



Design & Technology

Intent

This creative and thought-provoking qualification gives students the practical skills, theoretical knowledge and confidence to succeed in a number of careers. Especially those in the creative industries. They will investigate historical, social, cultural, environmental and economic influences on design and technology, whilst enjoying opportunities to put their learning in to practice by producing prototypes of their choice. Students will gain a real understanding of what it means to be a designer, alongside the knowledge and skills sought by higher education and employers. Students should also develop the ability to draw on and apply a range of skills and knowledge from other subject areas to inform their decisions in design and the application or development of technology.

Year 13

Unit 1: Non- Examination Assessment (September-April)

Unit 2: Paper 1 Revision Technical Principles (September-November)

Unit 3 Paper 2 Revision Designing and making principles (January-February)

Unit 4: Paper 1 Examination Preparation (April-June)

Knowledge (facts, information, concepts and key terminology)	<ul style="list-style-type: none"> Use primary and secondary research data to identify a design problem, an intended user/ client to ascertain needs & requirements. Summarise findings to write a design brief specification for the problem identified. Generate design ideas using a range of different design strategies to avoid fixation. Manufacturing processes including CAD/CAM to shape, join and finish materials using subject specialist manufacturing processes. Test, communicate, record, and justify design and manufacturing decisions and evaluate the outcome. 	Revisit the Specialist Technical principles. <ul style="list-style-type: none"> Materials and their applications Testing materials Enhancement of materials Forming, redistribution and addition processes The use of finishes The use of finishes Modern and industrial commercial practice Digital design and manufacture Product design and development Health and safety Design for manufacturing, maintenance, repair and disposal Enterprise and marketing in the development of products Performance characteristics of materials: 	<ul style="list-style-type: none"> Design methods and processes Design theory Technology and cultural changes Design processes Critical analysis and evaluation Selecting appropriate tools, equipment and processes Accuracy in design and manufacture Responsible design Design for manufacture 	All theory content revisited with a greater focus on weaker topics from Mock 2: <ul style="list-style-type: none"> Paper 1 – Technical Principles Paper 2 – Designing and Making Principles
Understanding (ability to connect and synthesise knowledge within a context)	<ul style="list-style-type: none"> How to respond to a design context through focused analysis. Summarise findings of primary & secondary investigation sources to write a design brief and specification. Develop design proposals for an identified user using a range of appropriate techniques. Use specialist product design tools and equipment to accurately manufacture prototype products safely by applying knowledge to shape, join and finish materials. Test, evaluate and refine ideas and practical work as it develops and review success & areas for improvement for the intended product use and its user to ensure their product meets the requirements of the context/user. 	<ul style="list-style-type: none"> How computers & automation impact manufacturing through robotics, CAD & CAM. How new technologies need to be developed/ sustainably to reduce environmental impact. The primary sources and properties of a range of materials. How power is generated through renewable and non-renewable energy sources. The principles of different electronic systems. Recognise and describe different types of materials and their properties related to their chosen specialism. Select suitable materials for form, functional performance, and aesthetics appropriate to a specific task. Use specialist tools and equipment to accurately manufacture products safely. Apply knowledge to shape, join and finish materials. How products are produced in different volumes Use of volume, percentages, ratio, surface area. Construction and analysis of graphs. 	<ul style="list-style-type: none"> How primary and secondary data can be collected to assist the understanding of client and user needs, writing a design brief & specification. Investigating the work of other designers and design companies to inform designs. How to develop, communicate, record, and justify design decisions. Apply knowledge of cutting, shaping, joining, and finishing materials to manufacture a prototype product. Use of trigonometry Use of statistics and probability as a measure of likelihood Students should be aware of, and able to discuss, how key historical design styles, design movements and influential designers. Be aware of how socio-economic influences have helped to shape product design and manufacture. Be aware of the responsibilities of designers and manufacturers 	<ul style="list-style-type: none"> Paper 1 – Technical Principles Paper 2 – Designing and Making Principles
Skills (successful application of knowledge and understanding to a specific task)	<ul style="list-style-type: none"> Analyse the design context and primary & secondary existing research to identify a need and potential user to formulate ideas that are fit for purpose. Create a design Brief & Specification Apply knowledge of different design strategies and material properties to develop design proposals that fulfil the requirements of the design context and identified user. Through formal and informal 2D/3D drawing including CAD, systems and schematic diagrams and models and schedules. Identify the correct tool/ machine/ process for a material apply knowledge to cut, shape, join, finish and materials to manufacture a prototype product. Test, evaluate and refine ideas as it develops and review success & areas for improvement. 	<ul style="list-style-type: none"> Retrieval practice Exam practice and technique using past papers Revision skills 	<ul style="list-style-type: none"> Retrieval practice Exam practice and technique using past papers Revision skills 	<ul style="list-style-type: none"> Retrieval practice Exam practice and technique using past papers Revision skills
Formal Assessments (those done by all/vast majority of the cohort)	<p>Teacher assessment will take place following the completion of each assessment objective and work will be marked and internally moderated prior to AQA submission.</p> <p>AO1: Identify, investigate, and outline design possibilities to address needs and wants</p> <p>AO2: Design & make prototypes that are fit for purpose</p> <p>AO3: Analyse & evaluate design decisions.</p>	<p>Mock 1 Examination</p> <p>AO4: Demonstrate and apply knowledge and understanding of all the Design & Technology principles.</p>	<p>Mock 2 Examination</p> <p>AO4: Demonstrate and apply knowledge and understanding of all the Design & Technology principles.</p>	<p>Public examination</p>

By the end of the year students on course for at least a grade C will be able to:

- Demonstrate appropriate knowledge and understanding of Technical and Design & Making principles.
- Analyse and evaluate to draw plausible conclusions which are supported by evidence.
- Apply appropriate terminology, technical language including methods of communication through formal drawings and annotated sketches including CAD and modelling.
- Extensively explore contexts to develop functioning prototypes; demonstrating safe and effective design, making and technical skills.
- Apply mathematical skills and scientific knowledge to make accurate calculations which inform choices in both theoretical and practical contexts.

