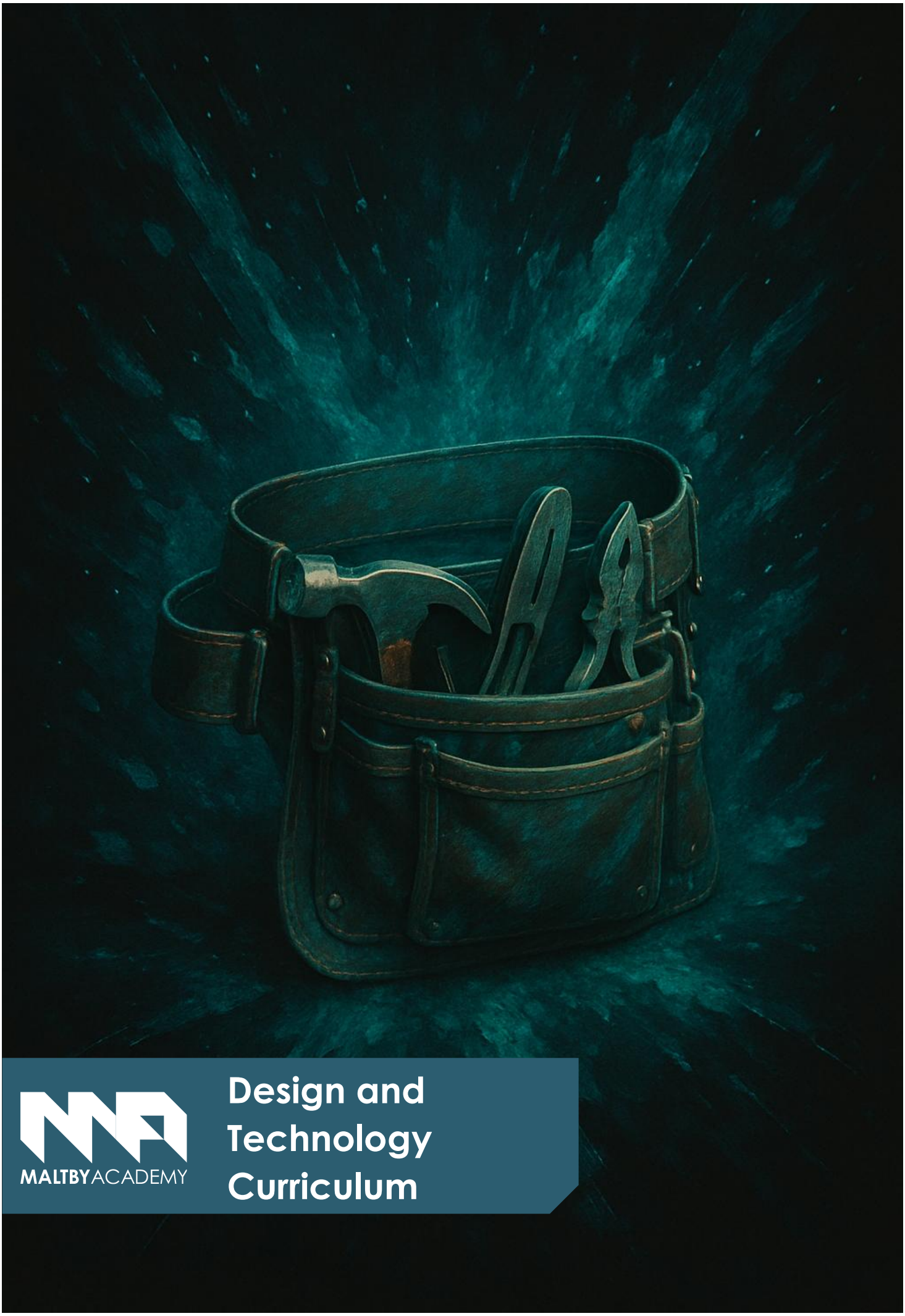

MALTBY ACADEMY

Design and Technology Curriculum

Design and Technology at Maltby Academy

Introduction

The Maltby Academy curriculum is designed to deliver exceptional learning experiences that enable all young people to thrive academically, personally, and socially. Each subject curriculum is ambitious, coherently planned, and carefully sequenced to ensure that all students develop the knowledge, skills, and character required to succeed in a competitive world. Our key drivers: Teaching & Learning, Personal Development, Careers & CEIAG, Enrichment, and Behaviour & Attitudes underpin every aspect of our curriculum design.

Design and Technology - intent statement

The Design & Technology curriculum at Maltby Academy equips students with the knowledge, creativity, and practical skills to design and make innovative products for the modern world. Students learn to work through the design process, from research and problem-solving to prototyping and evaluation. This helps our students develop independence, resilience, and technical expertise. The curriculum connects theory with real-world application, linking strongly to STEM and enterprise. D&T supports our key drivers through high-quality Teaching & Learning, Enrichment opportunities such as competitions and design challenges, and Careers preparation in engineering, design, and technology sectors. Personal Development is promoted through collaboration, innovation, and taking responsibility for high-quality outcomes. D&T at Maltby Academy empowers students to succeed academically and to become resourceful, creative, and ambitious young designers.

Why do we study Design and Technology?

Design and Technology empowers students to design, create, and innovate with purpose. It combines creativity with technical knowledge, helping students solve real-world problems and develop practical skills for everyday life and future careers.

Qualification

Our Key Stage 4 exam board for 3D Art and Design is AQA.

Our Key Stage 5 exam board for Product Design is AQA.

Key Tier 2 Vocabulary

prototype, evaluate, analyse, interpret, justify, refine, ergonomics, aesthetics, sustainability, innovation, manufacture, function, specification, criteria, iteration

Disciplinary Requirements

- Students must apply iterative design processes to develop creative and technically sound solutions.
- Demonstrate analysis and evaluation of design choices against performance, function, and user needs.
- Integrate mathematical and scientific principles to justify material, process, and ergonomic decisions.
- Communicate ideas fluently through annotated sketches, models, and design portfolios that evidence refinement and critical judgement.

Vocabulary and Substantive Knowledge Summary

The Design and Technology curriculum at Maltby Academy inspires creativity, problem-solving, and innovation through the exploration of materials, processes, and design principles. Students learn to design and make high-quality products that respond to user needs, considering functionality, sustainability, and aesthetics. Across Key Stages 3 to 5, learners develop practical skills, theoretical understanding, and critical reflection to become confident, independent designers.

Vocabulary focus:
Students are introduced to key Tier 3 terms such as design brief, specification, prototype, materials, properties, function, sustainability, innovation, and ergonomics. They also begin to use evaluative language like form, aesthetics, and manufacture to describe design decisions.

Substantive knowledge themes:
• Understanding the design cycle, from research and ideation to evaluation.
• Exploring materials and their properties, including woods, metals, and polymers.
• Developing practical skills in cutting, shaping, joining, and finishing materials.
• Using 2D and 3D design software to visualise and model products.
• Considering sustainability, environmental impact, and ethical design choices.
• Learning about key designers and movements that have influenced modern design.

Progression goal:
By the end of Key Stage 3, students can confidently apply the design process, selecting materials and methods suitable for purpose and sustainability. They communicate ideas using sketches, models, and digital tools, demonstrating awareness of user needs and design constraints.

Key Tier 2 Vocabulary in 3D Art and Design

structure, proportion, manipulate, refine, dimension, scale, construct, evaluate, surface, texture, functionality, balance, innovation, composition, precision

Disciplinary Requirements in 3D Art and Design

- Students must explore and develop design concepts through a range of three-dimensional processes and materials.
- Demonstrate technical competence and purposeful use of materials, construction methods, and surface treatments.
- Analyse design function and aesthetic qualities, evaluating outcomes against intentions.
- Record and communicate ideas through both visual and written formats to show refinement and progression.

Key Stage 4 3D Art and Design

Vocabulary focus:
Students extend their technical and creative vocabulary to include terms such as composition, form, structure, texture, scale, proportion, and perspective. They also develop understanding of materials and processes including casting, modelling, construction, and digital design. Evaluative language includes annotation, critique, refinement, and presentation.

Substantive knowledge themes:
• Exploring 3D materials, media, and techniques to create original design outcomes.
• Understanding design principles such as balance, symmetry, contrast, and rhythm.
•

- Investigating artists, designers, and movements that influence 3D practice.
- Developing skills in sketching, digital rendering, and model-making.
- Documenting design development through iterative processes and evaluation.
- Applying knowledge of sustainability, user needs, and innovation in final products.

Progression goal:
By the end of Key Stage 4, students can independently design, develop, and present creative 3D outcomes that communicate clear intent. They can justify material and design decisions using specialist vocabulary and evaluate their work in relation to function, aesthetics, and user feedback.

Key Stage 5 Product Design

Vocabulary focus:
Students master advanced design terminology including anthropometrics, ergonomics, innovation, iteration, material properties, tolerances, CAD/CAM, manufacturing processes, prototyping, and commercial production. Analytical terms such as evaluation, sustainability, and feasibility are used to refine and justify design outcomes.

Substantive knowledge themes:
• Investigating real-world design problems and developing creative, user-focused solutions.
• Applying the principles of materials science, manufacturing techniques, and product analysis.
• Using CAD/CAM and digital technologies to prototype and produce designs.
• Understanding industrial practices, market research, and commercial design considerations.
• Analysing historical and contemporary design influences.
• Developing independent project management and evaluative documentation through NEA-style coursework.

Progression goal:
By the end of Key Stage 5, students can manage complex design projects from conception to completion, integrating theory, creativity, and practical skill. They confidently use technical vocabulary to communicate ideas, justify decisions, and evaluate design effectiveness in relation to function, form, and sustainability.

Across Key Stages 3 to 5
The Design and Technology curriculum nurtures creative thinkers who can connect design, science, and art to solve practical problems. Students develop mastery of materials, digital tools, and design principles, preparing them for further study and careers in engineering, product design, architecture, and the creative industries. Their learning reflects Maltby Academy's vision to equip all learners to thrive as innovative and responsible creators in a rapidly evolving world.

Appendix

39-week plans

Tier 3 vocabulary

Design and Technology

Year 7

Week 1	Week 2	Week 3	Week 4	Week 5	Week 6	Week 7	Week 8
Introduction to DT		Initial designs		Practical skills		Appilque design	
Week 9	**Week 10**	**Week 11**	**Week 12**	**Week 13**	**Week 14**	**Week 15**	**Week 16**
Assembly of bauble		Assembly of bauble		Assembly of bauble & EOUT		Clock project & Mood board	
Week 17	**Week 18**	**Week 19**	**Week 20**	**Week 21**	**Week 22**	**Week 23**	**Week 24**
Product analysis & initial designs		2D designs for laser cutting		Assembly of clock & EOUT		Wood theory & practical skills	
Week 25	**Week 26**	**Week 27**	**Week 28**	**Week 29**	**Week 30**	**Week 31**	**Week 32**
Practical skills -hand tools		Practical skills - hand tools		Practical skills - machines		Practical skills - machines	
Week 33	**Week 34**	**Week 35**	**Week 36**	**Week 37**	**Week 38**	**Week 39**	
Assembly of toy & EOUT		Isometric drawings		Eco-house CAD		Eco-house CAD	

Design and Technology

Year 8

Week 1	Week 2	Week 3	Week 4	Week 5	Week 6	Week 7	Week 8
Graphics- mobile phone stand		2-point persective		Isometric drawing		Google sketch up8	
Week 9	**Week 10**	**Week 11**	**Week 12**	**Week 13**	**Week 14**	**Week 15**	**Week 16**
Pewter casting mood board		Metal theory and designs CAD work		CAD work		Practical skills - hand tools Practical skills & EOUT	
Week 17	**Week 18**	**Week 19**	**Week 20**	**Week 21**	**Week 22**	**Week 23**	**Week 24**
USB Light project theory		Practical skills - marking out tools		Practical skills - marking out tools		Practical skills - hand tools	
Week 25	**Week 26**	**Week 27**	**Week 28**	**Week 29**	**Week 30**	**Week 31**	**Week 32**
Practical skills - hand tools		Soldering		Practical skills - machines		Line bending and assembly	
Week 33	**Week 34**	**Week 35**	**Week 36**	**Week 37**	**Week 38**	**Week 39**	
Practical skills - marking out tools		Practical skills - hand tools		Practical skills - hand tools		Practical skills - hand tools	

Design and Technology

Year 9

Week 1	Week 2	Week 3	Week 4	Week 5	Week 6	Week 7	Week 8
Launch of the bridge project		Design theory mind map		Designer - mood board		Initial designs	
Week 9	**Week 10**	**Week 11**	**Week 12**	**Week 13**	**Week 14**	**Week 15**	**Week 16**
SCAMPER		Final design		Model making		Model making	
Week 17	**Week 18**	**Week 19**	**Week 20**	**Week 21**	**Week 22**	**Week 23**	**Week 24**
Google sketch up8		Google sketch up8		2D techsoft- for laser cutting		Assembly of bridge	
Week 25	**Week 26**	**Week 27**	**Week 28**	**Week 29**	**Week 30**	**Week 31**	**Week 32**
Assembly of bridge		Launch of Chocolate bar		History of chocolate & inspiration		2D techsoft	
Week 33	**Week 34**	**Week 35**	**Week 36**	**Week 37**	**Week 38**	**Week 39**	
Manufacture of mould		Manufacture of mould		Vacuum forming		Assembly of choclate bar	

Design and Technology (3D product design)

Year 10

Week 1	Week 2	Week 3	Week 4	Week 5	Week 6	Week 7	Week 8
Introduction to AQA 3D Product design	Form vs Function. Study of a design movement	Create and background for their PowerPoint based on their chosen movement	Mood board of chosen design movement	Artist study and Google sketch up 8 of chair design	Observational drawings-artwork	Observational drawings-chair designs	Initial designs
Week 9	**Week 10**	**Week 11**	**Week 12**	**Week 13**	**Week 14**	**Week 15**	**Week 16**
Looking at materials	3D modelling	3D modelling	Print making onto fabrics	Final Product	Final product	Final product	Peter Anton sweets artist research and mood board
Week 17	**Week 18**	**Week 19**	**Week 20**	**Week 21**	**Week 22**	**Week 23**	**Week 24**
Observational drawings-artwork	Observational drawings-Isometric drawings of objects	Initial designs on Google sketch up	Maker case and 2D design for laser cutter	Practical assembly of box	Practical assembly of box	Decorative design for the lid	Acrylic/wood or paper marche sweets
Week 25	**Week 26**	**Week 27**	**Week 28**	**Week 29**	**Week 30**	**Week 31**	**Week 32**
Acrylic/wood or paper marche sweets	Acrylic/wood or paper marche sweets	Introduction to Beamish	Creating mood boards from the trip	Observational drawings	Font reserach	Observational drawings-signs	Lino cutting
Week 33	**Week 34**	**Week 35**	**Week 36**	**Week 37**	**Week 38**	**Week 39**	
Lino cutting and printing onto different surfaces	Card modelling	Card modelling onto photoshop	2D techsoft design of chosen sign	Final product	Final product	Final product	

Design and Technology (3D product design)

Year 11

Week 1	Week 2	Week 3	Week 4	Week 5	Week 6	Week 7	Week 8
Theory	Theory	Theory	Theory	Theory	Theory	Introduction to Synoptic brief and mood board	Product anaylsis and metal research
Week 9	**Week 10**	**Week 11**	**Week 12**	**Week 13**	**Week 14**	**Week 15**	**Week 16**
BS8888 Properties and characteristics of material-submission	Google sketch-initial designs	Google sketch-initial designs	Development of design	Final design	Technical drawings	Technical drawings-submission	Evaluation of design against the brief
Week 17	**Week 18**	**Week 19**	**Week 20**	**Week 21**	**Week 22**	**Week 23**	**Week 24**
Modelling-submission	Modelling, testing and evaluation against brief	CAD design onto 2D techsoft and laser cut parts-submission	Assemble product	Assemble product	Assemble product-submission	Evaluation of product against brief	Re-submission for improvements
Week 25	**Week 26**	**Week 27**	**Week 28**	**Week 29**	**Week 30**	**Week 31**	**Week 32**
Re-submission for improvements	Final submission	Revision	Revision	Revision	Revision	Revision	Revision
Week 33	**Week 34**	**Week 35**	**Week 36**	**Week 37**	**Week 38**	**Week 39**	
Revision	Revision	Revision					

Design and Technology

Year 12 Theory

Week 1	Week 2	Week 3	Week 4	Week 5	Week 6	Week 7	Week 8
1.6 Modern and industrial scales of practice	1.6 Modern and industrial scales of practice	1.6 Modern and industrial scales of practice	1.7 Digital design and manufacture	1.7 Digital design and manufacture	1.8 The requirements for product design and development	1.8 The requirements for product design and development	1.8 The requirements for product design and development
Week 9	**Week 10**	**Week 11**	**Week 12**	**Week 13**	**Week 14**	**Week 15**	**Week 16**
1.9 Health and Safety	1.9 Health and Safety	1.10 Protecting designs and intellectual property	1.10 Protecting designs and intellectual property	1.11 Design for manufacturing, maintenance, repair and disposal	1.11 Design for manufacturing, maintenance, repair and disposal	1.11 Design for manufacturing, maintenance, repair and disposal	1.12 Feasibility studies
Week 17	**Week 18**	**Week 19**	**Week 20**	**Week 21**	**Week 22**	**Week 23**	**Week 24**
1.12 Feasibility studies	1.13 Enterprise and marketing in the development of products	1.13 Enterprise and marketing in the development of products	1.13 Enterprise and marketing in the development of products	1.14 Design communication	1.14 Design communication	2.1 Design methods and processes	2.1 Design methods and processes
Week 25	**Week 26**	**Week 27**	**Week 28**	**Week 29**	**Week 30**	**Week 31**	**Week 32**
2.2 Design theory	2.2 Design theory	2.2 Design theory- designers and their work	2.3 Technology and cultural changes	2.3 Technology and cultural changes	2.3 Technology and cultural changes	2.3 Technology and cultural changes	2.8 Responsible design
Week 33	**Week 34**	**Week 35**	**Week 36**	**Week 37**	**Week 38**	**Week 39**	
2.8 Responsible design	2.8 Responsible design	2.9 Design for manufacture and project managment	2.9 Design for manufacture and project managment	2.9 Design for manufacture and project managment	2.10 National and international standards in product design	2.10 National and international standards in product design	

Design and Technology

Year 13 Theory

Week 1	Week 2	Week 3	Week 4	Week 5	Week 6	Week 7	Week 8
1.1 Materials and their applications	1.1 Materials and their applications	1.2 Performance characteristics of materials	1.2 Performance characteristics of materials	1.2 Performance characteristics of materials	1.3 Enhancement of materials	1.3 Enhancement of materials	1.4 Forming, redistribution and addition processes
Week 9	**Week 10**	**Week 11**	**Week 12**	**Week 13**	**Week 14**	**Week 15**	**Week 16**
1.4 Forming, redistribution and addition processes	1.4 Forming, redistribution and addition processes	1.4 Forming, redistribution and addition processes	1.5 The use of finishes	1.5 The use of finishes	4.4 Mathematical skills for written exam	4.4 Mathematical skills for written exam	Closing the gap' on units covered
Week 17	**Week 18**	**Week 19**	**Week 20**	**Week 21**	**Week 22**	**Week 23**	**Week 24**
Exam prep	Closing the gap' on units covered	Exam prep	Closing the gap' on units covered	Exam prep	Closing the gap' on units covered	Exam prep	Closing the gap' on units covered
Week 25	**Week 26**	**Week 27**	**Week 28**	**Week 29**	**Week 30**	**Week 31**	**Week 32**
Exam prep	Reviewing the mock papers and tailoring the revision to students on the areas they need more support with.	Closing the gap' on units covered	Exam prep	Closing the gap' on units covered	Exam prep	Closing the gap' on units covered	Exam prep
Week 33	**Week 34**	**Week 35**	**Week 36**	**Week 37**	**Week 38**	**Week 39**	
Closing the gap' on units covered	Exam prep	Closing the gap' on units covered					

Design and Technology

Year 12 Controlled Assessment

Week 1	Week 2	Week 3	Week 4	Week 5	Week 6	Week 7	Week 8
Introduction to contextual challenges	RESEARCH: Moodboards	RESEARCH: Product Analysis	RESEARCH: Material testing	RESEARCH: material selection	RESEARCH: draft brief & questionnaires	RESEARCH: analysis of questionnaires	RESEARCH: analysis of research
Week 9	**Week 10**	**Week 11**	**Week 12**	**Week 13**	**Week 14**	**Week 15**	**Week 16**
FINAL BRIEF & SPECIFICATIONS	FINAL BRIEF & SPECIFICATIONS	DESIGNING: initial designs	DESIGNING: initial designs	DESIGNING: developed designs isometric	DESIGNING: developed designs CAD	DESIGNING: Final design hand drawn	DESIGNING: Final designs CAD
Week 17	**Week 18**	**Week 19**	**Week 20**	**Week 21**	**Week 22**	**Week 23**	**Week 24**
PROTOTYPING: plan for prototpye and modelling	PROTOTYPING: card modelling	PROTOTYPING: card modelling	PROTOTYPING: card modelling	PROTOTYPING: evaluation of modelling	PLANNING TO MANUFACTURE: manufacturing specifications	PLANNING TO MANUFACTURE: manufacturing plan and cutting list	PLANNING TO MANUFACTURE: manufacturing plan and cutting list
Week 25	**Week 26**	**Week 27**	**Week 28**	**Week 29**	**Week 30**	**Week 31**	**Week 32**
PLANNING TO MANUFACTURE: GANTT chart	MANUFACTURING	MANUFACTURING	MANUFACTURING	MANUFACTURING	MANUFACTURING	MANUFACTURING	MANUFACTURING
Week 33	**Week 34**	**Week 35**	**Week 36**	**Week 37**	**Week 38**	**Week 39**	
MANUFACTURING	MANUFACTURING	TESTING & USER TRIALS	TESTING & USER TRIALS: analysis	EVALUATION: Against spec and brief	EVALUATION: Against spec and brief	IMPROVEMENTS	

Design and Technology

Year 13 Controlled Assessment

Week 1	Week 2	Week 3	Week 4	Week 5	Week 6	Week 7	Week 8
Introduction to contextual challenges	RESEARCH: Moodboards	RESEARCH: Product Analysis	RESEARCH: Material testing & material selection	RESEARCH: draft brief & questionnaires	RESEARCH: analysis of questionnaires	RESEARCH: analysis of research	FINAL BRIEF & SPECIFICATIONS
Week 9	**Week 10**	**Week 11**	**Week 12**	**Week 13**	**Week 14**	**Week 15**	**Week 16**
DESIGNING: initial designs	DESIGNING: initial designs	DESIGNING: initial designs	DESIGNING: developed designs isometric	DESIGNING: developed designs CAD	DESIGNING: Final design hand drawn	DESIGNING: Final designs CAD	PROTOTYPING: plan for prototpye and modelling
Week 17	**Week 18**	**Week 19**	**Week 20**	**Week 21**	**Week 22**	**Week 23**	**Week 24**
PROTOTYPING: card modelling	PROTOTYPING: card modelling	PROTOTYPING: evaluation of modelling	PLANNING TO MANUFACTURE: manufacturing specifications	PLANNING TO MANUFACTURE: manufacturing plan and cutting list	PLANNING TO MANUFACTURE: GANTT chart	MANUFACTURING	MANUFACTURING
Week 25	**Week 26**	**Week 27**	**Week 28**	**Week 29**	**Week 30**	**Week 31**	**Week 32**
MANUFACTURING	MANUFACTURING	MANUFACTURING	TESTING & EVALUATION	IMPROVEMENTS			
Week 33	**Week 34**	**Week 35**	**Week 36**	**Week 37**	**Week 38**	**Week 39**	

Key Stage 3 – Tier 3 Vocabulary and Definitions

Design & Technology – Year 7

Week	Curriculum Component	Tier 3 Vocabulary	Definition
1	Introduction to DT	**Personal Protective Equipment (PPE)**	Equipment worn to reduce hazards that may cause injury in the workshop.
1	Introduction to DT	**Health and Safety**	Procedures ensuring safe working practices.
1	Introduction to DT	**Vice**	Tool used to hold material securely during cutting or shaping.
3	Initial designs	**Design Proposal**	A statement describing what the designer intends to do to meet the design brief.
3	Initial designs	**Annotate**	Adding written explanations or comments directly on drawings to clarify ideas.
3	Initial designs	**Aesthetics**	The visual and sensory appeal of a design.
3	Initial designs	**Rendering**	Adding shading and colour to drawings to show surface appearance and realism.
3	Initial designs	**Proportion**	The relative size relationship between parts of a design.
3	Initial designs	**Template**	A reusable pattern for marking out identical shapes.
5	Practical skills	**Coping Saw**	Narrow-bladed saw for curved cuts.
5	Practical skills	**File**	Steel hand tool used for smoothing surfaces.
6	Practical skills	**Sandpaper**	Abrasive paper for smoothing surfaces.
6	Practical skills	**Belt Sander**	Machine with an abrasive belt for smoothing materials.
6	Practical skills	**Pillar Drill**	Fixed drill used for accurate vertical holes.
6	Practical skills	**Seal**	Finishing coat such as varnish protecting a surface.
7	Appliqué design	**Textile**	Any fabric, knitted or woven.
7	Appliqué design	**Natural Fibres**	Fibres derived from plants or animal hair.
7	Appliqué design	**Synthetic Fibres**	Man-made fibres created from chemicals to imitate natural materials.
7	Appliqué design	**Appliqué**	Decorative technique attaching small fabric pieces onto a larger background.
8	Appliqué design	**Sew/Sewing**	Joining fabric with stitches by hand or machine.
8	Appliqué design	**Stitch Width**	The width of a stitch when sewn by hand or machine.
8	Appliqué design	**Straight Stitch**	A basic continuous stitch lying flat on fabric.
8	Appliqué design	**Back Stitch**	A strong stitch sewn backward along the seam line.
8	Appliqué design	**Cross Stitch**	X-shaped embroidery stitches forming patterns or pictures.

Week	Curriculum Component	Tier 3 Vocabulary	Definition
8	Appliqué design	**Embroider/Embroidery**	Decorating fabric with stitched designs.
8	Appliqué design	**Knitted**	Fabric made by looping yarn together.
8	Appliqué design	**Weaving/Weave**	Producing fabric by interlacing threads.
8	Appliqué design	**Warp**	Threads running along the length of a woven fabric.
8	Appliqué design	**Weft**	Threads running across the width of a woven fabric.
8	Appliqué design	**Bonded Fibre**	Fibres held together by heat or adhesives rather than weaving.
8	Appliqué design	**Felt**	Fabric made by pressing and matting fibres together.
9	Assembly of bauble	**Manufacture/Manufacturing**	The process of making products or goods.
9	Assembly of bauble	**Assemble/Assembling**	Fitting components together to form a product.
15	Clock project & Mood board	**Mood Board**	A collage of images and ideas to inspire design concepts.
19	2D designs for laser cutting	**Computer-Aided Design (CAD)**	Software used to create precise 2D or 3D designs.
23	Wood theory & practical skills	**Hardwood**	Timber from deciduous trees such as oak.
23	Wood theory & practical skills	**Softwood**	Timber from evergreen trees such as pine.
23	Wood theory & practical skills	**Manufactured Board**	Engineered timber made by bonding wood particles under heat and pressure.
23	Wood theory & practical skills	**Felling**	Cutting down trees for timber.
23	Wood theory & practical skills	**Seasoning**	Drying timber to remove moisture for stability.
35	Isometric drawings	**Isometric Projection**	Drawing technique using vertical and 30-degree angled lines to show 3D forms.
35	Isometric drawings	**Ellipse**	A circle viewed from an angle.
35	Isometric drawings	**3D (Three-Dimensional)**	Having height, width, and depth.

Design & Technology – Year 8

Week	Curriculum Component	Tier 3 Vocabulary	Definition
1	Graphics – mobile phone stand	**Perspective**	Technique for showing depth and distance on a flat surface.
1	Graphics – mobile phone stand	**Form**	The overall shape or structure of an object.
1	Graphics – mobile phone stand	**Aesthetic**	Relating to the visual beauty or appeal of a design.
1	Graphics – mobile phone stand	**Proportion**	The dimensional relationship between height, width, and depth.
3	2-point perspective	**Vanishing Point**	The point where parallel lines appear to meet in perspective drawing.
3	2-point perspective	**Parallel Lines**	Lines always the same distance apart and never meeting.
3	2-point perspective	**Vertical Line**	A line perpendicular to the ground.
3	2-point perspective	**Horizontal Line**	A line parallel to the ground.
3	2-point perspective	**Construction Lines**	Faint guide lines used to plan a drawing's structure.
3	2-point perspective	**Visible Lines**	Continuous thick lines outlining visible edges.
5	Isometric drawing	**Isometric Drawing**	A 3D representation on 2D paper using 30-degree angled lines.
5	Isometric drawing	**Ellipse**	A circle viewed from the side.
5	Isometric drawing	**3D (Three-Dimensional)**	An object with height, width, and depth.
7	Google SketchUp8	**Computer-Aided Design (CAD)**	The use of software to design products digitally.
7	Google SketchUp8	**Rendering**	Applying tone and colour to represent surface appearance.
9	Pewter casting mood board	**Mood Board**	A visual collage expressing a project's concept or theme.
9	Pewter casting mood board	**Annotate**	Adding explanatory notes to drawings.
11	Metal theory and designs CAD work	**Ferrous Metals**	Metals containing iron that rust when exposed to moisture.
11	Metal theory and designs CAD work	**Non-Ferrous Metals**	Metals without iron that do not rust.
11	Metal theory and designs CAD work	**Ingot**	A shaped piece of metal ready for further processing.
11	Metal theory and designs CAD work	**Pewter**	A metal alloy made primarily of tin and other metals.

Week	Curriculum Component	Tier 3 Vocabulary	Definition
11	Metal theory and designs CAD work	**Manufacture**	The process of producing goods.
13	CAD work	**Computer-Aided Manufacture (CAM)**	Using computer systems to control machinery during production.
13	CAD work	**Laser Cutting**	Cutting or engraving materials precisely using a laser beam.
15	Practical skills – hand tools Practical skills & EOUT	**Health and Safety**	Ensuring safe practices and preventing injury in workshops.
15	Practical skills – hand tools Practical skills & EOUT	**Personal Protective Equipment (PPE)**	Safety gear worn to prevent injury in practical workshops.
15	Practical skills – hand tools Practical skills & EOUT	**Vice**	Tool that holds materials securely while being worked on.
15	Practical skills – hand tools Practical skills & EOUT	**Junior Hacksaw**	Small saw for cutting metal or plastic.
15	Practical skills – hand tools Practical skills & EOUT	**File**	Tool with small teeth for smoothing or shaping.
15	Practical skills – hand tools Practical skills & EOUT	**Fettling**	Cleaning or finishing a metal object after casting.
17	USB Light project theory	**Light-Emitting Diode (LED)**	A component that emits light when current flows through it.
17	USB Light project theory	**Switch**	Device that opens or closes an electrical circuit.
17	USB Light project theory	**Resistor**	Component that limits electrical current.
17	USB Light project theory	**Solder**	Metal alloy melted to join components.
17	USB Light project theory	**Soldering Iron**	Heated tool for melting solder to join metals.
19	Practical skills – marking out tools	**Measuring Tool**	Device used to determine length or dimension.
19	Practical skills – marking out tools	**Marking Tools**	Instruments used to mark cutting lines on materials.
23	Practical skills – hand tools	**Chisel**	Sharp tool used with a mallet to cut or shape wood.
23	Practical skills – hand tools	**Finger Joint**	Interlocking joint used to join pieces of wood.
25	Practical skills – hand tools	**Sandpaper**	Abrasive sheet for smoothing surfaces.
29	Practical skills – machines	**Pillar Drill**	Fixed vertical drill used for accuracy.
29	Practical skills – machines	**Belt Sander**	Machine using a sanding belt to smooth surfaces.
31	Line bending and assembly	**Line Bender**	Tool heating a narrow strip of plastic so it can be bent.

Week	Curriculum Component	Tier 3 Vocabulary	Definition
31	Line bending and assembly	**Poly-Vinyl-Chloride (Vinyl)**	A flexible thermoplastic often brightly coloured.
31	Line bending and assembly	**Acrylic**	Hard, transparent thermoplastic similar to glass.
33	Practical skills – marking out tools	**Hardwood**	Timber from deciduous trees such as oak.
33	Practical skills – marking out tools	**Softwood**	Timber from coniferous trees such as pine.
33	Practical skills – marking out tools	**Manufactured Board**	Engineered wood made by bonding layers or particles.

Design & Technology – Year 9

Week	Curriculum Component	Tier 3 Vocabulary	Definition
1	Launch of the bridge project	**Design Brief**	A written outline defining the problem, purpose, and goals of a design project.
1	Launch of the bridge project	**Function**	The practical purpose or operation of a product.
1	Launch of the bridge project	**Form**	The overall shape and appearance of a design.
1	Launch of the bridge project	**Health and Safety**	Procedures that prevent accidents in the workshop.
1	Launch of the bridge project	**PPE (Personal Protective Equipment)**	Equipment used to protect the user during practical work.
3	Design theory mind map	**Mind Map**	A visual diagram used to organise and explore ideas during the early design phase.
3	Design theory mind map	**Design Influence**	The effect of famous designers, companies, or movements on design decisions.
3	Design theory mind map	**Innovation**	Creating new ideas or improving existing ones in product design.
3	Design theory mind map	**Ergonomics**	Designing products to suit the comfort and efficiency of human use.
5	Designer – mood board	**Mood Board**	A collection of images, colours, and materials used to inspire design concepts.
5	Designer – mood board	**Inspiration Board**	A collage of imagery and materials to guide creative design choices.
7	Initial designs	**Initial Ideas**	The first sketches or proposals developed in response to a design brief.
7	Initial designs	**Annotation**	Written notes that explain, evaluate, or justify design decisions.
7	Initial designs	**Rendering**	Adding colour and shading to drawings to enhance realism.
7	Initial designs	**Isometric Drawing**	A 3D representation drawn at 30° angles to show form and proportion.

Week	Curriculum Component	Tier 3 Vocabulary	Definition
7	Initial designs	**Orthographic Drawing**	A 2D technical drawing showing multiple views of a product.
7	Initial designs	**Exploded Diagram**	A drawing showing how components fit together in an assembly.
9	SCAMPER	**SCAMPER**	A creative thinking tool that stands for Substitute, Combine, Adapt, Modify, Put to another use, Eliminate, Reverse.
9	SCAMPER	**Iteration**	Repeated cycles of designing, testing, and refining a product.
11	Final design	**Final Design**	The completed proposal showing all design details before manufacture.
11	Final design	**Manufacturing Specification**	A detailed description of materials, dimensions, and processes required for production.
13	Model making	**Model Making**	Creating a physical prototype to test form, scale, and structure.
13	Model making	**Prototype**	The first working model built to test and develop a product idea.
13	Model making	**Scale Model**	A smaller or proportional version of a product used for testing or presentation.
13	Model making	**Materials Testing**	Assessing how materials respond to forces such as bending or stretching.
15	Model making	**Joint**	A point where two or more materials are connected.
15	Model making	**Adhesive**	A substance used to bond materials together.
17	Google sketch up8	**Google SketchUp**	3D design software used for modelling products and environments.
17	Google sketch up8	**Computer-Aided Design (CAD)**	Software used to create precise digital drawings or models.
21	2D techsoft – for laser cutting	**2D Design**	Digital design using software to create flat line drawings for manufacture.
21	2D techsoft – for laser cutting	**Techsoft 2D Design**	CAD software used to create drawings for laser cutting or CNC machining.
21	2D techsoft – for laser cutting	**Laser Cutting**	A digital manufacturing process that uses a laser to cut or engrave materials.
21	2D techsoft – for laser cutting	**Computer-Aided Manufacture (CAM)**	Using computer systems to control machines for production.
23	Assembly of bridge	**Assembly**	The process of putting individual components together to complete a product.
23	Assembly of bridge	**Bridge Structure**	A framework designed to span a distance and support loads.
23	Assembly of bridge	**Truss**	A structure made from triangles to provide strength and stability.

Week	Curriculum Component	Tier 3 Vocabulary	Definition
23	Assembly of bridge	**Compression**	A force that pushes or squeezes materials together.
23	Assembly of bridge	**Tension**	A pulling force that stretches materials apart.
23	Assembly of bridge	**Load Bearing**	The ability of a structure to support weight without collapsing.
23	Assembly of bridge	**Stability**	The ability of a structure to remain steady and balanced.
23	Assembly of bridge	**Reinforcement**	Strengthening a structure or material to increase durability.
23	Assembly of bridge	**Accuracy**	The degree to which measurements and production meet the intended dimensions.
23	Assembly of bridge	**Tolerance**	The acceptable amount of variation in a measurement or fit.
23	Assembly of bridge	**Quality Control (QC)**	Checking the accuracy and quality of components during production.
23	Assembly of bridge	**Quality Assurance (QA)**	The overall system ensuring a product meets design and safety standards.
27	Launch of Chocolate bar	**Lifecycle**	The stages a product goes through from creation to disposal.
27	Launch of Chocolate bar	**Sustainability**	Designing products with minimal environmental impact.
27	Launch of Chocolate bar	**Sustainable Design**	Creating products that minimise waste and use renewable materials.
29	History of chocolate & inspiration	**Design Influence**	The effect of famous designers, companies, or movements on design decisions.
31	2D techsoft	**Template**	A guide used to trace or replicate shapes consistently.
31	2D techsoft	**Marking Out**	Accurately drawing guidelines on material before cutting or shaping.
31	2D techsoft	**Cutting List**	A plan detailing sizes and quantities of parts required for a project.
33	Manufacture of mould	**Manufacture**	The process of making a product using tools, machines, or by hand.
33	Manufacture of mould	**Mould**	A hollow form used to shape materials during manufacture.
33	Manufacture of mould	**MDF (Medium Density Fibreboard)**	A manufactured wood made from compressed wood fibres and resin.
35	Manufacture of mould	**Batch Production**	Making a set number of identical products in one run.
37	Vacuum forming	**Vacuum Forming**	A process where heated plastic is shaped over a mould using suction.
37	Vacuum forming	**Thermoplastic**	A plastic that can be softened by heat and reshaped multiple times.

Week	Curriculum Component	Tier 3 Vocabulary	Definition
37	Vacuum forming	**Acrylic**	A hard, transparent plastic often used for models and products.
39	Assembly of chocolate bar	**Assembly Drawing**	A visual representation showing how components are joined.
39	Assembly of chocolate bar	**Polishing**	Smoothing and finishing a surface to enhance its appearance.
39	Assembly of chocolate bar	**Evaluation**	Assessing the success of a product against its design specification.
39	Assembly of chocolate bar	**Feedback**	Comments and advice used to improve a design or product.

KS4 3D Product Design – Tier 3 Vocabulary and Definitions

Design & Technology (3D Product Design) – Year 10

Week	Curriculum Component	Tier 3 Vocabulary	Definition
1	Introduction to AQA 3D Product design	**AQA Specification**	The official document outlining assessment objectives, content, and marking criteria.
1	Introduction to AQA 3D Product design	**3D Product Design**	The creation of functional three-dimensional objects combining aesthetics, materials, and manufacture.
1	Introduction to AQA 3D Product design	**Design Brief**	A statement defining the problem, client, and intended outcome.
2	Form vs Function. Study of a design movement	**Form vs Function**	Balancing the appearance (form) and purpose (function) of a product.
2	Form vs Function. Study of a design movement	**Design Movement**	A historical period or style influencing design (e.g. Bauhaus, Memphis).
2	Form vs Function. Study of a design movement	**Aesthetics**	The visual appearance and sensory appeal of a product.
3	Create and background for their PowerPoint based on their chosen movement	**Artist/Designer Study**	Research into the work, style, and influence of a chosen designer.
3	Create and background for their PowerPoint based on their chosen movement	**Artist Influence**	The stylistic or conceptual impact a creative figure has on new work.
4	Mood board of chosen design movement	**Mood Board**	A visual collection of imagery and materials used to inspire and communicate design themes.
4	Mood board of chosen design movement	**Inspiration Board**	Visual material collected to inspire creative direction.
5	Artist study and Google sketch up 8 of chair design	**Google SketchUp**	3D modelling software used for visualising products and spaces.

Week	Curriculum Component	Tier 3 Vocabulary	Definition
5	Artist study and Google sketch up 8 of chair design	**CAD (Computer-Aided Design)**	Software used to create digital 2D or 3D design models.
6	Observational drawings-artwork	**Observational Drawing**	Detailed drawing from real objects to record proportion, form, and structure.
6	Observational drawings-artwork	**Annotation**	Written explanation of design decisions on sketches or drawings.
7	Observational drawings-chair designs	**Orthographic Projection**	2D views of a 3D object showing plan, front, and side elevations.
8	Initial designs	**Initial Ideas**	Early concept sketches exploring multiple possible design directions.
8	Initial designs	**Development**	Refining and improving initial ideas through testing, modelling, and evaluation.
8	Initial designs	**Design Specification**	A list of criteria that the final product must meet.
9	Looking at materials	**Material Properties**	The characteristics that define how a material behaves (strength, flexibility, hardness).
9	Looking at materials	**Timber**	Processed wood used as a construction and modelling material.
9	Looking at materials	**Plywood**	Engineered board made from layers of wood veneer glued at right angles.
9	Looking at materials	**MDF (Medium Density Fibreboard)**	Smooth engineered wood formed from compressed fibres and resin.
10	3D modelling	**3D Modelling**	Creating a digital or physical three-dimensional representation of a product.
10	3D modelling	**Prototype**	The first functional version of a design built for testing.
11	3D modelling	**Card Modelling**	Making mock-ups using paper or card to test form and scale.
12	Print making onto fabrics	**Print Making**	Transferring designs onto surfaces such as fabric, card, or acrylic.
13	Final Product	**Final Design**	The chosen, fully resolved design solution before manufacture.
13	Final Product	**Manufacture**	The process of making a product using tools or machines.
13	Final Product	**Assembly**	Fitting separate parts together to create the final product.
16	Peter Anton sweets artist research and mood board	**Contextual Research**	Investigating existing products, users, and environments to inform design.
17	Observational drawings-artwork	**Isometric Drawing**	A 3D drawing method using 30° angles to show accurate form and scale.

Week	Curriculum Component	Tier 3 Vocabulary	Definition
19	Initial designs on Google sketch up	**Ergonomics**	Designing to optimise user comfort, safety, and efficiency.
19	Initial designs on Google sketch up	**Anthropometrics**	Measurement data of human body sizes applied to product design.
20	Maker case and 2D design for laser cutter	**Techsoft 2D Design**	CAD software used for line drawings suitable for laser cutting or CNC.
20	Maker case and 2D design for laser cutter	**Laser Cutting**	Using a laser to cut or engrave materials precisely.
20	Maker case and 2D design for laser cutter	**CAM (Computer-Aided Manufacture)**	Using computer-controlled machines to produce parts or products.
21	Practical assembly of box	**Joining Techniques**	Methods used to connect materials (adhesive, screw, weld, interlock).
21	Practical assembly of box	**Adhesive**	Substance used to bond materials together.
21	Practical assembly of box	**Tolerance**	The permitted variation from a specified measurement.
21	Practical assembly of box	**Accuracy**	How close a measurement or finished product is to its intended value.
22	Practical assembly of box	**Quality Control (QC)**	Checking materials or components during production.
22	Practical assembly of box	**Quality Assurance (QA)**	Planned process ensuring consistent product quality throughout manufacture.
23	Decorative design for the lid	**Decorative Design**	Ornamentation added to improve visual appeal.
23	Decorative design for the lid	**Decorative Finishes**	Techniques that enhance a product's appearance.
23	Decorative design for the lid	**Surface Treatment**	Applying coatings such as paint, varnish, or lacquer to protect or decorate.
24	Acrylic/wood or paper marche sweets	**Acrylic**	Hard, durable thermoplastic often used for laser-cut or decorative elements.
24	Acrylic/wood or paper marche sweets	**Paper Mâché**	Layering paper and adhesive to create lightweight, sculptural forms.
27	Introduction to Beamish	**Beamish Study**	Research trip informing historical and contextual design understanding.
28	Creating mood boards from the trip	**Presentation Board**	A mounted display summarising design ideas, research, and outcomes.
30	Font research	**Font Design**	The selection or creation of typefaces to support a product's identity.
32	Lino cutting	**Lino Cutting**	Carving a design into linoleum to create repeat prints.

Week	Curriculum Component	Tier 3 Vocabulary	Definition
33	Lino cutting and printing onto different surfaces	**Prototype Testing**	Evaluating how effectively a design performs before final production.
34	Card modelling	**CNC Machining**	Computer-controlled cutting or shaping of materials.
35	Card modelling onto photoshop	**Photoshop**	Software for editing and rendering digital images or design boards.
36	2D techsoft design of chosen sign	**Sustainable Design**	Designing to reduce waste, pollution, and use of finite resources.
36	2D techsoft design of chosen sign	**Lifecycle Assessment (LCA)**	Evaluating environmental impact from raw material to disposal.
36	2D techsoft design of chosen sign	**Recyclability**	The ability of a material to be processed for reuse.
37	Final product	**Evaluation**	Judging the success of a design against specification and user feedback.

Design & Technology (3D Product Design) – Year 11

Week	Curriculum Component	Tier 3 Vocabulary	Definition
1	Theory	**Theory Content**	Knowledge covering materials, processes, systems, and environmental considerations.
1	Theory	**Manufacturing Processes**	The steps taken to turn materials into finished products.
1	Theory	**Sustainability**	Considering environmental, social, and economic impact during design.
2	Theory	**Properties of Materials**	Characteristics such as strength, flexibility, and durability.
2	Theory	**Characteristics of Materials**	The aesthetic and functional traits influencing suitability.
3	Theory	**Tolerance Fit**	The degree of precision between joined components.
3	Theory	**Ergonomic Design**	Products shaped for comfort, efficiency, and usability.
4	Theory	**Aesthetic Quality**	The visual or sensory characteristics that make a product appealing.
5	Theory	**Evaluation Criteria**	Measurable standards used to assess success.
6	Theory	**Exam Technique**	The ability to interpret questions and communicate answers clearly.
7	Introduction to Synoptic brief and mood board	**Synoptic Brief**	The main GCSE project that brings together all design skills and knowledge.

Week	Curriculum Component	Tier 3 Vocabulary	Definition
7	Introduction to Synoptic brief and mood board	**Analysis of Brief**	Examining the design problem and identifying opportunities.
7	Introduction to Synoptic brief and mood board	**Research and Investigation**	Collecting information about users, materials, and existing products.
7	Introduction to Synoptic brief and mood board	**Design Communication**	Presenting design ideas through drawings, models, and annotations.
8	Product analysis and metal research	**Product Analysis**	Evaluating existing products to inform design improvements.
9	BS8888 Properties and characteristics of material-submission	**BS8888 Standard**	British standard governing technical drawing conventions.
10	Google sketch-initial designs	**Concept Sketching**	Quick drawings to communicate initial ideas.
10	Google sketch-initial designs	**Initial Designs**	Early creative solutions developed from research.
12	Development of design	**Development of Design**	Refining ideas through modelling, CAD, and evaluation.
13	Final design	**Final Design Proposal**	A fully detailed and justified design ready for manufacture.
14	Technical drawings	**Technical Drawing**	Accurate scaled drawing showing dimensions and details.
14	Technical drawings	**Orthographic Drawing**	Multi-view drawing showing plan, front, and side elevations.
14	Technical drawings	**Exploded View**	Illustration showing how components fit together.
17	Modelling-submission	**Modelling**	Creating physical or digital representations to test scale and fit.
18	Modelling, testing and evaluation against brief	**Testing and Evaluation**	Measuring performance against specification and user needs.
19	CAD design onto 2D techsoft and laser cut parts-submission	**CAD/CAM Integration**	Using digital files to move directly from design to manufacturing machines.
20	Assemble product	**Assembly Submission**	Completion and submission of a manufactured prototype.
23	Evaluation of product against brief	**Evaluation Against Brief**	Reflecting on how effectively the final design meets objectives.
24	Re-submission for improvements	**Re-submission**	Improving work based on teacher or examiner feedback.
26	Final submission	**Final Submission**	The completed coursework project ready for assessment.
27	Revision	**Revision**	Reviewing key content, processes, and exam techniques.

KS5 Product Design – Tier 3 Vocabulary and Definitions

Design & Technology – Year 12 Theory

Week	Curriculum Component	Tier 3 Vocabulary	Definition
1	1.6 Modern and industrial scales of practice	**Industrial Scale Production**	Large-scale manufacturing involving high output and automation.
1	1.6 Modern and industrial scales of practice	**Mass Production**	Manufacturing identical products in large quantities using assembly lines.
1	1.6 Modern and industrial scales of practice	**Batch Production**	Producing a set quantity of identical products before switching production.
2	1.6 Modern and industrial scales of practice	**Just-In-Time (JIT)**	Production strategy that reduces stock by delivering materials only when needed.
2	1.6 Modern and industrial scales of practice	**Lean Manufacturing**	System focused on minimising waste while maximising productivity.
3	1.6 Modern and industrial scales of practice	**Economies of Scale**	Cost advantages gained when production becomes efficient at high volume.
4	1.7 Digital design and manufacture	**CAD (Computer-Aided Design)**	Software used to create precise digital models and drawings.
4	1.7 Digital design and manufacture	**CAM (Computer-Aided Manufacture)**	Use of computer-controlled machinery to produce components.
5	1.7 Digital design and manufacture	**CNC Machining**	Computer Numerical Control manufacturing process using programmed instructions.
5	1.7 Digital design and manufacture	**Additive Manufacturing**	Building objects layer by layer, commonly known as 3D printing.
6	1.8 The requirements for product design and development	**Design Specification**	A detailed list of criteria a product must meet.
6	1.8 The requirements for product design and development	**User-Centred Design**	Designing with the needs and experiences of users as a priority.
7	1.8 The requirements for product design and development	**Ergonomics**	Designing for comfort, safety and efficiency of human use.
8	1.8 The requirements for product design and development	**Anthropometrics**	Statistical measurement of human body dimensions for design application.
9	1.9 Health and Safety	**Risk Assessment**	Identifying hazards and implementing measures to reduce risk.
9	1.9 Health and Safety	**COSHH Regulations**	Control of Substances Hazardous to Health legislation.
10	1.9 Health and Safety	**PPE (Personal Protective Equipment)**	Protective equipment worn to reduce risk of injury.
11	1.10 Protecting designs and intellectual property	**Intellectual Property (IP)**	Legal rights protecting creations of the mind.

Week	Curriculum Component	Tier 3 Vocabulary	Definition
11	1.10 Protecting designs and intellectual property	**Patent**	Legal protection for a new invention.
12	1.10 Protecting designs and intellectual property	**Copyright**	Legal protection for original creative work.
12	1.10 Protecting designs and intellectual property	**Registered Design**	Protection for the visual appearance of a product.
13	1.11 Design for manufacturing, maintenance, repair and disposal	**Design for Manufacture (DFM)**	Designing products to simplify production processes.
14	1.11 Design for manufacturing, maintenance, repair and disposal	**Planned Obsolescence**	Designing products with a limited useful life.
15	1.11 Design for manufacturing, maintenance, repair and disposal	**Circular Economy**	Economic system aimed at eliminating waste through reuse and recycling.
16	1.12 Feasibility studies	**Feasibility Study**	Investigation into the practicality and viability of a project.
17	1.12 Feasibility studies	**Market Analysis**	Assessment of demand, competition and viability in a target market.
18	1.13 Enterprise and marketing in the development of products	**Enterprise**	The process of developing and managing a business venture.
18	1.13 Enterprise and marketing in the development of products	**Product Lifecycle**	The stages from product introduction to decline.
19	1.13 Enterprise and marketing in the development of products	**Market Segmentation**	Dividing consumers into groups based on shared characteristics.
20	1.13 Enterprise and marketing in the development of products	**Brand Identity**	The visual and emotional representation of a brand.
21	1.14 Design communication	**Orthographic Projection**	Multi-view technical drawing showing plan and elevations.
21	1.14 Design communication	**Isometric Projection**	3D representation using 30-degree angles.
22	1.14 Design communication	**Rendering**	Adding tone, colour and texture to drawings for realism.
23	2.1 Design methods and processes	**Iterative Design**	Repeated cycles of designing, testing and refining.
23	2.1 Design methods and processes	**Systems Approach**	Viewing a product as part of an interconnected system.
24	2.1 Design methods and processes	**Concurrent Engineering**	Simultaneous development of product and manufacturing processes.
25	2.2 Design theory	**Form Follows Function**	Design principle where shape is determined by purpose.
26	2.2 Design theory	**Postmodernism**	Design movement rejecting minimalism and embracing bold aesthetics.

Week	Curriculum Component	Tier 3 Vocabulary	Definition
27	2.2 Design theory – designers and their work	**Influential Designer**	A designer whose work has shaped industry practices.
28	2.3 Technology and cultural changes	**Globalisation**	Worldwide integration of markets and production.
29	2.3 Technology and cultural changes	**Automation**	Use of machines to reduce human labour.
30	2.3 Technology and cultural changes	**Smart Materials**	Materials that respond to changes in environment.
31	2.3 Technology and cultural changes	**Internet of Things (IoT)**	Network of interconnected devices communicating via the internet.
32	2.8 Responsible design	**Sustainable Design**	Designing to minimise environmental impact.
33	2.8 Responsible design	**Lifecycle Assessment (LCA)**	Evaluating environmental impact from raw material to disposal.
34	2.8 Responsible design	**Carbon Footprint**	Total greenhouse gas emissions associated with a product.
35	2.9 Design for manufacture and project management	**Critical Path Analysis**	Method identifying the sequence of tasks determining project duration.
36	2.9 Design for manufacture and project management	**Gantt Chart**	Timeline chart used to manage project stages.
37	2.9 Design for manufacture and project management	**Quality Assurance (QA)**	System ensuring consistent product standards.
38	2.10 National and international standards in product design	**ISO Standards**	International standards ensuring quality and safety compliance.
39	2.10 National and international standards in product design	**BSI (British Standards Institution)**	UK body setting national product standards.

Design & Technology – Year 13 Theory

Week	Curriculum Component	Tier 3 Vocabulary	Definition
1	1.1 Materials and their applications	**Material Classification**	Grouping materials by type such as polymers, metals, timbers, and composites.
1	1.1 Materials and their applications	**Ferrous Metals**	Metals containing iron that are typically strong but prone to corrosion.
1	1.1 Materials and their applications	**Non-Ferrous Metals**	Metals that do not contain iron and are generally corrosion resistant.
2	1.1 Materials and their applications	**Thermoplastics**	Polymers that soften when heated and can be reshaped repeatedly.
2	1.1 Materials and their applications	**Thermosetting Polymers**	Plastics that permanently set after being heated and cannot be reshaped.
2	1.1 Materials and their applications	**Composites**	Materials made from two or more combined substances to improve performance.

Week	Curriculum Component	Tier 3 Vocabulary	Definition
3	1.2 Performance characteristics of materials	**Tensile Strength**	The maximum stress a material can withstand when stretched.
3	1.2 Performance characteristics of materials	**Compressive Strength**	The ability of a material to resist crushing forces.
4	1.2 Performance characteristics of materials	**Elasticity**	The ability of a material to return to its original shape after deformation.
4	1.2 Performance characteristics of materials	**Plastic Deformation**	Permanent change in shape after stress is removed.
5	1.2 Performance characteristics of materials	**Hardness**	Resistance of a material to scratching, indentation or wear.
5	1.2 Performance characteristics of materials	**Toughness**	Ability of a material to absorb energy and resist fracture.
6	1.3 Enhancement of materials	**Heat Treatment**	Controlled heating and cooling to alter material properties.
6	1.3 Enhancement of materials	**Annealing**	Heat process that softens metal to improve ductility.
7	1.3 Enhancement of materials	**Tempering**	Heat treatment used to improve toughness and reduce brittleness.
7	1.3 Enhancement of materials	**Surface Hardening**	Strengthening the outer layer of a material while keeping the core tough.
8	1.4 Forming, redistribution and addition processes	**Injection Moulding**	Manufacturing process where molten plastic is injected into a mould.
9	1.4 Forming, redistribution and addition processes	**Vacuum Forming**	Heating plastic sheet and shaping it over a mould using suction.
9	1.4 Forming, redistribution and addition processes	**Blow Moulding**	Forming hollow plastic products by inflating heated material inside a mould.
10	1.4 Forming, redistribution and addition processes	**Casting**	Pouring molten material into a mould to form a solid shape.
10	1.4 Forming, redistribution and addition processes	**Forging**	Shaping metal using compressive forces.
11	1.4 Forming, redistribution and addition processes	**Lamination**	Bonding layers of material together for strength or stability.
12	1.5 The use of finishes	**Surface Finish**	Final texture or coating applied to improve appearance or durability.
12	1.5 The use of finishes	**Anodising**	Electrochemical process that thickens the natural oxide layer on aluminium.
13	1.5 The use of finishes	**Powder Coating**	Applying dry powder electrostatically and curing it for a durable finish.
13	1.5 The use of finishes	**Galvanising**	Coating steel with zinc to prevent corrosion.

Week	Curriculum Component	Tier 3 Vocabulary	Definition
14	4.4 Mathematical skills for written exam	**Stress–Strain Curve**	Graph showing how a material deforms under applied force.
14	4.4 Mathematical skills for written exam	**Young's Modulus**	Measure of a material's stiffness derived from stress–strain data.
15	4.4 Mathematical skills for written exam	**Efficiency Ratio**	Comparison of useful output to total input in a system.
17	Exam prep	**Command Words**	Instructional words in exam questions guiding the depth of response required.
18	Closing the gap on units covered	**Knowledge Retrieval**	Practice of recalling information to strengthen memory retention.
19	Exam prep	**Extended Response**	Structured written answer demonstrating depth of understanding.
21	Exam prep	**Synoptic Understanding**	Ability to link multiple areas of the specification in one response.
23	Exam prep	**Time Management**	Allocating appropriate time to maximise marks in assessments.
25	Exam prep	**Exam Technique**	Applying knowledge clearly and effectively under exam conditions.
26	Reviewing mock papers and tailoring revision	**Mark Scheme Analysis**	Evaluating assessment criteria to understand how marks are awarded.
28	Exam prep	**Model Answer**	Example response demonstrating high-level structure and content.
30	Exam prep	**Evaluation Strategy**	Structured approach to analysing and justifying design decisions.
32	Exam prep	**Critical Analysis**	Detailed examination of strengths, weaknesses, and implications.
34	Exam prep	**Revision Strategy**	Planned approach to reviewing content efficiently and effectively.