

<u>Timeline</u>	<u>Topic</u>	<u>Key concepts and knowledge</u>	<u>Skills development</u>	<u>Rationale</u>
YEAR 11 Engineering				
Y11 - half term 1 and 2	<p>NEA R107 L01 Generate design proposals using a range of techniques</p> <p>R108 L01 Understand safe working practices used when making a prototype</p> <p>(each unit is worth 25% of the qualification)</p>	<p>R107-L01</p> <ul style="list-style-type: none"> • Hand drawn sketches in 2D and 3D • Rendering using shade tone and texture • Annotation and labelling to demonstrate key features • Use ICT to modify and enrich design proposals <p>R108- L02</p> <ul style="list-style-type: none"> • Interpreting a specification/design brief • Planning manufacture (gantt and flow charts • Risk assessment of manufacturing processes 	<p>Creativity Problem solving Communication skills Design communication skills Digital skills: Numeracy (dimensions and scale) Self-management – meeting deadlines and organisation Planning and sequencing Risk assessment</p>	<p>Builds on KS3 design technology which contains an introduction to engineering. Builds on unit year 10 engineering design (R105 and R106) and puts learning into context to deepen understanding of engineering design</p> <p>Application of engineering knowledge to a given design problem to design and prototype a product to meet user needs.</p>

<p>Y11 – half term 3 and 4</p>	<p>R107 L02 and L03– Produce engineering drawings and use CAD to produce them.</p> <p>R108 L02 and L03</p>	<p>R107 – L02 and L03</p> <ul style="list-style-type: none"> • CAD software operation • Third angle orthographic drawing to BS8888 • Scale, dimensions, materials, parts lists, notes • Assembly drawing • Isometric drawing • Exploded views <p>R108- L02 and L03</p> <ul style="list-style-type: none"> • Select appropriate materials to prototype the product • Use a range of tools and processes to shape materials • Use manufacturing techniques such and jigs and moulds • Create a follow a detailed production plan to manufacture the prototype • Safe working and following risk assessments for tools. Equipment, materials, chemicals, solvents 	<p>Mathematical skills (geometry, scale, dimensions) Digital skills Use of 2D CAD Working to British standards (BS8888 drawing standard) Visualisation Creativity Problem solving Self management – meeting deadlines and organisation Safe working practices in the workshop Sequencing Range of manufacturing processes appropriate to the prototype</p>	<p>Builds on KS3 design technology which contains an introduction to engineering. Builds on unit year 10 engineering design (R105 and R106) and puts learning into context to deepen understanding of engineering design</p> <p>Application of knowledge to produce a prototype to envisage the 3D product. Application of knowledge safely plan and manufacture a prototype from a design proposal. Create a range of engineering drawings using 2D and 3D techniques to BS8888</p>
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<p>Y11 – half term 5</p>	<p>R108 L04 Evaluate the success of a prototype</p>	<p>Complete any practical work from term 4.</p> <p>R108-L04</p> <ul style="list-style-type: none"> Recording stages of prototype manufacture including photographic evidence Evaluate prototype against design specification Identify potential design improvements (e.g. features, function, ergonomics, modelling techniques) Evaluate own performance (e.g. management of time and resources, planning /preparation, precision and accuracy, quality of outcome) 	<p>Creativity Problem solving Communication skills Creativity Numeracy (dimensions and scale) Self management – meeting deadlines and organisation Planning and sequencing Safe working practices Range of practical processes Reflection and evaluation</p>	<p>Builds on KS3 design technology which contains an introduction to engineering. Builds on unit year 10 engineering design (R105 and R106) and puts learning into context to deepen understanding of engineering design</p> <p>Reflecting on the manufacture of the prototype and the design, use critical analysis skills to evaluate performance of the product and own performance</p>
<p>Y11 – half term 5</p>	<p>Complete any NEA before deadline for external moderation Use any remaining time to prepare for external exam resit.</p>			