



**Level 1 / 2 Technical Award in Engineering**

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|  | <p><b>Intent</b></p> <p>In response to an externally set brief the learner will produce hand drafted and Computer-Aided Design (CAD) engineering drawings. The learners will produce a production plan for the manufacture of an engineered product which will demonstrate the application of skills and techniques to prepare, mark-out, modify, join and finish materials.</p>                             |  |   |
| <p><b>Year 11 Subject Focus (Unit 2)</b></p>   | <p><b>LO 1 &amp; 2: Engineering Drawings September-December</b></p>  | <p><b>LO3: Production planning techniques December to February</b></p>   | <p><b>LO4: Processing skills and techniques applied to materials for a manufacturing task September to May</b></p>  |
| <p><b>Knowledge</b><br/>(facts, information, concepts and key terminology)</p>   | <ul style="list-style-type: none"> <li>Freehand sketching</li> <li>Isometric drawing (CAD and freehand)</li> <li>Orthographic drawing (CAD and freehand)</li> <li>Rendering, Annotation, Dimensions, Scale, Unit of measurement, Tolerance, Title Block</li> </ul>   | <p>Risk assessments</p> <ul style="list-style-type: none"> <li>Hazards, Risks, Control measures.</li> </ul> <p>Production plan</p> <ul style="list-style-type: none"> <li>Tools and Equipment, H&amp;S, Quality Control, Flow chart symbols, Time plan</li> </ul>  | <p>Prepare materials.</p> <ul style="list-style-type: none"> <li>Cleaning, Marking out.</li> </ul> <p>Modifying shape and size.</p> <ul style="list-style-type: none"> <li>Cutting, Drilling, Bending, Casting, CAM</li> </ul> <p>Joining materials.</p> <ul style="list-style-type: none"> <li>Riveting, Gluing, Bolting, Soldering.</li> </ul> <p>Finishing materials.</p> <ul style="list-style-type: none"> <li>Filing, Sanding, Polishing, Applying a surface finish.</li> </ul> <p>Safe and correct use of tools, equipment and machines.</p> <p>Control Measures.</p> <ul style="list-style-type: none"> <li>Guards, Safety Zones, PPE, Extraction and Ventilation.</li> </ul> |
| <p><b>Understanding</b><br/>(ability to connect and synthesise knowledge within a context)</p>   | <p>How to apply specific drawing conventions and use layouts recognised within the engineering industry following British Standard BS 8888.</p> <p>The learner will be able to use CAD software knowledge to produce engineering drawings. The learner will be able to apply specific drawing conventions and use layouts recognised within the engineering industry following British Standard BS 8888.</p> | <p>The learner will be able to apply knowledge of planning the manufacturing process of an engineered product, for a manufacturing task. The learner will be able to plan the process, considering the individual stages of manufacture, to include health and safety factors.</p>   | <p>In this learning outcome the learner will demonstrate a variety of processing skills and manufacturing techniques: preparing, modifying, joining and finishing techniques applied to materials for a manufacturing task, whilst maintaining safe and correct use of tools, equipment and machines.</p>   |
| <p><b>Skills</b><br/>(successful application of knowledge and understanding to a specific task)</p>  | <p>The learner will be able to produce a variety of drawings using various visual communication methods.</p> <p>Convey knowledge of drawing conventions through work produced (scale, dimensions, orthographic conventions, tolerance).</p>  | <p>The learner will be able to produce a production plan of their proposed prototype which will include suitable information such as tools, processes, health and safety, quality control checks.</p> <p>The learner will demonstrate an awareness of health and safety by producing a risk assessment. They will apply their knowledge of various tools, machinery and their working environment.</p> | <p>The learner will demonstrate an awareness of health and safety by following their own risk assessment. They will apply their knowledge of various tools, machinery and their working environment.</p> <p>The learner will demonstrate competence using tools, equipment and processes suitable for their chosen task including modifying and finishing.</p> <p>The learner will select appropriate materials for their identified purpose.</p>   |
| <p><b>Formal Assessments</b><br/>(those done by all/vast majority of the cohort)</p>   | <p>Should learners need an opportunity to re-sit the formal exam they will be able to in the November of this year.</p> <p>Once the externally set brief has been delivered students will be assessed against the set assessment objectives in the summer term.</p>  |  | <p><b>Assessment Objectives:</b></p> <p>LO1: Produce hand drawn engineering drawings</p> <p>LO2: Produce Computer-Aided Design (CAD) engineering drawings</p> <p>LO3: Demonstrate production planning techniques</p> <p>LO4: Demonstrate processing skills and techniques applied to materials for a manufacturing task</p>   |
| <p><b>By the end of the year students on course for at least a Level 2 Pass in Engineering will...</b></p> <p>To achieve at least a level 2 pass in this qualification students will need to demonstrate the following knowledge and understanding. The learner will be able to identify tools, equipment and machines commonly associated with an engineering workshop. The learner should understand what each of the tools, pieces of equipment and machines are used for and be able to state which are the most appropriate to select to perform a series of techniques on various materials for marking out, modifying, joining and finishing. The learner should understand the safe and correct use of tools equipment and machines and be able to discuss the different training requirements and control measures. Through the delivery of this learning outcome, before any practical tasks be undertaken the learner should demonstrate an ability to maintain a safe working environment. This should include ensuring their own personal safety, the safety of those in the same work space and the correct usage and storage of tools and equipment in line with appropriate health and safety legislation. The learner should undertake all practical tasks whilst maintaining a safe working environment, selecting the correct personal protective equipment, undertaking full training before using any tools or equipment and in the full knowledge of the safety rules of the workshop.</p> |  |  |   |