

Alcester Academy Curriculum Planning: Key Stage 4

		Department: <i>Design and Technology</i>					Year Group: <i>11</i>	
Term	Topic/Subject	Assessment Objectives and Knowledge (include differentiation)	Knowledge acquisition	Skill building and intent	Wider reading opportunities to include numeracy and SMSC	Final assessment task and title	SEND/PP identify where access and learning is supported.	
Autumn 1	NEA	A02 Design and make prototypes that are fit for purpose	<p>Know what a prototype is and how they are used.</p> <p>Know which materials are useful/suitable for modelling.</p> <p>Knowledge of specifications</p>	<p>Very detailed development work is evident, using a wide range of 2D/3D techniques (including CAD where appropriate) in order to develop a prototype.</p> <p>Modelling, using a wide variety of methods to test their design ideas, which fully meet all requirements.</p> <p>Fully appropriate materials/components selected with extensive research into their working properties and availability.</p> <p>Fully detailed manufacturing specification is</p>	<p>Understanding sizes and anthropometric data.</p> <p>Understanding quantities of materials/components needed.</p> <p>Calculating the cost of materials needed and those that are left over.</p> <p>Designing for others, taking into account the needs and wants of the intended user.</p>	<p>Imaginative, creative and innovative ideas have been generated, fully avoiding design fixation and with full consideration of functionality, aesthetics and innovation.</p> <p>Ideas have been generated, that take full account of on-going investigation that is both fully relevant and focused.</p> <p>Extensive experimentation and excellent communication is evident, using</p>	<p>Key words</p> <p>exemplar work.</p> <p>TA support.</p>	

				produced with comprehensive justification to inform manufacture.		a wide range of techniques. Imaginative use of different design strategies for different purposes and as part of a fully integrated approach to designing.	
Autumn 2	NEA	A02 Design and make prototypes that are fit for purpose	<p>Knowledge of suitable materials.</p> <p>Suitable construction methods.</p> <p>Knowledge of suitable tools/equipment to use to make a successful prototype.</p>	<p>Students will work with a range of appropriate materials/components to produce prototypes that are accurate and within close tolerances.</p> <p>This will involve using specialist tools and equipment, which may include hand tools, machines or CAM/CNC.</p> <p>The prototypes will be constructed through a range of techniques, which may involve shaping, fabrication, construction and assembly.</p>	<p>Using CNC machines.</p> <p>Measuring and marking out accurately and precisely.</p> <p>Following a commercial pattern.</p> <p>Adapting a commercial pattern.</p> <p>Calculating the cost of materials needed.</p> <p>Working to a client's budget.</p> <p>Working to a budget.</p> <p>Costing materials.</p> <p>Working with suppliers to select the</p>	<p>Students will be awarded marks for the quality of their prototype(s) and how it addresses the design brief and design specification based on a contextual challenge.</p>	<p>Key words</p> <p>exemplar work.</p> <p>TA support.</p>

				The prototypes will have a suitable finish with functional and aesthetic qualities, where appropriate.	most suitable materials.		
Spring 1	NEA	<p>Ao3 Analyse and evaluate.</p> <p>Within this iterative design process students are expected to continuously analyse and evaluate their work, using their decisions to improve outcomes.</p> <p>This should include defining requirement, analysing the design brief and specifications along with the testing and evaluating of ideas produced during the generation and</p>	<p>How to evaluate work.</p> <p>How evaluations can be used throughout a project to further improve the end result.</p> <p>Using a specification to check progress.</p> <p>How to successfully test a product.</p>	<p>Students will learn how to take on board feedback and make changes to their work if necessary.</p> <p>Look at possible developments for their product if it were to be made on a larger scale.</p> <p>Look at other possible materials that may be more suitable if it were to be made commercially.</p>	<p>Testing the product against the specification and all tolerances set.</p> <p>Think about the ecological footprint their product might have on the environment if it were to be made on a large scale.</p> <p>A research possible solution using the 6R's to try and rethink the design if it is harmful to the environment in any way.</p>	<p>Extensive evidence that various iterations are as a direct result of considerations linked to testing, analysis and evaluation of the prototype, including well considered feedback from third parties.</p> <p>Comprehensive testing of all aspects of the final prototype against the design brief and specification.</p> <p>Fully detailed and justified reference is made to any modifications both proposed and undertaken.</p>	<p>Key words</p> <p>exemplar work.</p> <p>TA support.</p>

		<p>development stages.</p> <p>Their final prototype(s) will also undergo a range of tests on which the final evaluation will be formulated.</p> <p>This should include market testing and a detailed analysis of the prototype(s).</p>				<p>Excellent ongoing analysis and evaluation evident throughout the project that clearly influences the design brief and the design and manufacturing specifications.</p>	
Spring 2	Revision						
Summer 1	Course completed						
Summer 2							

Last updated: 1.9.21