

GCSE Design & Technology Subject Topics

<p><b>Impact of new technologies</b>          Industry          Enterprise          Sustainability          Culture          Society          Environment          Production techniques          Systems          Market Pull          Tech push          Consumer choice          Product Life Cycle          Global production          Legislation BSi ISO Kite          Consumer rights          Moral ethical fair          Adv Dis CAD CAM          CNC vinyl router 3D</p>	<p><b>Modern materials</b>          Smart materials          Composite          Technical textiles          Sensors          Control devices          Inputs          outputs          Process          Circuit diagrams          block diagrams          flowcharts          input data sensor          light dependent resistor LDR          thermistor          Processing by control devices          Semi-conductor          IC          microprocessor          feedback          methods of feedback          products          control devices counting          switching and timing          Analogue input components          Digital sensors input          components          Programmable          components          Sub routines          Macros          Microcontrollers control          systems          Microcontrollers interface          devices          Microcontrollers          reprogrammed          Adv/Dis PM          PIC how they can be used to          control</p>	<p><b>Paper and boards properties</b>          Card          Paper          Board          Composite          Strength          folding          surface finish          Absorbency          Lamination          ISO sizes          GSM          Microns          Layout paper          tracing paper          copier paper          recycled paper          corrugated board          cartridge paper          mounting board          boxboard</p>	<p><b>Mechanical Devices</b>          Input motion and force          Output motion and force          Everyday devices          Input          Process          output          Increase decrease speed          motion          Magnitude/direction of          motion          Calculations mechanical          systems          Puller systems          Gear systems          Levers and linkages          Rack and pinion          Cams</p>	<p><b>Ferrous and non-ferrous metals</b>  <b>Ferrous-metals</b>          Non-ferrous metals          aluminium          copper          brass          bronze          alloys          Hardness          elasticity          conductivity          toughness          ductility          tensile          malleability          Forms available          sheet          bar          rod          tube          angle          cast iron          mild steel          medium carbon steel          high carbon fibre</p>	<p><b>Thermoforming and Thermosetting polymers</b>          Natural polymers          Animal polymers          wool/fleece          mohair          cashmere          angora          alpaca          camel          Insect polymers          silk          Plant polymers          cotton          linen          hemp          jute          rayon          viscose          Manufactured polymers          Synthetic          polyester          polypropylene          nylon          acrylic          elastane          lycra          aramid fibres          microfibres          Tactel          Tencel lyocell</p>
<p><b>Natural and Manufactured boards</b>          Hardwood - deciduous          Softwoods - coniferous          Strength          Grain          finish          durability          absorbency          Forms available          plank          board          strip          square          dowel          Plywood          MDF          Chipboard          hardboard          veneered board</p>		<p><b>Evaluation</b>          Future Scenarios          Ethics          Environment          SCEE responsibilities          Life Cycle Analysis          Sustainability          Ecological footprint          Fair-trade policies          Carbon footprint</p>	<p><b>Energy</b>          Generated          Stored          Appropriate sources          Renewable and non-renewable          wind          solar          geothermal          hydroelectric          wood/biomass          wave          coal          gas          nuclear          oil          Adv/Dis renewable          Issues fossil fuels          wind-up          photovoltaic          cars/battery/solar/mains</p>		

In depth area Papers and Boards

<p><b>Origins, sources, physical and working properties</b>          How wood pulp is made          Mechanical and chemical wood pulp          Recycled paper          How paper is made by hand          Surface finishes          Commercial manufacture of paper</p>	<p><b>Ecological and social footprint</b>          Impact          greenhouse          society and waste          greener world          packaging          Life cycle analysis          Sustainable design</p>	<p><b>Stock forms</b>          sizes of paper          GSM          Cores          calculations</p>	<p><b>Jigs and devices repeat activities</b>   <b>Pre Press</b>          Grids          registration marks          layout          imposition          colour separation</p>	<p><b>Deforming/Reforming</b>          Bending plastics          Vacuum forming          Laser cutting          3D printing          Press forming          Blow moulding          CAM machines          Score and folding          Material joining</p>
<p><b>Properties of paper and board</b>          texture          weight          thickness          strength          surface finish          transparency          folding ability          absorbency</p>	<p><b>Selection of materials</b>          ACCESS FM          paper          card          boards          layout paper          mounting board          boxboard          corrugated card</p>	<p><b>Scales of production</b>          Advantages and disadvantages          single          one off          batch          continuous          high volume</p>	<p><b>Jigs and devices repeat activities</b>  <b>Finishing</b>          Die cutting          spirit varnish          UV varnish          laminating          embossing          debossing          cropping          folding          binding</p>	<p><b>Surface treatments/finishes</b>          Die cutting          Spirit varnish          U.V varnishing          laminating          embossing          debossing          cropping          folding/binding          labelling          symbolic images</p>
<p><b>Responsibilities of designers and manufacturers</b>          Environment          Working conditions          third world countries          exploitation          recyclability          biodiversity          deforestation          Cost</p>	<p><b>Impact of forces and stresses</b>          Paper and boards          corrugation/folding/gluing          stiffening papers/ribs/thickness          structural integrity          stiffness          strength          laminating          fluted core          joining and fixing methods</p>	<p><b>Specialist techniques</b>   <b>Wastage/Addition</b>  <b>Tools and equipment</b>           marking out          hold          cut          shape          drill          form laminates of plastics, papers/boards          jigs and formers to ensure accuracy when drilling, bending, cutting and forming</p>	<p><b>Techniques to produce</b>           Books          Magazines          leaflets          flyers          packages</p>	