

Year 11 Curriculum Plan – Product Design

YEAR 11

SUBJECT D&T / PD

LEARNING PROGRAMME



TOPIC	LEARNING OBJECTIVES	KEY VOCABULARY	LEARNING SEQUENCE <u>MUST</u> be pupil led.	LINKED LEARNING	HOME LEARNING
Controlled Assessment – Design Brief & Specification	<ul style="list-style-type: none"> • Write a clear and detailed 'Design Brief' • Write a Design Specification' with measurable outcomes. 	Design Brief Manufacturing Specification Measurable Form Function Client requirements Standard Components Materials Manufacturing Processes Health and Safety	PPT Review Y10 work Produce Design Brief & Specification	Controlled Assessment -Analysis & investigation.	Revise Exam Question for the week. The level of control for Controlled Assessment tasks allows for them to be completed at home.
Controlled Assessment – Development of design ideas	<ul style="list-style-type: none"> • Be able to generate and developing design ideas • An iterative approach is required. • A range of design strategies. • Clear and effective testing. • Analysis against Spec identifies further refinements. • Testing and selection of: 	The key words for this section of the Controlled Assessment could be any or all of the previous key words listed, depending on the pupil's personal project selection.	The Iterative design process is central to the completion of this section. The iterations must include: <ul style="list-style-type: none"> • Developing shape form and aesthetics • Modelling multiple ideas in multiple materials 	Controlled Assessment -Analysis & investigation / Design Brief & Specification	

	<ul style="list-style-type: none"> • Materials • Components • Dimensions • Manufacturing / production • Finishing • High level skills evident. 		<ul style="list-style-type: none"> • Modelling in both 2D and 3D CAD • Rethinking design based on testing • 3D printed prototype or part of a prototype • Size Iteration 		
<p>Controlled Assessment – Manufacturing a prototype</p>	<ul style="list-style-type: none"> • Stages of production timeline. • Completed prototype to schedule. • Successful high-level making skills. • Excellent appreciation of materials and components • High levels of accuracy in outcome. • Prototype functions perfectly • Meeting the user needs and wants. 	<p>The key words for this section of the Controlled Assessment could be any or all of the previous key words listed, depending on the pupil's personal project selection.</p>	<p>The pupil led ongoing testing and development of the prototype ensuring evidence of the following is obvious:</p> <ul style="list-style-type: none"> • High quality fully functioning prototype • Highly appropriate making skills. • Excellent understanding shown. • Specialist processes and materials used skilfully. 	<p>Controlled Assessment -Analysis & investigation. Controlled Assessment – Development of design ideas</p>	<p>Revise Exam Question for the week.</p> <p>The level of control for Controlled Assessment tasks allows for them to be completed at home.</p>

			<ul style="list-style-type: none"> • High levels of accuracy achieved. • A precise outcome. • Details of a sophisticated logical sequence. • Achievable timeline for manufacture. Supports the manufacture 		
<p>Controlled Assessment – Manufacturing & Evaluation. Revision</p>	<ul style="list-style-type: none"> • Analysing and evaluating design decisions and prototypes. • On-going evaluation and analysis of ideas as they develop. • Appraising concepts through the iterative process. • A critical analysis and evaluation of the FINAL prototype. • User trials / testing and opinions of potential users. • Reflection on feedback and further development issues identified. 	<p>The key words for this section of the Controlled Assessment could be any or all of the previous key words listed, depending on the pupil's personal project selection.</p>	<ul style="list-style-type: none"> • On-going evaluation and analysis of ideas as they develop. • Appraising concepts through the iterative process. • A critical analysis and evaluation of the FINAL prototype. • User trials / testing and opinions of potential users. • Reflection on feedback and further 	<p>Controlled Assessment -Analysis & investigation. Controlled Assessment – Development of design ideas Controlled Assessment – Manufacturing a prototype</p>	<p>Revise Exam Question for the week.</p> <p>The level of control for Controlled Assessment tasks allows for them to be completed at home.</p>

	<ul style="list-style-type: none"> Detailed suggestions for modifications. 		<p>development issues identified.</p> <ul style="list-style-type: none"> Detailed suggestions for modifications. 		
Revision	<ul style="list-style-type: none"> Be able to confidently answer a variety of appropriate exam questions on Renewable Energy. 	<ul style="list-style-type: none"> Biomass Tidal power Geothermal Wind power Hydroelectric Solar power Nuclear Power Efficiency Carbon offsetting Carbon Neutral Ground source heating Greenhouse affect Carbon footprint Sustainability Fossil fuels 	<p>Use the QR codes & Knowledge Organisers to help research the answers to the questions on the A3 sheets.</p> <p>These answers will help you complete the Linked GCSE exam style questions.</p>		
	<ul style="list-style-type: none"> Be able to confidently answer a variety of appropriate exam questions on Materials and Manufacturing Systems 	<ul style="list-style-type: none"> Laminating Malleability Hardness Toughness Elasticity Strength – Tension / Compression Plasticity Durability Lean Manufacturing 	<p>Use the QR codes & Knowledge Organisers to help research the answers to the questions on the A3 sheets.</p> <p>These answers will help you complete the Linked GCSE exam style questions.</p>		

		<ul style="list-style-type: none"> • 'Just in Time' manufacturing • Remote manufacturing • Crowd funding • Globalisation 			
	<ul style="list-style-type: none"> • Be able to confidently answer a variety of appropriate exam questions on Thermosetting & Thermo forming Plastics 	<ul style="list-style-type: none"> • Extrusion • Injection moulding • Blow moulding • Vacuum forming • Line bending • Rotational moulding • 3D Printing • PVC • ABS • PET • HIPS • Acrylic • HDPE <p>• One off Production</p> <ul style="list-style-type: none"> • Prototype <p>+ Lots of client input into design</p> <p>+ Client gets a one off</p> <p>- Expensive</p> <p>- Can take a long time</p> <p>- Can be difficult to find someone with the skills needed</p>	<p>Use the QR codes & Knowledge Organisers to help research the answers to the questions on the A3 sheets.</p> <p>These answers will help you complete the Linked GCSE exam style questions.</p>		

		<ul style="list-style-type: none"> • <u>Batch Production</u> • Some machinery involved • Jobs broken down • Faster than 'One Off' • Can involve more than one person • <u>Mass or Continuous Production</u> <p><u>3rd World benefit:</u></p> <ul style="list-style-type: none"> • Job creation • Regular income • Better working conditions <p><u>Consumers benefit:</u></p> <ul style="list-style-type: none"> • Cheap products • Identical quality • Availability of products <ul style="list-style-type: none"> • Rethink • Reuse • Recycle • Repair • Reduce • Refuse 			
	<ul style="list-style-type: none"> • Be able to confidently answer a variety of 	<ul style="list-style-type: none"> • Thermochromic liquid crystals 	Use the QR codes & Knowledge Organisers		

	<p>appropriate exam questions on SMART materials & Composites</p>	<ul style="list-style-type: none"> • Shape memory alloy • Kevlar • Biometrics • Photochromic • Polymorph - 62° • Ergonomics • Anthropometrics • Composites 	<p>to help research the answers to the questions on the A3 sheets.</p> <p>These answers will help you complete the Linked GCSE exam style questions.</p>		
	<ul style="list-style-type: none"> • Be able to confidently answer a variety of appropriate exam questions on Electronic systems, programmable components and mechanical devices. 	<ul style="list-style-type: none"> • <u>Inputs</u> • Switch • Light dependant resistor • Thermistor • Pressure sensor • Keyboard / mouse • <u>Outputs</u> • Buzzer • Speaker • Lamps • Shop doors opening / Alarm • Monitor • PIC controller • NOT gate • AND gate • OR gate • <u>Movement</u> • Linear • Reciprocating • Rotary • Oscillating • Cams • Followers • Crank 	<p>Use the QR codes & Knowledge Organisers to help research the answers to the questions on the A3 sheets.</p> <p>These answers will help you complete the Linked GCSE exam style questions.</p>		

		<ul style="list-style-type: none">• Drive wheel / pulley• Driven wheel / pulley• Idler gear• First order lever• Second order lever• Third order lever			
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