

Year 11 Product Design Curriculum End Points and Key Vocabulary

	Autumn Term 1	Autumn Term 2	Spring Term 1	Spring Term 2	Summer Term 1	Summer Term 2
Units of Work	NEA Phase 1: Contextual Challenge Investigation & Specification (Sections A & B)	NEA Phase 2: Design Ideas Generation & Development (Sections C & D)	NEA Phase 3: Prototype Realisation & Making (Section E)	NEA Phase 4: Testing, Evaluation & Final Hand-in (Section F) / Exam Revision Start	Comprehensive Exam Revision: Core & Specialist Technical Principles	Final Exam Preparation: Designing & Making Principles & Exam Technique
Ethos Links	<p>Sustainability: Investigating ecological and social impacts, carbon footprints, and ethical sourcing for the NEA context.</p> <p>STEM: Analysing primary/secondary data, statistical interpretation of user surveys, and anthropometric percentiles.</p> <p>Milton Keynes: Researching local context needs and community challenges relevant to the AQA NEA brief.</p>	<p>Sustainability: Considering material efficiency, sustainability factors, and the 6Rs during the design stage.</p> <p>STEM: Applying mathematical calculations for material costs, scaling drawings, and dimensional accuracy.</p> <p>Milton Keynes: Sourcing component suppliers and sustainable materials accessible within the local region.</p>	<p>Sustainability: Minimising material waste through effective nesting, tessellation, and careful material management.</p> <p>STEM: Applying precise SI units, measuring to tight tolerances, and operating machinery safely.</p> <p>Milton Keynes: Adhering to rigorous health and safety standards aligned with industrial workshop practices.</p>	<p>Sustainability: Evaluating the environmental and social footprint of the completed final prototype.</p> <p>STEM: Analysing quantitative test data, stress testing results, and comparative performance metrics.</p> <p>Milton Keynes: Presenting completed prototypes for peer review and mock moderation standards.</p>	<p>Sustainability: Life-cycle assessment (LCA), carbon footprints, and global resource management.</p> <p>STEM: Scientific equations, electrical calculations (Ohm's Law), mechanical advantage, gear ratios, and material properties.</p> <p>Milton Keynes: Reviewing industrial manufacturing systems and technological case studies.</p>	<p>Sustainability: Ethical, social, and environmental design considerations in commercial products.</p> <p>STEM: Application of math/science principles to unfamiliar design scenarios and exam case studies.</p> <p>Milton Keynes: Final exam preparation and readiness for GCSE assessment.</p>
Learning End Points	<ul style="list-style-type: none"> How to analyse AQA contextual challenges and identify design possibilities. 	<ul style="list-style-type: none"> How to generate imaginative and creative design ideas while avoiding design fixation. 	<ul style="list-style-type: none"> Safe working practices and risk assessments when operating specialist tools, equipment, and CAM 	<ul style="list-style-type: none"> Comprehensive testing methodologies against the original design brief and specification. How to gather and 	<ul style="list-style-type: none"> In-depth core technical principles: new & emerging technologies, energy generation/storage, 	<ul style="list-style-type: none"> Designing and making principles: investigation, user needs, work of designers/companies,

	<ul style="list-style-type: none"> • Methods for conducting primary and secondary research (surveys, interviews, focus groups, ergonomic analysis). • How to write a comprehensive design brief and detailed specification directly linked to user/client needs. 	<ul style="list-style-type: none"> • Advanced modelling techniques (card, CAD, physical toiles) to test and refine design concepts. • How to select appropriate materials, components, and produce a detailed manufacturing specification. 	<p>machinery.</p> <ul style="list-style-type: none"> • Quality control measures and precision tolerances required for accurate prototype fabrication. • Advanced techniques in wastage, addition, deforming, reforming, and surface finishing. 	<p>integrate third-party feedback to evaluate commercial viability and fitness for purpose.</p> <ul style="list-style-type: none"> • Structure and requirements of the final NEA digital/written portfolio (approx. 20 pages A3 equivalent). 	<p>modern/smart/composite materials, systems, and mechanical devices.</p> <ul style="list-style-type: none"> • Specialist technical principles across chosen material categories (sources, working properties, commercial processes). • Mathematical and scientific requirements embedded within the AQA GCSE specification. 	<p>design strategies, communication, tolerances, and quality control.</p> <ul style="list-style-type: none"> • AQA GCSE exam structure (Papers 1 & 2 format, command words, mark allocation, and time management). • Effective exam technique for short-answer, multiple-choice, and extended-response questions.
	<ul style="list-style-type: none"> • Investigate and outline design possibilities addressing specific user needs and wants. • Carry out targeted product analysis and investigate the work of relevant designers and companies. • Produce a justified design brief and measurable design specification. 	<ul style="list-style-type: none"> • Generate a diverse range of creative design solutions with flair and originality. • Develop and refine preferred ideas using 2D/3D sketching, CAD modeling, and iterative physical testing. • Formulate an accurate manufacturing specification containing precise parts lists and working drawings. 	<ul style="list-style-type: none"> • Operate specialist hand tools, machinery, and CAM equipment safely and with a high level of skill. • Fabricate and assemble a fully functional prototype applying strict quality control and close tolerances. • Apply appropriate functional and aesthetic surface treatments and finishes. 	<ul style="list-style-type: none"> • Conduct rigorous testing and critical evaluation of the final prototype against user requirements. • Propose and document justified modifications and iterative improvements. • Complete and finalize all NEA portfolio evidence for final submission and internal standardisation. 	<ul style="list-style-type: none"> • Recall, apply, and synthesize technical knowledge across all core and specialist theory topics. • Interpret complex technical data, graphs, and specification sheets under exam conditions. • Solve multi-step calculation questions involving ratios, surface areas, volumes, and electrical/mechanical principles. 	<ul style="list-style-type: none"> • Answer exam questions effectively using precise technical vocabulary and structured arguments. • Analyse case studies of past/present designers and companies (e.g., Alessi, Dyson, Braun, Zaha Hadid, William Morris). • Manage exam timing and execute high-scoring extended responses.
Key Vocabulary	Contextual challenge, Primary data, Secondary data, Anthropometrics, Ergonomics, User-centred design, Design brief, Specification,	Design fixation, Ideation, Orthographic, CAD/CAM, Modelling, Tolerance, Manufacturing specification, Parts list, Aesthetics, Ergonomics, Iteration, Refinement.	Quality control, Tolerance, Go/no-go gauge, Wastage, Addition, Deforming, Reforming, CAM, Laser cutting, 3D printing, Surface finish, Precision, Assembly.	Commercial viability, Third-party feedback, Critical evaluation, Fitness for purpose, Modification, Iteration, Portfolio, Moderation, Performance testing, Verification.	Life-cycle assessment, Modern material, Smart material, Composite, Automation, JIT, FMS, Renewable energy, Microcontroller, Mechanical advantage, Ferrous, Thermoplastic, LCA, Carbon footprint.	Command word, Extended response, Case study, Designer, Company, Anthropometrics, Ergonomics, Iterative design, Commercial production, Quality assurance,

	Stakeholder, Market research, Analysis, Iterative design.					Evaluation, Specification.
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