

Engineering curriculum map 9-11				
	<p>Topic title: Unit 1 NEA Manufacturing</p>	<p>Topic title: Unit 2 NEA Designing</p>	<p>Topic title: The Royal Enfield Project</p>	<p>Topic title: Unit 3 Exam Content</p>
	<p>Big Questions: How do you interpret the engineering drawings and data sheets? How do we convey manufacturing information to a third party? How do we ensure that the engineering process happen in the right order? What control measures do we need to put in place for the identified risks? How can you complete the manufacturing to the highest quality? What have we learnt from making the engineered project?</p>	<p>Big Questions: How do we commence the design process? How do we show a range of design solutions for our engineered product? How do we convey the information required to plan manufacturing details of our engineered product? What design calculations are needed to realise your engineering solution? How do we summarise the design process?</p>	<p>BIG question: How do we decide the materials used in an engineered product? How do we decide the engineering processes used in an engineered product? How do we decide the engineering surface finishes used in an engineered product?</p>	<p>BIG question: How do engineering developments define new engineered products? What are the main factors that influence modern engineering products? What are the main factors that affect the environmental impact of engineered products? How do we choose suitable engineering materials? How do we define the physical properties of materials and why they are important to us? What are the properties of materials that mean we can make an informed choice in their use? How do we decide if non-destructive or destructive testing is the most appropriate? What are the key stages of the manufacturing processes and how do you document them?</p>

				<p>How do we select the best engineering process and how do we justify this?</p> <p>Keeping safe in the engineering environment is of utmost importance, how do we achieve this?</p> <p>What processes do we use to create engineered products in polymers?</p> <p>Where is maths of use in Engineering?</p> <p>What is Ohms Law and how do we use it?</p> <p>Where would you need to calculate the average of an engineering value?</p> <p>Why are graphs used to represent engineering data?</p> <p>How do we convey engineering product details to a third party? And how do you interpret drawings from a third party?</p>	
Assessment	For each of the NEA assessment points 1ab, 2a, 2b, 2c, 3 & 4a and 4b Cue cards for retrieval of workshop processes	NEA - 1ab Product analysis, 2a Design Sketches, 2b Evaluation of initial designs, 2c Experimental CAD work, 3a CAD final drawings, 3b Specification, 4a Mathematical considerations, 4b Evaluation	NEA - 1ab Product analysis, 2a Design Sketches, 2b Evaluation of initial designs, 2c Experimental CAD work, 3a CAD final drawings, 3b Specification, 4a Mathematical considerations, 4b Evaluation	Each topic (big question) has embedded CFU	
Practical	Engineering workshop experience How can you complete the manufacturing to the highest quality?				

	<p>marking out aluminium, filing to a line, Centre punch, Pillar drill and measurement using a gauge. Vacuum forming of HIPs, routing, and deburring. Marking out acrylic face, hacksaw to size and draw file finish. Focussed task around large diameter hole in acrylic. , Centre lathe to turn the rear support of the clock, using a die and holder. Reading an engineering drawing and cutting threaded bar to length. Use of the vinyl cutter to prepare numerals and cleaning of components prior to manufacture.</p>			
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