processes, design requirements, communicating design outcomes and evaluating design ideas.

Progress is tracked against the OCR marking criteria for each unit, and every end-of-topic test and timed practice paper is followed by question level analysis (QLA) by topic and cohort, with PP and SEND work reviewed first. Practical work is risk-assessed, access arrangements are in place, and JCQ regulations apply to the set assignments.

Yr 11 end points: With both coursework units completed in Year 10, Year 11 focuses entirely on R038 Principles of engineering design (40%). By the exam, pupils can explain designing processes, design requirements, communicating design outcomes and evaluating design ideas, and answer every question type under timed conditions.

Yr 11 key dates (LTP): Timed R038 practice papers in class at the end of each topic area · Year 11 reports home 7.1.27 and 24.3.27 · R038 exam in the summer series

	Autumn 1	Autumn 2	Spring 1	Spring 2	Summer 1		Summer 2
Core Course Topic: Topics taught in this half term. Bold = summative assessment.	**R038 TA1 and TA2: Designing Processes and Requirements** TA1 Design strategies and the iterative process TA2 Design requirements and specifications TA2 Manufacturing considerations Exam technique: short and extended answers	**R038 TA3: Communicating Design Outcomes** TA3 Freehand sketching and annotation TA3 Engineering drawing conventions (BS 8888) TA3 CAD and its uses **Timed R038 practice paper (TA1 to TA3)**	**R038 TA4: Evaluating Design Ideas** TA4 Evaluation methods: ranking matrices, user testing, modelling TA4 Impact on people and the environment Mixed-topic exam practice QLA-led revision	**R038 Revision and Timed Practice** **Timed R038 practice paper (all topic areas)** QLA-led revision of weakest topics Extended-response practice Timed practice papers	**Final Exam Preparation and R038 Exam** Targeted revision from QLA Timed practice papers R038 exam (summer series)		**Course Complete** R038 exam (summer series); course complete
Additional support links: Topic-specific pages from trusted sources (links checked September 2026)	**OCR** Engineering Design J822 at a glance **Seneca (GCSE preview)** Design strategies	**Technology Student** Third-angle orthographic drawing **Onshape** Free CAD for education	**OCR** Engineering Design J822 at a glance **Seneca (GCSE preview)** Sustainability and LCA	**OCR** Engineering Design J822 at a glance **Tomorrow's Engineers** Engineering careers	**OCR** Engineering Design J822 at a glance **National Careers Service** Mechanical engineer		**Tomorrow's Engineers** Engineering careers
Knowledge: The specific knowledge your child will learn in detail	Design strategies include iterative, inclusive, user-centred, sustainable and ergonomic design; the iterative process cycles through needs, specification, ideas, modelling, testing and evaluation. Design requirements become a specification covering needs, wants, function, cost, safety, materials and manufacture. Manufacturing considerations include the scale of production, processes (wasting, shaping, forming, joining), material properties and cost.	Designs are communicated through freehand sketches (2D and 3D, with annotation), engineering drawings that follow BS 8888 conventions (orthographic projection, dimensions, line types and scale) and CAD models and drawings. Exam questions ask pupils to interpret, complete and choose between these methods.	Engineers evaluate design ideas against the specification using methods such as ranking matrices, user testing and modelling, and consider the impact on people and the environment (sustainability, life cycle and the 6 Rs). Mixed-topic practice links all four topic areas.	Revision targets each pupil's weakest topic areas from QLA of the practice papers, with extended-response practice and timed papers marked against OCR mark schemes.	Final preparation for the R038 exam (1 hour 15 minutes, 70 marks), which covers designing processes, design requirements, communicating design outcomes and evaluating design ideas.	**R038 Exam** summer series	The R038 exam is sat in the summer series. Coursework, marks and records are kept securely under JCQ retention rules.
Key vocabulary: Subject terms your child should know, spell and use	*iterative design, inclusive design, user-centred design, ergonomics, specification, scale of production, wasting, forming, joining*	*freehand sketch, annotation, orthographic, isometric, BS 8888, dimension, line type, scale, CAD*	*evaluation, ranking matrix, user testing, sustainability, life cycle, 6 Rs*	*QLA, command word, extended response, mark scheme*	*revision, timed practice, mark scheme*		*results day, JCQ retention, post-16*
Exam & Practical Skills: Exam skills and practical techniques your child will develop	Applying knowledge to unseen scenarios; short and extended exam answers	Interpreting and completing drawings in exam questions; timed answers	Evaluating ideas against criteria; mixed-topic timed answers	Timed exam practice; self-marking with mark schemes	Answering every question type under time		Portfolio evidence kept for college and apprenticeship interviews
How it is assessed: Formative checks and summative assessments	End-of-topic tests in OCR exam style with QLA; PP and SEND first.	Timed R038 practice paper in class on TA1 to TA3, with QLA by topic, PP and SEND first.	Practice papers with QLA. Year 11 reports home 7.1.27.	Timed R038 practice paper in class on all topic areas, with QLA by topic; revision targets set. Year 11 reports home 24.3.27.	Timed practice papers with QLA.		Course complete.
Builds on / leads to: How this topic connects to prior and future learning	Builds on: Year 10 R038 and coursework. Leads to: TA3 (Autumn 2).	Builds on: R039 coursework. Leads to: TA4 (Spring 1).	Builds on: R040 coursework. Leads to: revision and timed practice (Spring 2).	Builds on: TA1 to TA4 and practice paper QLA. Leads to: final exam preparation (Summer 1).	Builds on: the whole course. Leads to: Level 3 engineering courses, apprenticeships and careers.		Leads to: results day and post-16 study.

The Hart School – Faculty of Design
Design and Technology: Curriculum Map and KS4 Pathways

Each strand is taught in every year and revisited at greater depth, so pupils build on what they already know. Year 9 follows the same design process as both Key Stage 4 courses, so pupils are ready for either pathway.

Strand	Year 7	Year 8	Year 9	GCSE D&T (AQA 8552)	Engineering Design (OCR J822)
Designing	Design brief, user needs, ACCESS FM, specification	Designing for a target user; briefs from product analysis	Client research, measurable specification, design strategies, biomimicry	NEA investigation, brief, specification and ideas	R038 designing processes and design requirements
Communicating	2D and isometric sketching, rendering, templates	2D CAD; flowcharts; block diagrams	Third-angle orthographic to BS 8888; 3D CAD; annotation	Sketches, exploded views, CAD and models	R039 freehand sketches, engineering drawings and CAD
Materials	Timbers, manufactured boards, polymers; FSC	Smart and modern materials	Material choice for function, cost and sustainability	Core and specialist materials and their properties	Material properties in design requirements
Making	Marking out, sawing, joining, finishing to ±1 mm; acrylic	Mechanisms; CAM laser cutting	Making to tolerance; quality control	NEA prototype with quality control	R040 virtual and physical modelling
Systems and mechanisms	LED circuits, polarity, resistors	Levers, linkages, cams; inputs, processes, outputs; microcontrollers	Systems within analysed products	Mechanical devices and electronic systems; ratio calculations	Systems in product analysis
Structures and forces	Stable, square assemblies	Rigid frames and triangulation	Forces in product analysis and prototypes	Forces, stresses, reinforcement and stiffening	Requirements and modelling
Evaluating and wider issues	Testing with a user; designers and cultures	Life cycle and circular economy; careers	Evidence-based evaluation; 6 Rs; responsibilities of designers	NEA analysis and evaluation; environmental, social and economic issues	R038 evaluating design ideas; R040 evaluation

Key Stage 4 courses at a glance

Course	Exam	Non-exam assessment
GCSE Design and Technology, AQA 8552	Written exam: 2 hours, 100 marks, 50% (core technical principles, specialist technical principles, designing and making principles; at least 15% mathematics and 10% science).	Non-exam assessment: about 30 to 35 hours, 100 marks, 50%; contextual challenges released by AQA on 1 June in the year before submission; marked in school and moderated by AQA.
Cambridge National in Engineering Design, OCR J822	R038 Principles of engineering design: exam, 1 hour 15 minutes, 70 marks, 40%.	R039 Communicating designs (30%) and R040 Design, evaluation and modelling (30%): OCR-set assignments, marked in school and moderated by OCR.

The Hart School – Faculty of Design
Design and Technology: National Curriculum Coverage

National Curriculum coverage: every Key Stage 3 statement (lesson numbers)

Area	Key Stage 3 National Curriculum statement	Year 7	Year 8	Year 9
Design	use research and exploration, such as the study of different cultures, to identify and understand user needs	L3, L15	L4, L9	L7
Design	identify and solve their own design problems and understand how to reformulate problems given to them	L3, L5	L4	L7–L8
Design	develop specifications to inform the design of innovative, functional, appealing products that respond to needs in a variety of situations	L3	L9	L8
Design	use a variety of approaches [for example, biomimicry and user-centred design] to generate creative ideas and avoid stereotypical responses	L5	L4	L8
Design	develop and communicate design ideas using annotated sketches, detailed plans, 3-D and mathematical modelling, oral and digital presentations	L2, L5, L11	L2, L10	L3–L5, L9
Make	select from and use specialist tools, techniques, processes, equipment and machinery precisely, including computer-aided manufacture	L6–L8, L12	L5, L11–L12	L10–L11
Make	select from and use a wider, more complex range of materials, components and ingredients, taking into account their properties	L4, L9	L13	L9–L11
Evaluate	analyse the work of past and present professionals and others to develop and broaden their understanding	L15	L9, L15	L2
Evaluate	investigate new and emerging technologies	L12	L11, L13	L4–L5
Evaluate	test, evaluate and refine their ideas and products against a specification, taking into account the views of intended users and other interested groups	L8, L14	L6, L14	L12–L14
Evaluate	understand developments in design and technology, its impact on individuals, society and the environment, and the responsibilities of designers, engineers and technologists	L4	L14, L15	L14
Technical	understand and use the properties of materials and the performance of structural elements to achieve functioning solutions	L4, L7, L9	L5, L13	L9
Technical	understand how more advanced mechanical systems used in their products enable changes in movement and force	—	L2–L6	L2
Technical	understand how more advanced electrical and electronic systems can be powered and used in their products [for example, circuits with heat, light, sound and movement as inputs and outputs]	L10, L13	L7	L2
Technical	apply computing and use electronics to embed intelligence in products that respond to inputs [for example, sensors] and control outputs [for example, actuators] using programmable components [for example, microcontrollers]	—	L7–L8	—

Statements quoted from the National Curriculum in England: design and technology programmes of study (DfE). Cooking and nutrition is delivered in Food Preparation and Nutrition.