

Key Stage 3 Overview

	Module 1	Module 2	Module 3	Module 4	Module 5	Module 6
Year 8	<p>University Challenge:</p> <p>I'm an Engineer - get me in here</p> <p>Context: Focus on technical drawings:</p> <ul style="list-style-type: none"> - Importance planned to dimensions - Planned view and Assembly methods <p>Skills:</p> <ul style="list-style-type: none"> • Reading technical drawings. • Completing existing orthographic views with missing views/lines/dimensions. • Produce technical drawing of various objects/selections. • Using CAD to produce drawing (All views) of object that fits into Assembly/Template JIG. • Measuring existing components and drawing design based on recorded measurement. 	<p>University Challenge:</p> <p>Theatre</p> <p>Context: Electric Powered Vehicles</p> <p>Skills:</p> <ul style="list-style-type: none"> • Researching electric motor specifications, reading technical data and interpreting for a specific project/need. • Calculating gear ratios, torque and RPM • Designing concepts of vehicles, side views and corresponding factors using aerodynamics and material selection • Making and assembling chassis of electric powered 	<p>University Challenge:</p> <p>Recycling</p> <p>Context: Challenge of being much more efficient with material making. Outcome: Making object out of cardboard, sustainable materials.</p> <p>Skills:</p> <ul style="list-style-type: none"> • Use of strategic marking out of component on material. • Effective use of including all components on blanking plate of material before cutting. • Use of strategic cutting out – looking at line path numbers of cut – short straight compared to long wavy. • Comparison of materials. 	<p>University Challenge:</p> <p>Brunel Museum</p> <p>Context: Looking at tunnels & how they are made. Outcome – To build a tunnel to withstand external forces.</p> <p>Skills:</p> <ul style="list-style-type: none"> • Investigating tunnel structures. • Identifying & explaining the different forces that are acting on a tunnel. • Comparing different types of tunnels/bridges. • Test/prototype of a tunnel structure using Quick/Rough methods of making/materials. • Looking at different shales/profiles for tunnels. Circular – compared to Rectangular. Identifying strengths/weaknesses. • Final build of tunnel using robot materials structural integrity through making, cutting/measuring/finishing skills. 	<p>University Challenge:</p> <p>Extreme Re-Design</p> <p>Context: Taking certain objects or products from set selection to redesign.</p> <p>Skills:</p> <ul style="list-style-type: none"> • Investigating current function of a product looking into at its performance. • Measuring performance against existing specifications. • Identifying a particular function/attribute as a target to improve. • Sketching annotating a redesign of current component/object. • Making skills cutting, finishing to make redesigned object/component. 	<p>University Challenge:</p> <p>Community</p> <p>Context: Building/making a range of objects. Utilising skills learnt in Year 8. Produce 3-4 objects to sell using Digital engineering techniques.</p> <p>Skills:</p> <ul style="list-style-type: none"> • Going through design process – Researching existing solutions to design problem. • Brainstorm – Concept development/mind map for project. • Sketching/CAD work using CAD to make 3D Model. • Manual/Digital Engineering methods to make enhanced final product. • Use of CAD system to produce multiple

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		<p>vehicle using standard components and custom designed components</p> <ul style="list-style-type: none"> • Testing performance of vehicle against race criteria & evaluating against specification. 	<ul style="list-style-type: none"> • Packing of design for items – looking at reducing waste/area. • Use of iPhone/iPad packaging over years as a case study. 	<ul style="list-style-type: none"> • Looking at external case studies – cross rail tunnelling. 		<p>set/numbers of product.</p> <ul style="list-style-type: none"> • Investigating Mass Methods of Production Manufacturing.
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