

Subject: DESIGN ENGINEERING	Areas Covered	What students should understand/be able to demonstrate	Available resources to consolidate areas of weakness
Year 7	<ul style="list-style-type: none"> - Engineering Design - LED lighting - Mechanisms - Types of Adhesives - Sustainability - Transistor Theory - Types of plastics 	<p>An understanding for Engineering design methods and processes.</p> <p>The operation of LED lighting</p> <p>An understanding of basic mechanisms and types of movements created.</p> <p>The application and uses of different types of adhesives.</p> <p>Sustainability and the impact technology has on the wider environment.</p> <p>The operation of transistor and their use in electronic circuits.</p> <p>The different types of plastics available and their basic uses, advantages and disadvantages.</p>	<p>Resources sent on TEAMS and MILK</p> <p>www.bournetoinvent.com</p>
Year 8	<ul style="list-style-type: none"> - Practical Mechanisms - The Environment and sustainability - Potentiometers - Pulse Width Modulation 	<p>An understanding more complex mechanisms and types of movements created.</p> <p>Sustainability and the impact technology has on the wider environment.</p> <p>Understanding how potentiometers are made and their use in electronic circuits.</p> <p>An understanding of what pulse width modulation is and how it is used to control power for use in motor speed control circuits.</p>	<p>Resources sent on TEAMS and MILK</p> <p>www.bournetoinvent.com</p>
Year 9	<ul style="list-style-type: none"> - Health and Safety - Quality Assurance - The Environment and sustainability - Arduino programming 	<p>Understanding the need for a safe working environment and how to apply this when use tools and equipment.</p> <p>Developing a quality assurance system to ensure products meet</p>	<p>Resources sent on TEAMS and MILK</p> <p>www.bournetoinvent.com</p>

		<p>the manufacturers requirements and specifications.</p> <p>Sustainability and the impact technology has on the wider environment.</p> <p>Understanding the basic connections for the Arduino microcontroller and writing basic programs to monitor inputs and control outputs.</p>	
Year 10	<ul style="list-style-type: none"> - Textiles - Timbers - Material choices - Past and present analysis - Prototyping - Communication of design - Researching contexts 	<p>Understanding the differences between natural fibres, synthetic fibres, woven textiles, non-woven textiles and knitted textiles.</p> <p>Understanding the difference between natural timbers (softwoods and hardwoods) and manufactured timbers.</p> <p>Know the process involved in choosing the correct materials for the project.</p> <p>Understanding the need to investigate past and present designs in order to successfully develop design briefs.</p> <p>Understanding the best methods of communicating designs through a combination of 3D modelling, drawings, clay modelling and digital media.</p> <p>Being able to effectively analyse a system in order to help develop their own products further.</p> <p>Starting the development of their controlled assessment through research into contexts from the exam board, progressing into a chosen, researched context.</p>	<p>Resources sent on TEAMS and MILK</p> <p>www.bournetoinvent.com</p> <p>Edexcel GCSE Design and Technology (9-1) series text book,</p> <p>ISBN: 9781292184586</p>

Year 12	<ul style="list-style-type: none"> - Developing initial ideas using the iterative design process - Investigating electronic circuits - Developing a final design using stakeholder feedback - Researching commercial feedback and improvements - Developing a brand identity 	<p>Using their controlled assessment to develop iterative designs which will lead to a final design idea.</p> <p>Research and testing of multiple electronic circuits relevant to the design ideas generated.</p> <p>Using stakeholder feedback and research to develop their design ideas further, including commercial development of the final design idea.</p> <p>Developing a brand identity, creating a unique product brand.</p>	<p>Resources sent on TEAMS and MILK</p> <p>www.bournetoinvent.com</p> <p>OCR Design and Technology for AS/A Level (OCR AS/A Level Design and Technology 2017) Text book ISBN - 10: 1510402659</p>
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