



A LEVEL – YEAR 12 – DESIGN TECHNOLOGY – CURRICULUM OVERVIEW

Autumn Term		Spring Term		Summer Term	
Autumn 1	Autumn 2	Spring 1	Spring 2	Summer 1	Summer 2
Key Themes	Key Themes	Key Themes	Key Themes	Key Themes	Key Themes
<p>Principles of Design and Technology Topics 1-2:</p> <p>1: Materials: Hardwoods Softwoods Metals Polymers Composites Paper & Board Textiles Smart Materials</p> <p>2: Performance characteristics of materials: Conductivity Strength Elasticity Toughness Durability Malleability Ductility Hardness Biodegradability</p>	<p>Principles of Design and Technology Topics 3:</p> <p>3: Processes and techniques: a) heat treatments – hardening and tempering, case hardening, annealing, normalising (including use of specialist tools) b) alloying (including use of specialist tools) c) printing – offset lithology, flexography, screen-printing, gravure (including use of specialist tools) d) casting – sand (to include investment), die, resin, plaster of Paris (including use of specialist tools) e) machining – milling/routing, drilling, turning, stamping, pressing (including use of specialist tools) f) moulding – blow moulding, injection moulding, vacuum forming, extrusion, rotational moulding (including use of specialist tools) g) lamination (including use of specialist tools) h) marking out techniques – woods, metals, polymers, paper and boards (including use of specialist tools).</p>	<p>Principles of Design and Technology Topics 4:</p> <p>4: Digital technologies Set up, safe and accurate operation, advantages and disadvantages of the following digital technologies: a) computer-aided design (CAD) – 2D and 3D design to create and modify designs and create simulations, 3D modelling for creating ‘virtual’ products b) computer-aided manufacture (CAM) and rapid prototyping – CNC lathes, CNC routers, CNC milling machine, CNC laser, CNC vinyl cutters, rapid prototyping.</p>	<p>Principles of Design and Technology Topics 5:</p> <p>5: Factors influencing the development of products The importance and influence of user centred design in ensuring products are fit-for-purpose and meet the criteria of specifications when designing, making and evaluating in relation to: a) user needs, wants and values b) purpose c) functionality d) innovation e) authenticity. Design theory through the influences and methods of the following key historical movements and figures: a) Arts and Crafts – William Morris b) Art Nouveau – Charles Rennie Mackintosh c) Bauhaus Modernist – Marianne Brandt d) Art Deco – Eileen Gray e) Post Modernism – Philippe Starck f) Streamlining – Raymond Lowey g) Memphis – Ettore Sottsass.</p>	<p>Principles of Design and Technology Topics 6:</p> <p>6: Effects of technological developments Current and historical technological developments that have had an effect on the work of designers and technologists and their social, moral and ethical impacts: a) mass production – the consumer society, built-in obsolescence, the effect mass production has on employment b) the ‘new’ industrial age of high-technology production – computers and the development and manufacture of products, miniaturisation of products and components, the use of smart materials, products from innovative applications c) the global marketplace – multinational companies in developed and developing countries, manufacturing ‘offshore’ in developing countries and local and global production.</p>	<p>Principles of Design and Technology Topics 7:</p> <p>7: Potential hazards and risk assessment. Adopting safe working practices, recognise and react to potential hazards: a) understanding safe working practices for yourself and others when designing and making, including when selecting and safely using machinery, equipment and tools in order to ensure safe working environments b) understanding the need for risk assessments – identification of potential hazards, identification of people at risk, evaluation of risks, implement control measures, recording and storing of risk assessment documentation.</p>
Assessment / Composite Tasks	Assessment / Composite Tasks	Assessment / Composite Tasks	Assessment / Composite Tasks	Assessment / Composite Tasks	Assessment / Composite Tasks
Project 1 – Design history contextual project. Art Deco mirror	Project 2 – Architectural project. Bus shelter	Project 3 – Brand extensions Create new products for well known existing brands	Project 4 – Automata CAD Making a mechanical automata in 3D CAD.	Project 5 – Unilever industrial context project Design a commercial piece of packaging	Preparation for NEA