



Year	Intent	Autumn 1	Autumn 2	Spring 1	Spring 2	Summer 1	Summer 2
10	<p>Students will develop skills to be able to carry out independently Engineering tasks</p> <p>Engineering activities take place in many different contexts. Through these units, students will gain the knowledge and understanding to analyse engineered products in order to propose design solutions to meet requirements, to use skills developed to produce an engineered product, develop knowledge and understanding of engineering processes and material properties to solve problems.</p>	<p><b>Unit 1: Engineering Design and Communication</b></p> <p><b>LO1 know how engineered products meet requirements</b></p> <p>AC1.1 identify features that contribute to the primary function of engineered products Features • Of component parts • Electrical components • Mechanical components • Properties of component materials</p> <p>AC1.2 identify features of engineered products that meet requirements of a brief Requirements • Aesthetic • Environment (where used) • User/customer/client • Cost • Safety • Ergonomics • Size • Limits • Sustainability</p> <p>AC1.3 describe how engineered products function Function • How components interrelate</p> <p><b>LO2 be able to communicate design solutions</b></p>	<p><b>Unit 1: Engineering Design and Communication</b></p> <p><b>LO3 be able to propose design solutions</b></p> <p>AC3.1 develop creative ideas for engineered products Creative ideas • Identify features of other engineered products • Generate ideas • Explore implementation of ideas</p> <p>AC3.2 evaluate options for design solutions Evaluate • Constraints • Design requirements • Fit for purpose • Best fit • Operating performance • Reliability Evaluation techniques • Total Design Model • SWOT analysis • Advantages and disadvantages</p> <p>AC3.3 produce design specifications Design specifications • Clear communication • Demands/wishes • Using prepared templates • Using set criteria</p>	<p><b>Unit 2: Producing Engineering Products</b></p> <p><b>LO1 be able to interpret engineering information</b></p> <p>AC1.1 interpret engineering drawings Interpret • Symbols • Conventions • Information • Calculations Sources • Sketches • Drawings • Design specifications</p> <p>AC1.2 interpret engineering information Engineering information • Data charts • Data sheets • Job sheets • Specifications • Tolerances</p> <p><b>LO2 be able to plan engineering production</b></p> <p>AC2.1 identify resources required Resources • Materials • Equipment • Tools • Time</p> <p>AC2.2 sequence required activities Sequence • Prioritise activities • Which are needed before something else can be done •</p>	<p><b>Unit 2: Producing Engineering Products</b></p> <p><b>LO1 be able to interpret engineering information</b></p> <p>AC1.1 interpret engineering drawings Interpret • Symbols • Conventions • Information • Calculations Sources • Sketches • Drawings • Design specifications</p> <p>AC1.2 interpret engineering information Engineering information • Data charts • Data sheets • Job sheets • Specifications • Tolerances</p> <p><b>LO2 be able to plan engineering production</b></p> <p>AC2.1 identify resources required Resources • Materials • Equipment • Tools • Time</p> <p>AC2.2 sequence required activities Sequence • Prioritise activities • Which are needed before something else can be done • Within</p>	<p><b>Unit 3: Solving Engineering Problems</b></p> <p><b>LO1 understand effects of engineering achievements</b></p> <p>AC1.1 describe engineering developments Developments • Engineering o Structural o Mechanical o Electronic • Engineers involved o UK o International • Key outputs • Applications • Technologies • Materials</p> <p>AC1.2 explain effects of engineering achievements Effects • In the home • In industry • In society</p> <p>AC1.3 explain how environmental issues affect engineering applications Environmental issues • Use • Disposal • Recycling • Materials development • Engineering processes • Costs • Sustainability Applications •</p>	<p><b>Unit 3: Solving Engineering Problems</b></p> <p><b>LO3 know forming processes of engineering materials</b></p> <p>AC3.1 describe engineering processes Processes • Marking out • Cutting • Finishing • Preparing • Shaping • Drilling • Turning • Brazing • Joining o Permanent o Temporary fixings • Filing • Soldering</p> <p>AC3.2 describe applications of engineering processes Applications • For material removal • For shaping and manipulation • For joining and assembly • For heat and chemical treatment</p> <p><b>LO4 be able to solve engineering problems</b></p> <p>AC4.1 use mathematical techniques for solving engineering problems Mathematical techniques • Use of formulae o Ohms law o Efficiency • Areas and volumes</p>



		<p>AC2.1 draw engineering design solutions Draw (using British Standards) • 3 rd angle orthographic projection • Isometric</p> <ul style="list-style-type: none"> <li>• Dimensions and associated symbols <ul style="list-style-type: none"> <li>o Diameter, circumference, radius, height, depth, width</li> <li>• Conventions <ul style="list-style-type: none"> <li>o Title block</li> <li>o Dimension lines</li> <li>o Extension lines</li> <li>o Centre lines</li> <li>o Metric units of measurement</li> </ul> </li> </ul> </li> <li>• Hidden detail</li> <li>• Scale</li> </ul> <p>WJEC Level 1/2 Vocational Award in Engineering Specification 18 © WJEC CBAC Ltd.</p> <p>Learning outcomes</p> <p>Assessment criteria</p> <p>Content The learner will: The learner can:</p> <p>AC2.2 communicate design ideas</p> <ul style="list-style-type: none"> <li>• Communicate</li> <li>• Convey meaning</li> <li>• Using appropriate language</li> <li>• Logical structure</li> <li>• Presentation of information</li> <li>• Clarity of language and presentation</li> <li>• Use of appropriate terminology</li> <li>• Audiences (engineers, non-engineers)</li> <li>• Use of visual support, e.g. mock-ups, CAD</li> </ul>		<p>Within designated parameters</p> <ul style="list-style-type: none"> <li>• Consideration of resources available</li> <li>• Contingencies</li> </ul> <p><b>LO3 be able to use engineering equipment</b></p> <p>AC3.1 use tools in production of engineering products</p> <ul style="list-style-type: none"> <li>• Tools</li> <li>• Hand tools</li> <li>• Lathe tools</li> <li>• Turning tools</li> <li>• Portable power tools</li> <li>• Health and safety</li> <li>• Awareness and application of Health and Safety practices.</li> </ul> <p>Learning outcomes</p> <p>Assessment criteria</p> <p>Content The learner will: The learner can:</p> <p>AC3.2 use equipment in production of engineering products</p> <ul style="list-style-type: none"> <li>• Equipment</li> <li>• Centre lathes</li> <li>• Drilling machines</li> <li>• Milling machines</li> <li>• Portable power tool equipment</li> <li>• Multimeters</li> <li>• UV PCB light box</li> <li>• PCB tank</li> <li>• Health and safety</li> <li>• Awareness and application of Health and Safety practices</li> </ul> <p><b>LO4 be able to use engineering processes</b></p>	<p>designated parameters</p> <ul style="list-style-type: none"> <li>• Consideration of resources available</li> <li>• Contingencies</li> </ul> <p><b>LO3 be able to use engineering equipment</b></p> <p>AC3.1 use tools in production of engineering products</p> <ul style="list-style-type: none"> <li>• Tools</li> <li>• Hand tools</li> <li>• Lathe tools</li> <li>• Turning tools</li> <li>• Portable power tools</li> <li>• Health and safety</li> <li>• Awareness and application of Health and Safety practices.</li> </ul> <p>Learning outcomes</p> <p>Assessment criteria</p> <p>Content The learner will: The learner can:</p> <p>AC3.2 use equipment in production of engineering products</p> <ul style="list-style-type: 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communications, alarm</li> <li>• Properties</li> <li>• Tensile strength</li> <li>• Hardness</li> <li>• Toughness</li> <li>• Malleability</li> <li>• Ductility</li> <li>• Conductivity</li> <li>• Corrosive resistance</li> <li>• Environmental degradation</li> <li>• Elasticity</li> </ul> <p>AC2.2 explain how materials are tested for properties</p> <ul style="list-style-type: none"> <li>• Tests</li> <li>• Destructive tests</li> <li>• Non-destructive tests</li> <li>• Properties</li> </ul> <p>As in</p>	<p>of geometric shapes</p> <ul style="list-style-type: none"> <li>• Calculation</li> <li>• Measuring</li> <li>• Estimation</li> <li>• Mean</li> <li>• Units of measurement</li> <li>• Metric o Metres, millimetres</li> <li>• Pounds, pence</li> </ul> <p>AC4.2 convert between isometric sketches and 3rd angle orthographic projections</p> <ul style="list-style-type: none"> <li>• Convert</li> <li>• Section views</li> <li>• Construction lines</li> <li>• Centre lines</li> <li>• Hidden detail</li> <li>• Standard conventions</li> </ul> <p>AC4.3 analyse situations for engineering problems</p> <ul style="list-style-type: none"> <li>• Analyse</li> <li>• Filter information</li> <li>• Synthesise information</li> <li>• Identify salient points</li> <li>• Identify requirements</li> </ul> <p>AC4.4 propose solutions in response to engineering problems</p> <ul style="list-style-type: none"> <li>• Propose solutions</li> <li>• Communication</li> <li>• Logical structure</li> </ul>
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11	<p>Students will independently demonstrate skills during NEA. Unit 2/3 and prepare for exam in Unit 1.</p> <p>Engineering activities take place in many different contexts. Through these units, students will gain the knowledge and understanding to analyse engineered products in order to propose design solutions to meet requirements, to use skills developed to produce an engineered product, develop knowledge and understanding of engineering processes and material properties to solve problems.</p>	<p><b>Unit 2: Producing Engineering Products</b></p> <p>NEA</p>	<p><b>Unit 2: Producing Engineering Products</b></p> <p>NEA</p> <p><b>Unit 3: Solving Engineering Problems</b></p> <p>NEA</p>	<p><b>Unit 3: Solving Engineering Problems</b></p> <p>NEA</p>	<p><b>Revision for –</b></p> <p><b>Unit 1: Engineering Design and Communication</b></p>		