

Alcester Academy Curriculum Planning: Key Stage 4

Department: <i>Design and Technology</i>							
Term	Topic/Subject	Assessment Objectives and Knowledge	Knowledge acquisition	Skill building	Wider reading to include Literacy, Numeracy and SMSC	Final Assessment	SEND PP
Autumn 1	Looking at the work of others	<p>Students will work on a project studying the following designers: <i>Harry Beck</i> <i>Coco Chanel</i> <i>Alexander McQueen</i> <i>William Morris</i> <i>Mary Quant</i> <i>Vivienne Westwood</i> <i>Marcel Breuer</i> <i>Norman Foster</i> <i>Charles Rennie Mackintosh</i> <i>Aldo Rossi</i> <i>Gerrit Rietveld</i> <i>Ettore Sottsass</i> <i>Raymond Templier</i> <i>Louis Comfort Tiffany</i></p> <p>Students need to know how to investigate, analyse and evaluate the work of others.</p> <p>Understand how investigating the work of other designers and design companies can inform designing.</p>	<p>Knowledge of other peoples styles.</p> <p>Understanding what makes them successful.</p>	<p>Being able to research existing products to inspire new ideas and offer a starting point.</p> <p>Being able to produce own design sketches using a variety of communication techniques such as CAD. (2D design used in KS3).</p>	<p>Understanding sizes and proportion.</p> <p>Wider reading about their chosen designer.</p> <p>Annotating design work using subject specific vocabulary.</p> <p>Appreciating the work of others.</p> <p>Being respectful to peoples work and ideas.</p>	<p>A portfolio of research and design work.</p> <p>A final practical piece.</p>	<p>TA support.</p> <p>Key words introduced at the beginning of each topic on ppt slides.</p> <p>Use of computers for mock NEA extended writing.</p>
Autumn 2	Core content 1:	Understand how new and emerging	What the new technologies	Able to answer exam questions.	Use of the AQA textbook.	Exam paper at the end of each module.	TA support.

	<p><i>Industry and Enterprise.</i></p> <p><i>Sustainability and the environment.</i></p> <p><i>People culture and society.</i></p> <p><i>Production systems and techniques.</i></p> <p><i>Informing design decisions</i></p>	<p>technologies have changed the way we live and how they continue to shape the modern world.</p> <p>Be aware of how computers and automation have impacted upon the design and organisation of the work place through the use of robotics.</p> <p>Be aware of the impact that resource consumption has on the planet.</p> <p>Understand how the environment can be protected by responsible design and manufacturing.</p> <p>Understand how waste can</p>	<p>are and how these are used.</p> <p>Know how automation is used and the advantages and disadvantages of this.</p> <p>Know how to select materials and components taking into account the effects on the environment.</p> <p>Environmental issues.</p> <p>CAD/CAM.</p>	<p>Use of 2d and 3d design software. (3D software new for KS4).</p>	<p>Read around the subject for homework.</p> <p>Key words highlighted.</p> <p>Taking into consideration the ecological and social footprint of materials. (Links to KS3 textiles project).</p> <p>Respecting people of different faiths and beliefs.</p> <p>How products are designed and made to avoid having a negative impact on others:</p> <ul style="list-style-type: none"> • design for disabled • elderly • Different religious groups. 		<p>Key words introduced at the beginning of each topic on ppt slides.</p> <p>Use of computers for mock NEA extended writing.</p>
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		<p>be disposed of with the least impact on the planet. (links to KS3 textiles project).</p> <p>Understand how new products can have both a positive and negative impact on society.</p> <p>Be aware of changes in fashion and trends and how they affect designers and manufacturers.</p> <p>Understand CAD/CAM. Understand flexible manufacturing systems (FMS).</p> <p>Understand just in time (JIT).</p> <p>Be able to evaluate the</p>					
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		<p>advantages and disadvantages of planned obsolescence from different perspectives.</p> <p>Understand how products can be designed to be repaired and recycled. (Links to KS3 textiles project).</p>					
Spring 1	<p>Core Content 2:</p> <p><i>Energy generation.</i></p> <p><i>Energy storage.</i></p> <p><i>Modern materials.</i></p> <p><i>Smart materials.</i></p> <p><i>Composite materials and technical textiles.</i></p>	<p>Understand how power is generated from fossil fuels and nuclear power.</p> <p>Understand how power is generated from renewable energy sources.</p> <p>Be able to identify mechanical power and understand how it is stored.</p>	<p>Renewable and non renewable energy.</p> <p>modern and smart materials.</p> <p>Composite materials.</p> <p>Movements.</p>	<p>How to choose appropriate energy sources.</p> <p>Being able to produce arguments for and against the selection of fossil fuels.</p> <p>Being able to produce arguments for and against the selection of nuclear power.</p> <p>Being able to produce arguments for</p>	<p>Classification of the types of properties of a range of materials.</p> <p>Selecting appropriate materials.</p> <p>Extracting information from technical specifications.</p> <p>The action of forces and how levers and gears transmit and transform the effects of forces.</p>	Exam paper at the end of the module.	<p>TA support.</p> <p>Key words introduced at the beginning of each topic on ppt slides.</p> <p>Use of computers for mock NEA extended writing.</p>

	<p><i>Systems approach to designing.</i></p> <p><i>Electronic systems processing.</i></p> <p><i>Mechanical devices.</i></p>	<p>Understand the functional properties of alkaline and rechargeable batteries.</p> <p>Be able to recognise a range of modern materials.</p> <p>Be able to recognise a range of smart materials.</p> <p>Understand how material properties can be enhanced by combining two or more materials.</p> <p>Recognise a range of composite materials.</p> <p>Understand the principles of electronic systems.</p>		<p>and against the selection of renewable energy sources.</p>	<p>Arithmetic and numerical computation e.g use ratios. Use angular measures in degrees.</p> <p>visualise and represent 2D and 3D objects including 2D diagrams of mechanisms/ mechanical movement.</p> <p>Knowledge of the function of mechanical devices to produce different sorts of movement, changing the magnitude and direction of forces.</p> <p>How to choose appropriate energy sources.</p> <p>Understanding their responsibility as a designer to ensure we do</p>		
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		Be able to recognise and identify a range of movements.			not leave future generations without.		
Spring 2	<p>Core content 3:</p> <p>Materials and their working properties.</p> <p>Papers and boards.</p> <p>Natural and manufactured timbers.</p> <p>Metals and alloys.</p> <p>Polymers.</p> <p>Textiles.</p>	<p>Know the primary sources of materials for producing papers and boards.</p> <p>Know the primary sources of materials for producing natural and manufactured timbers.</p> <p>Know the primary sources of materials for producing metals and alloys.</p> <p>Know the primary sources of materials for producing polymers.</p>	<p>Papers and boards.</p> <p>Origins of materials:</p> <p>Textiles</p> <p>Timbers</p> <p>Polymers</p> <p>Paper</p> <p>Boards</p>	<p>Students should be able to answer exam questions on:</p> <p>papers:</p> <ul style="list-style-type: none"> • bleed proof paper • cartridge paper • grid • layout paper • tracing paper <p>boards:</p> <ul style="list-style-type: none"> • corrugated card • duplex board • foil lined board • foam core board • ink jet card • solid white board. <p>Students should be able to answer exam questions on the following:</p> <p>hardwoods:</p> <ul style="list-style-type: none"> • ash • beech 	<p>Understanding stock forms for each material.</p> <p>Knowing how to work out appropriate lay plans in order to minimise waste.</p> <p>Understanding how to calculate how much wastage there will be.</p> <p>Knowing what is available for us now and how to plan for future generations e.g. sustainable forests.</p> <p>Understanding what harm different materials can cause to the environment.</p>	<p>Exam paper at the end of the module.</p>	<p>TA support.</p> <p>Key words introduced at the beginning of each topic on ppt slides.</p> <p>Use of computers for mock NEA extended writing.</p>

		Know the primary sources of materials for producing textiles.		<ul style="list-style-type: none"> • mahogany • oak • balsa softwoods: <ul style="list-style-type: none"> • larch • pine • spruce manufactured boards: <ul style="list-style-type: none"> • medium density fibreboard (MDF) • plywood • chip board. 			
Summer 1	NEA (50%) of GCSE	AO1 Identify, investigate and outline design possibilities.		<p>Identifying & investigating design possibilities using primary and secondary data.</p> <p>Selecting appropriate research to include.</p> <p>Presenting research findings using computers.</p>	<p>Presenting information in graphs.</p> <p>Anthropometric data.</p> <p>Students work on individual projects and will need to read around the topic they choose.</p>	<p>Assessment objectives from AQA are to be met.</p>	<p>TA support.</p> <p>Key words introduced at the beginning of each topic on ppt slides.</p> <p>Use of computers for mock NEA extended writing.</p>
Summer 2		Students will explore a range of possible ideas linking to		Based on conclusions from their investigations	Taking information from real people in order	NEA continued as above.	TA support. Key words introduced at the beginning of

		<p>the contextual challenge selected.</p> <p>These design ideas will demonstrate flair and originality and students are encouraged to take risks with their designs.</p> <p>Students may wish to use a variety of techniques to communicate.</p> <p>Students will not be awarded for the quantity of design ideas but how well their ideas address the contextual challenge selected.</p> <p>Students are encouraged to be imaginative in their approach by experimenting</p>		<p>students will outline design possibilities by producing a design brief and design specification.</p> <p>Students will review both throughout the project.</p> <p>Different ways to communicate ideas in the form of sketching, oblique projection, isometric projection, two point perspective, 2d and 3d and exploded drawings.</p>	<p>to design and make a prototype suitable for a particular person.</p> <p>Team work and communication skills, students will need to conduct interviews with their chosen target market group.</p> <p>Working drawings presented in orthographic projection. Single angle and third angle projection.</p>		<p>each topic on ppt slides.</p> <p>Use of computers for mock NEA extended writing.</p>
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		<p>with different ideas and possibilities that avoid design fixation.</p> <p>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.</p>					
					Working alongside others.		<p>TA support.</p> <p>Key words introduced at the beginning of each topic on ppt slides.</p> <p>Use of computers for mock NEA extended writing.</p>