

# Engineering Manufacture - Learning journey

Year 10

Term 1 – September to December			
Practical		Theory – R109	
<b>Metal working – starter task</b>	Workshop safety Understanding engineering drawings Measuring and marking metals Cutting, filing and drilling metals Quality control and tolerance	Learning Outcome 1. - Materials	1.1 Metals 1.2 Polymers 1.3 Ceramics 1.4 Composites 1.5 Smart materials 1.5 New and emerging materials 1.6 Material properties 1.7 Selection of materials
<b>Metal wall hook task</b>	Interpreting the engineering drawings Measuring and marking metals for cutting and drilling Cutting, filing and drilling metals Quality control and tolerance Preparation for brazing and brazing Preparation for surface finish and applying a finish		
Term 2 – January to April			
<b>CNC router task</b>	Develop 2D CAD skills and interpret CAD drawings Program CNC machine from CAD drawings Set up and operate CNC router	Learning Outcome 2. - Processes	2.1. Basic Engineering Processes 2.2. Machine Processes 2.3. Safe use of tools and equipment Mock exam preparation
<b>Phone holder project</b>	Interpreting the engineering drawings Measuring and marking metals for cutting at an angle Cutting and filing metals Introduction to the milling machine Quality control and tolerance		
Term 3 – May to July			
<b>Phone holder project</b>	Preparation for brazing and brazing Preparation for surface finish and applying a finish	Learning Outcome 3. - Computer Control	3.1 - CNC Machines 3.2 - Additive manufacturing and rapid prototyping processes
<b>CNC project</b>	Development of 2D CAD skills Introduction to the laser cutter Quality, accuracy and tolerances	Learning Outcome 4. - Modern Technology	4.0 - Modern Technology

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## Year 11

<b>Term 1 – September to December</b>			
<b>Practical</b>		<b>Theory</b>	
<b>NEA work</b>	Write a design brief and specification Generate a range of design ideas Produce a range of models based on design ideas Evaluate design ideas/models to select the final solution	3.3 Designing and Making Principles	3.3.5 Communication of Design Ideas 3.3.6 Prototype Development
<b>Term 2 – January to April</b>			
<b>NEA work</b>	Development of the final product Selection of materials Produce a manufacturing specification Test and evaluate the final product	3.3 Designing and Making Principles	3.3.7 Selection of Materials and Components 3.3.8 Tolerances 3.3.9 Material Management 3.3.10 Specialist Tools and Equipment
<b>Term 3 – May to June</b>			
<b>No practical work in this term</b>		Exam preparation	Exam preparation Practice exam questions Maths based questions