




Unit = Year 13 Theory	Road Map					
In this unit you will complete your final NEA worth 50% of you're A Level grade.	Assessment Grades					
Themes	Learning Goals/Outcomes/Content					
What are the requirements for product design and development?	<p>L1 The requirements for product design and development</p> <p>Through the study and critical analysis of existing products, students should develop an understanding of the requirements of the following:</p> <ul style="list-style-type: none"> • the design, development and manufacture of products to meet specification criteria • fitness for purpose • accuracy of production • how the critical assessment of products can lead to the development of new designs. <p>Students should develop the skills to critically assess products and develop new design proposals.</p>					
How do you consider aesthetics, ergonomics and anthropometrics?	<p>L2 Product development and improvement</p> <p>Students should development their ability to work with a variety of materials, including two and three-dimensional forms, to produce creative and original products which satisfy the demands of the target market, and consider accurate and efficient manufacture.</p> <p>When designing products Students should consider aesthetics, ergonomics and anthropometrics.</p>					
What is inclusive design?	<p>L3 Inclusive design</p> <p>Students should be aware of, and be able to explain, the development of products that are</p>					

	<p>inclusive in their design so that they can be used by a wide range of users including the disabled, children and the elderly.</p>			
<p>What are industrial safe working practices?</p>	<p>L4 Safe working practices</p> <p>Students should be aware of, and able to explain, health and safety procedures related to products and manufacturing, including:</p> <ul style="list-style-type: none"> • knowledge of the Health and Safety at Work Act (1974), and how it influences the safe manufacture of products • control of Substances Hazardous to Health (COSHH) and safety precautions that should be taken with relevant materials • safe working practices and identifying potential hazards for the school or college workshop and industrial contexts • safety precautions that should be taken with specific manufacturing processes • the concept of risk assessment and its application to given manufacturing processes. 			
<p>How do you provide safety in products and services to the customer?</p>	<p>L5 Safety in products and services to the customer</p> <p>Students should be aware of, and able to explain, how designers and manufacturers ensure products are safe for consumers to use, including:</p> <ul style="list-style-type: none"> • legislation used to protect consumers and its impact on product design, eg Consumer Rights Act (2015), Sales of Goods Act (1979) • the British Standards Institute (BSI), and how specific products might be tested to meet safety standards • measures to ensure the safety of toys, eg Lion Mark 			

	<ul style="list-style-type: none"> • advice to consumers: • manufacturer’s instructions • safety warnings • aftercare advice. 			
How do you protect designs and intellectual property?	<p>L6 Protecting designs and intellectual property</p> <p>Students should be aware of, and able to explain, the importance of the following to the designer:</p> <ul style="list-style-type: none"> • copyright and design rights • patents • registered designs • trademarks • logos. 			
What is open design?	<p>L7 Open Design</p> <p>Students should be aware of, and able to explain, the concept of ‘open design’.</p> <p>Specifically referring to the development of products for the common good of society, including potential use. Students should be able to give examples of this in practice, eg humanitarian projects and file sharing for 3D printing.</p>			
How do you plan for repair and maintenance?	<p>L1 Manufacture, repair, maintenance and disposal</p> <p>Students should be aware of, and able to explain, the need to modify designs to make them more efficient to manufacture, including:</p> <ul style="list-style-type: none"> • reducing the number of manufacturing processes • how the choice of materials affects the use, care and disposal of products: • labelling of materials to aid separation for recycling • making products easy to disassemble or separate • application of the six Rs of sustainability: 			

	<ul style="list-style-type: none"> • reduce the quantity of materials, of toxic materials, of damaging materials and associated energy use • reuse components and parts • rethink by using eco friendly alternative materials • recycle materials and/or components into new products • maintenance: • temporary and integral fixings • use of standardised parts • allowing for service and repair/ replacement of parts • ability to upgrade with software downloads. 			
<p>How do you plan for efficient manufacture?</p>	<p>L2 Ease of manufacture</p> <p>Students should be aware of, and able to explain, the different ways in which a product can be designed to allow for more efficient manufacture, including:</p> <ul style="list-style-type: none"> • ribs and webbing to reduce material thicknesses • snap fittings to remove the need for fixings/adhesives • internal moulded screw posts for use with self tapping screws • use of pre made components • use of standardised patterns and sizes • addition of texture in moulding to reduce number of manufacturing processes • self finishing. 			
<p>How do you plan for product disassembly?</p>	<p>L3 Disassembly</p> <p>Students should be aware of, and able to explain, how a product can be designed and</p>			

	<p>manufactured with disassembly in mind, including integral fixings and active disassembly using smart materials such as SMA and biodegradable parts.</p>			
<p>What role does a feasibility study play?</p>	<p>L4 Feasibility studies</p> <p>Students should be aware of, and able to explain, the use of feasibility studies to assess the practicality for production of proposed designs, including the testing of prototypes with potential consumers.</p>			
<p>What role does enterprise and marketing play?</p>	<p>L5 Enterprise and marketing in the development of products</p> <p>Students should be aware of, and able to explain, the importance of marketing and brand identity, including:</p> <ul style="list-style-type: none"> • customer identification • labelling • packaging • corporate identification • concept of global marketing: • the promotion and advertisement of products including the use of new technologies, eg social media, viral marketing • product costing and profit • awareness of the role of entrepreneurs. <p>Students should be aware of, and able to explain, the collaborative working of designers in the development of new and innovative products, including virtual and face-to-face collaborative working systems.</p>			
<p>How do you communicate designs?</p>	<p>L6 Design communication</p> <p>Students should be aware of, and able to explain and demonstrate the skills, in a range of communication and presentation techniques for conveying proposals and intentions to clients,</p>			

	<p>potential users and manufacturers, including:</p> <ul style="list-style-type: none">• report writing• the use of graphs• tables and charts• 2D/3D sketching• the use of mixed media and rendering to enhance drawings• dimensioning and details for manufacture.			
--	--	--	--	--