

Subject	GCSE Design and Technology
Specification	8552 AQA
Recommended Revision Guides	https://www.daydreameeducation.co.uk/revision-guides-pocket-posters/design-and-technology https://www.pgonline.co.uk/resources/design-and-technology/gcse-aqa/clearrevise-8552/ https://www.cgpbooks.co.uk/secondary-books/gcse/design-technology/d-t/tar42-new-gcse-design-technology-aqa https://collins.co.uk/products/9780008535018
Recommended websites and other resources	https://www.bbc.co.uk/bitesize/examspecs/zby2bdm https://www.aqa.org.uk/subjects/design-and-technology/gcse/design-and-technology-8552/specification

New and emerging technologies	
Subcategories of topic:	What you need to know (all links below are to sample exam questions):
Industry	The impact of new and emerging technologies on: - the design and organisation of the workplace including automation and the use of robotics - buildings and the place https://docs.google.com/presentation/d/1YEs9ncl9xBI5d4i8CzlgYkzFm04gU3BFFgp674Xt-3g/edit?usp=drive_link
Enterprise	Enterprise based on the development of an effective business innovation: - crowd funding - virtual marketing and retail - co-operatives - fair trade https://drive.google.com/file/d/1I8T8goGlcM6459U2n0DfZG1KHktj0LoV/view?usp=sharing
Sustainability	The impact of resource consumption on the planet: - finite - non-finite - disposal of waste. https://drive.google.com/file/d/1XH_cD0YXkbp9AY3-2LQ4XWzqg6lr9Lod/view?usp=sharing
People	How technology push/market pull affects choice. Changing job roles due to the emergence of new ways of working driven by technological change. https://drive.google.com/file/d/1ZXjrxMPulziccS53clCqfaGBOZ6tfjZ/view?usp=sharing
Culture	Changes in fashion and trends in relation to new and emergent technologies. Respecting people of different faiths and beliefs. https://drive.google.com/file/d/1rScEhtFhOwPa17Ei4AwRU65v1v1Merot/view?usp=sharing
Society	How products are designed and made to avoid having a negative impact on others: - design for disabled - elderly - different religious groups. https://drive.google.com/file/d/1rME_kyVeKgeO_pMbFlxPtNT00dzGUtWj/view?usp=sharing
Environment	Positive and negative impacts new products have on the environment: - continuous improvement - efficient working - pollution - global warming. https://drive.google.com/file/d/17sgTV1UnzcuSmai_1B3M95uXW7zs_Sho/view?usp=sharing
Production Techniques and Systems	The current and potential future use of: - automation - computer aided design (CAD) - computer aided manufacture (CAM) - flexible manufacturing systems (FMS) - just in time (JIT) - lean manufacturing. https://drive.google.com/file/d/17GdxUJDvKdNOGKPxDe6OiGLvNK2O-bQS/view?usp=sharing

How the critical evaluation of new and emerging technologies informs design decisions	That it is important to consider scenarios from different perspectives and considering: • planned obsolescence • design for maintenance • ethics • the environment
Energy Generation and Storage	
Fossil Fuels	How power is generated from: • coal • gas • oil. Arguments for and against the selection of fossil fuels. https://docs.google.com/presentation/d/10zv3L4DgNN02YUI8Us4iCXnUclUnv2gBuCQXHDum7Zk/edit?usp=drive_link
Nuclear Power	How nuclear power is generated. Arguments for and against the selection of nuclear power.
Renewable Energy	How power is generated from: • wind • solar • tidal • hydro-electrical • biomass. Arguments for and against the selection of renewable energy. https://drive.google.com/file/d/14u36pxhmufSEVWiXHDklgqzBYFPYzu9p/view?usp=sharing
Energy Storage Systems Including Batteries	Kinetic pumped storage systems. Alkaline and re-chargeable batteries. https://drive.google.com/file/d/1te8teC8SD_1Z93e4oCAIW5FULdcZjMyL/view?usp=sharing
Developments in New Materials	
Modern Materials	Developments made through the invention of new or improved processes eg Graphene, Metal foams and Titanium. Alterations to perform a particular function eg Coated metals, Liquid Crystal Displays (LCDs) and Nanomaterials. https://drive.google.com/file/d/1KPVgMSBivBRvEELxGnbJ0Lp8ihHDgQgY/view?usp=sharing
Smart Materials	That materials can have one or more properties that can be significantly changed in a controlled fashion by external stimuli, such as stress, temperature, moisture, or PH eg shape memory alloys, thermochromic pigments and photochromic pigments https://drive.google.com/file/d/1Fg9i-DUz8QZKgyiYBqPmGwQAmqeDZagV/view?usp=sharing
Composite Materials	That composite materials are produced by combining two or more different materials to create an enhanced material eg glass reinforced plastic (GRP) and carbonfibre reinforced plastic (CRP). https://docs.google.com/presentation/d/1Wh8pZl6GHCTIHMh_QQBnbS6-dfHh4PgFg8U-T5HZm5g/edit?usp=drive_link
Systems Approach to Designing	
Inputs, Processes, Outputs	The use of light sensors, temperature sensors, pressure sensors and switches. The use of programming microcontrollers as counters, timers and for decision making, to provide functionality to products and processes. The use of buzzers, speakers and lamps, to provide functionality to products and processes. https://docs.google.com/presentation/d/1YXrswcUcHFMSAZtSVqMiBeIVkVRpShbLEmau9V_C8J4/edit?usp=drive_link
Mechanical Devices	The functions of mechanical devices to produce linear, rotary, reciprocating and oscillating movements. https://docs.google.com/presentation/d/1D2Xn_aICkDVT066QzhgdvonXQ7RW6Si39U56YDg4knc/edit?usp=drive_link
Different types of Movement	
Changing Magnitude and Direction of Force	Levers: • first order • second order • third order. Linkages: • bell cranks

	• push/pull. Rotary systems: • CAMs and followers • simple gear trains • pulleys and belts. https://docs.google.com/presentation/d/1yul50ArEvPGp5-XCo35hapZJte-5nmX-EG_PD3ZJK4k/edit?usp=drive_link
Materials and Their Working Properties	
Papers and Boards	Have an overview of the main categories and types of papers and boards: papers including: • bleed proof • cartridge paper • grid • layout paper tracing paper boards including: • corrugated card • duplex board • foil lined board • foam core board • ink jet card • solid white board. https://docs.google.com/presentation/d/1jzvbQN7UbF7EcT6NQfij6k37JUDE5_XQzyj0cGe_zd4/edit?usp=drive_link
Natural and Manufactured Timbers	Have an overview of the main categories and types of natural and manufactured timbers: Hardwoods including: • ash • beech • mahogany • oak • balsa Softwoods including: • larch • pine • spruce Manufactured boards including: • medium density fibreboard (MDF) • plywood • chipboard. https://docs.google.com/presentation/d/18UtLjunAkhg0S4aPgZASKjz6T1d4ufaxfDfH3_MGO0I/edit?usp=drive_link
Metals and Alloys	Have an overview of the main categories and types of metals and alloys: Ferrous metals including: • low carbon steel • cast Iron • high carbon/tool steel Non ferrous metals including: • aluminum • copper • tin • zinc Alloys including: • brass • stainless steel • high speed steel. https://docs.google.com/presentation/d/1VcQarevTv5wwf0gs0iT81sZ_uS40fOOJiU4sukhgVok/edit?usp=drive_link

Polymers	have an overview of the main categories and types of polymers: Thermoforming including: • acrylic (PMMA) • high impact polystyrene (HIPS) • high density polythene (HDPE) • polypropylene (PP) • polyvinyl chloride (PVC) • polyethylene terephthalate (PET) Thermosetting including: • epoxy resin (ER) • melamine-formaldehyde (MF) • phenol formaldehyde (PF) • polyester resin (PR) • urea-formaldehyde (UF). https://docs.google.com/presentation/d/1qFKwdiUWLFVDtshua9zkZctSPUGzA22xsZNCgbkqvGI/edit?usp=drive_link
Textiles	Have an overview of the main categories and types of textiles: Natural fibres including: • cotton • wool • silk Synthetic fibres including: • polyester • polyamide (nylon) • elastane (lycra) Blended and mixed fibres including: • cotton/polyester Woven including: • plain weave Non-woven including: • bonded fabrics • felted fabrics Knitted textiles including: • knitted fabrics. https://docs.google.com/presentation/d/1fmvYBqmcGfJiYbHY67byebdWL0umvSV7q9OBEEQT0yM/edit?usp=drive_link
Material Categories	In relation to the main categories outlined above (not the specific materials identified), students should know and understand physical properties such as: • absorbency (resistance to moisture) • density • fusibility • electrical and thermal conductivity. In relation to the main categories outlined above (not the specific materials identified), students should know and understand working properties such as: • strength • hardness • toughness • malleability • ductility and elasticity https://docs.google.com/presentation/d/1g4oadYoukz9aUsGfyq7YRybwgCxqhQwVefpkbH92U7c/edit?usp=drive_link
Design Strategies	
Communication of Design Ideas	https://drive.google.com/file/d/1d53D_SG2cUgswaalzGbKOK3WD9jAkG8u/view?usp=sharing
Prototype Development	https://drive.google.com/file/d/1t3TLUdqlv7iGPyMAO6oxuJLiq4rgZ_MT/view?usp=sharing

Selection of Materials and Components	Functionality: application of use, ease of working. Aesthetics: surface finish, texture and colour. Environmental factors: recyclable or reused materials. Availability: ease of sourcing and purchase. Cost: bulk buying. Social factors: social responsibility. Cultural factors: sensitive to cultural influences. Ethical facto https://drive.google.com/file/d/11QRCSpkvCIZilvQt9pYNxrb434MnccS/view?usp=drive_link
Tolerances	https://drive.google.com/file/d/1Y4LXTd0j1j2D-EL0nqkrAA8MCb6TGg52/view?usp=sharing
The work of others	Students should investigate, analyse and evaluate the work of past and present designers and companies to inform their own designing. https://drive.google.com/file/d/1vg5p1qkEbCBjscnEIDpLMTAkV4jDHeU9/view?usp=sharing
Material Management	
Stock Forms	Commercially available types and sizes of materials and components. Papers and boards: • sheet, roll and ply • sold by size eg A3, thickness, weight and colour • standard components eg fasteners, seals and bindings • cartridge paper and corrugated card. Timber based materials: • planks, boards and standard moldings • sold by length, width, thickness and diameter • standard components eg woodscrews, hinges, KD fittings. Metal based materials: • sheet, rod, bar and tube • sold by length, width, thickness and diameter • standard components eg rivets, machine screws, nuts, and bolts. Polymers: • sheet, rod, powder, granules, foam and films • sold by length, width, gauge and diameter • standard components eg screws, nuts and bolts, hinges. https://drive.google.com/file/d/1SI-N6TnAyc_YQENlvFy5sOEoFIDPABUa/view?usp=sharing
Specialist Techniques and Processes	
Specialist Processes	A range of tools, equipment and processes that can be used to shape, fabricate, construct and assemble high quality prototypes, as appropriate to the materials and/or components being used including: wastage, such as: • die cutting • perforation • turning • sawing • milling • drilling • cutting and shearing • brazing • welding • lamination • soldering • 3D printing • batik • sewing • bonding • printing deforming • vacuum forming • creasing • pressing • drape forming • bending • folding • blow moulding • casting

- | | |
|--|--|
| | <ul style="list-style-type: none">• injection moulding• extrusion. <p>https://drive.google.com/file/d/1wtQcV9QpKWGYO3EWbdEHqXDRx6rKssMr/view?usp=sharing</p> |
|--|--|