

Year 11- GCSE Design and Technology

Year 11 Topics

In year 11 we teach the following topics over the course of the year. Each topic draws on prior learning from previous years and builds on understanding from the KS3 programme of study. Each topic develops and deepens the Core knowledge that will underpin all areas of the curriculum at KS4 and KS5.

Topic	Rationale	Knowledge acquisition	Key Vocabulary	Skills and Enrichment
Section A- Identifying & investigating design possibilities	By analysing the contextual challenge students will identify design possibilities, investigate client needs and wants and factors including economic and social challenges. Students should also use the work of others (past and/or present) to help them form ideas. Research should be concise and relate to their contextual challenge. Students are also advised to use a range of research techniques (primary/secondary) in order to draw accurate conclusions. Students should be encouraged to investigate throughout their project to help inform decisions.	Analysis of a given context	Analysis, context.	<ul style="list-style-type: none"> • Problem solving- • Evaluation- • Analysis- • Creativity- • Literacy- • Numeracy- Subject Specific Skills: <ul style="list-style-type: none"> •
		Development of a design brief	Design brief, problem, client, and customer.	
		Questionnaire, survey and interview design	Primary research, open and closed questions.	
		Client profiling	Customer requirements, needs, profile.	
		Research and analysis of existing products	ACCESSFMM- Aesthetics, customer, cost of manufacture, safety, size, form, function, materials, manufacture.	
		Research and analysis of influential designers and design movements.	Mood board, key features, socioeconomic influences.	
		Research and analysis of potential customers/ users ergonomics and anthropometrics	Ergonomics, anthropometrics, 5 th , 50 th and 95 th percentile.	
Section B- Producing a design brief & specification	Based on conclusions from their investigations students will outline design possibilities by producing a design brief and design specification. Students should review both throughout the project.	Writing a justified specification and design brief	Specification, justification, measurable.	

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Section C- Generating Design Ideas	Students should explore a range of possible ideas linking to the contextual challenge selected. These design ideas should demonstrate flair and originality and students are encouraged to take risks with their designs. Students may wish to use a variety of techniques to communicate. Students will not be awarded for the quantity of design ideas but how well their ideas address the contextual challenge selected. Students are encouraged to be imaginative in their approach by experimenting with different ideas and possibilities that avoid design fixation. In the highest band students are expected to show some innovation by generating ideas that are different to the work of the majority of their peers or demonstrate new ways of improving existing solutions.	Generating design ideas- sketching and CAD	CAD, rendering, tolerance, axis, work plane.	<ul style="list-style-type: none"> • Problem solving- • Evaluation- • Analysis- • Creativity- • Literacy- • Numeracy- <p>Subject Specific Skills:</p>
		Generating design ideas- starting with the properties of a material	Mechanical and physical properties, hardness, toughness, durability, flexibility, ductility, malleability, strong, annotation.	
		Generating design ideas- inspired by an iconic design	E1027 Table- Eileen Gray Barcelona chair- Ludwig Mies van der Rohe Eames Lounge Chair- Charles and Ray Eames Jucy Salif- Philippe Starck Braun RT20 Radio- Dieter Rams	
		Generating design ideas-thumbnail sketches	Crating in, isometric, form.	
		Generating design ideas-card modelling	Prototype, scale, dimensions, feedback.	
		Generating design ideas- from a theme	Memphis (Modernism), Art Deco, Streamlining, Arts and Crafts, Industrial revolution.	

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<p style="text-align: center;">Section D- Developing Design Ideas</p>	<p>Students will develop and refine design ideas. This may include, formal and informal 2D/3D drawing including CAD, systems and schematic diagrams, models and schedules. Students will develop at least one model, however marks will be awarded for the suitability of the model(s) and not the quantity produced. Students will also select suitable materials and components communicating their decisions throughout the development process. Students are encouraged to reflect on their developed ideas by looking at their requirements; including how their designs meet the design specification. Part of this work will then feed into the development of a manufacturing specification providing sufficient accurate information for third party manufacture, using a range of appropriate methods, such as measured drawings, control programs, circuit diagrams, patterns, cutting or parts lists.</p>	<p>Idea Development</p>	<p>Tonal rendering, presentation drawing, joining and shaping, material finishes, dimensions, standard components, stock form, KD fittings, adhesives.</p>	<ul style="list-style-type: none"> • Problem solving- • Evaluation- • Analysis- • Creativity- • Literacy- • Numeracy- <p><u>Subject Specific Skills:</u></p>
		<p>Working Drawings</p>	<p>Third angle Orthographic projection, exploded drawings, drawing conventions, BS:8888</p>	
		<p>Manufacturing Specification</p>	<p>Cutting list, scale of production. QA, QC,</p>	

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Section E- Realising Design Ideas	Students will work with a range of appropriate materials/components to produce prototypes that are accurate and within close tolerances. This will involve using specialist tools and equipment, which may include hand tools, machines or CAM/CNC. The prototypes will be constructed through a range of techniques, which may involve shaping, fabrication, construction and assembly. The prototypes will have suitable finish with functional and aesthetic qualities, where appropriate. Students will be awarded marks for the quality of their prototype(s) and how it addresses the design brief and design specification based on a contextual challenge.	Manufacture	Manufacturing log, health and safety, QA and QC.	<ul style="list-style-type: none"> • Problem solving- • Evaluation- • Analysis- • Creativity- • Literacy- • Numeracy- <p><u>Subject Specific Skills:</u></p>

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Section F- Analysing and evaluating	Within this iterative design process students are expected to continuously analyse and evaluate their work, using their decisions to improve outcomes. This should include defining requirements, analysing the design brief and specifications along with the testing and evaluating of ideas produced during the generation and development stages. Their final prototype(s) will also undergo a range of tests on which the final evaluation will be formulated. This should include market testing and a detailed analysis of the prototype(s).	Planning and carrying out Testing	Focus group, visual testing, Hardness testing, drilling test, filing test, weigh test, smoothness test, conductivity.	<ul style="list-style-type: none"> • <i>Problem solving-</i> • <i>Evaluation-</i> • <i>Analysis-</i> • <i>Creativity-</i> • <i>Literacy-</i> • <i>Numeracy-</i> <u>Subject Specific Skills:</u>
		Evaluation	Evaluation against specification. Third party feedback, evaluation against design brief, Modifications.	