

Curriculum Coverage in the Department of Engineering

	Year 7	Year 8	Year 9	Year 10	Year 11
Autumn Term 1	<p>Topic: Introduction to the work shop. Desk Tidy Knowledge: Focus on the correct and safe use of tools and equipment. The design cycle, research, design, Make Evaluate. Understanding of materials. Correct and safe use of tools, equipment and machinery Skills: Use of CAD/CAM, Use of a range of tools and equipment within the workshop NC Links: Make, Design, Evaluate. Rotation of 10 weeks</p> <p>FOOD: Topic: Healthy Eating Knowledge: This unit of work focuses on introducing students into nutrition, healthy eating and the kitchen environment. The main purpose of this unit of work is to introduce students into how to work safely and correctly select and use a range of equipment and ingredients. Skills: Use of a range of equipment and utensils within the kitchen NC Links: understand and apply the principles of nutrition and health Rotation of 10 weeks</p>	<p>Topic: Pewter Casting. Knowledge: CAD/CAM process, Understanding key features of a design brief, selection of correct tools/equipment. Heat treatment process, health and safety. develop, manufacture, evaluation. Using inspiration from a range of different themed sources, for example. Animals, flowers, oriental, Celtic design, Rock music Skills: Use of CAD/CAM, working within tolerance, using engineering tools and equipment NC Links: Make, Evaluate 10 week rotation</p> <p>FOOD: Topic: World Foods Knowledge Students will investigate foods from around the world, they will look at the ever-growing market of ready meals. They will look at the packaging and the nutritional information requirements that must be provided on the packaging for the customer to be able to make an informed choice. Skills: Knife skills, preparation, finishing skills, cooking temperature control. NC Links: cook a repertoire of predominantly savoury dishes so that they are able to feed themselves and others a healthy and varied diet 10 week rotation</p>	<p>Topic: Desk top clock Knowledge: Understand the basic principles of isometric drawings and 3rd angle projection drawings. How and why the drawings are produced. Industry standard techniques. How to combine different materials together. Skills: Use of 2D design, the centre lathe, the correct and safe use of the tools and equipment NC Links: Design, Make, Evaluate 10 Week rotation</p> <p>FOOD: Topic: Raising agent investigation. Knowledge: Understand the science behind raising agents, how they work, the different variety and how each raising agent will give different results. Be able to choose the most suitable agent for baking. Skills: baking skills, experiment, graph evaluation, measuring, weighing. NC Links: become competent in a range of cooking techniques, understand the source, seasonality and characteristics of a broad range of ingredients</p>	<p>Topic: Reverse Engineering Knowledge: Understanding electronic components. Manufacturing processes and techniques. How to analyse a product using ACCESS FM Skills: To be able to disassemble products and identify the components and their purpose. Make links between materials used and the processes in manufacture</p> <p>FOOD: Topic: Theory, research, planning. Knowledge: research different areas of core theory knowledge needed. This approach mirrors planning processes used within the food industry Skills: Applying the theory they have learnt into practical lessons. AOs: AQA Food preparation and nutrition Specification.</p>	<p>Topic: Interpreting information within working drawings Knowledge: the students will need to identify.</p> <ul style="list-style-type: none"> • Symbols • Conventions • Information • Calculations • Data charts • Data sheets • Job sheets • Specifications • Tolerances. <p>Students will need to identify the resources that they will need Skills: using the skills that they have previously learnt they will need to apply to the working drawing that they are given. Once they have identified the resources they need to plan the sequence of activities AOs: WJEC Engineering Level1/2 Specification. Unit 2 LO1, LO2, LO4</p> <p>FOOD: Topic: Introduction to NEA 1 Knowledge: Food science, research different areas of core theory knowledge needed. Practical application, evaluations Skills: Practical skills of using equipment and utensils. AOs: AQA Food preparation and nutrition Specification.</p>

<p style="text-align: center;">Cross Curricular Link</p>	<p>Maths: conversion of units working in millimetres, geometric shapes, symmetry, Weighing, (grams) division. English: how to write specification and evaluations.</p>	<p>Maths: angle, scale, dimensions. English: how to write specification and evaluations.</p>	<p>Maths: Angles, shapes, scale, dimensions. Weighing, measuring how to write specification and evaluations. Science: Experimentation</p>	<p>Maths: Dimensions, Shapes, weighing Science: Electronics. GCSE PE: food nutrition Health and social care:</p>	<p>Maths: Equations, calculations, data sheets.</p>
<p style="text-align: center;">Autumn Term 2</p>				<p>Topic: Engineering Design Knowledge: know how engineered products meet requirements. Be able to communicate design solutions. Creatively propose design solutions. Skills: Use of isometric drawing, use of CAD both 2D and 3D AOs: WJEC Engineering Level1/2 Specification. Unit 1 LO1, LO2, LO3. FOOD: Topic: Theory, research, planning. Knowledge: research different areas of core theory knowledge needed. This approach mirrors planning processes used within the food industry Skills: Applying the theory they have learnt into practical lessons. AOs: AQA Food preparation and nutrition Specification.</p>	<p>Topic: Producing Engineering Products. Knowledge: Students will need to use their knowledge of the different machinery and process needed to carry out the activities Skills: to be able to independently use the tools and machinery to make an engineered produced from the drawing and information that they have interpreted AOs: WJEC Engineering Level1/2 Specification. Unit 2 LO3, LO4 FOOD: Topic: NEA 1 Knowledge: Food science, research different areas of core theory knowledge needed. Practical application, evaluations Skills: Practical skills of using equipment and utensils. AOs: AQA Food preparation and nutrition Specification.</p>
<p style="text-align: center;">Cross Curricular Link</p>				<p>Maths: Dimensions, Shapes, weighing Science: Electronics. GCSE PE: food nutrition Health and social care:</p>	<p>Maths: Equations, calculations, data sheets.</p>
<p style="text-align: center;">Spring Term 1</p>				<p>Topic: Engineering Design Ideas Knowledge: To be able to identify key features of a design brief in order to produce a range design ideas using features of other engineered products.</p>	<p>Topic: Producing Engineering Products. Knowledge: Students will need to use their knowledge of the different machinery and process needed to carry out the activities</p>

				<p>Students will also build their knowledge of different engineering processes.</p> <p>Skills: Use of Isometric and CAD to respond creatively to a design brief.</p> <p>Engineering process</p> <ul style="list-style-type: none"> • Marking out • Cutting • Finishing • Preparing • Shaping • Drilling • Turning • Brazing • Joining <ul style="list-style-type: none"> • Permanent • Temporary fixings • Filing • Soldering <p>AOs: WJEC Engineering Level1/2 Specification. Unit 1 LO1, LO2, LO3</p> <p>FOOD: Topic: Theory, research, planning. Knowledge: research different areas of core theory knowledge needed. This approach mirrors planning processes used within the food industry Skills: Applying the theory they have learnt into practical lessons. AOs: AQA Food preparation and nutrition Specification.</p>	<p>Skills: to be able to independently use the tools and machinery to make an engineered produced from the drawing and information that they have interpreted</p> <p>Engineering process</p> <ul style="list-style-type: none"> • Marking out • Cutting • Finishing • Preparing • Shaping • Drilling • Turning • Joining <ul style="list-style-type: none"> • Permanent • Temporary fixings • Filing <p>AOs: WJEC Engineering Level1/2 Specification. Unit 2 LO3, LO4</p> <p>FOOD: Topic: Introduction to NEA 2 Knowledge: Food preparation task: students will select appropriate dishes for the given briefs from exam board Skills: individual learnt skills to be put into practice AOs: AQA Food preparation and nutrition Specification.</p>
<p>Cross Curricular Link</p>				<p>Maths: Dimensions, scale, Tolerance, x,y,z axes Science: investigations English: "Evaluations"</p> <p>GCSE PE: food nutrition Health and social care:</p>	<p>Maths: Dimensions, scale, Tolerance, x,y,z axis Science: investigations English: "Evaluations"</p>

<p style="text-align: center;">Spring term 2</p>				<p>Topic: Wider Engineering focus Knowledge: Environmental issues, Engineering Achievements. Quality control, materials testing Skills: Students to work on testing materials for their properties. Focus on Destructive Tests, Non-Destructive, Rockwell Hardness Test. Students to demonstrate links within the industry with a focus on structural, mechanical and electrical AOs: WJEC Engineering Level1/2 Specification. Unit 3 L01.</p> <p>FOOD: Topic: Theory, research, planning. Knowledge: research different areas of core theory knowledge needed. This approach mirrors planning processes used within the food industry Skills: Applying the theory they have learnt into practical lessons. AOs: AQA Food preparation and nutrition Specification.</p>	<p>Topic: Producing Engineering Products. Knowledge: Students will need to use their knowledge of the different machinery and process needed to carry out the activities Skills: to be able to independently use the tools and machinery to make an engineered produced from the drawing and information that they have interpreted Engineering process</p> <ul style="list-style-type: none"> • Marking out • Cutting • Finishing • Preparing • Shaping • Drilling • Turning • Joining <ul style="list-style-type: none"> • Permanent • Temporary fixings • Filing <p>Students to prepare and focus on Exam revision</p> <p>AOs: WJEC Engineering Level1/2 Specification. Unit 2 L03, LO4</p> <p>FOOD: Topic: NEA 2 Knowledge: Food preparation task: students will select appropriate dishes for the given briefs from exam board Skills: individual learnt skills to be put into practice AOs: AQA Food preparation and nutrition Specification.</p>
<p style="text-align: center;">Cross Curricular Link</p>				<p>Maths: line graphs, mean Science: climate change. Electronics. GCSE PE: food nutrition</p>	<p>Maths: line graphs, mean, Dimensions, scale, Tolerance, x,y,z axis Science: climate change. Electronics.</p>

				Health and social care:	English: "Evaluations" Extended writing technique's
Summer Term 1				<p>Topic: Revision & Examinations</p> <p>Knowledge: Knowledge and understanding of materials, engineering process/ tools and equipment. Maths within engineering, effects of engineering achievements, environmental issues. Isometric and 3rd angle orthographic projection drawings.</p> <p>Skills: Use of isometric drawings, 3rd angle orthographic projection drawings. Product analysis. Examination technique to focus on extended writing. Mathematical skills</p> <p>AOs: WJEC Engineering Level1/2 Specification.</p> <p>FOOD:</p> <p>Topic: Theory, research, planning.</p> <p>Knowledge: research different areas of core theory knowledge needed. This approach mirrors planning processes used within the food industry</p> <p>Skills: Applying the theory they have learnt into practical lessons.</p> <p>AOs: AQA Food preparation and nutrition Specification.</p>	<p>Topic: Revision & Final Examinations</p> <p>Knowledge: Knowledge and understanding of materials, engineering process/ tools and equipment. Maths within engineering, effects of engineering achievements, environmental issues. Isometric and 3rd angle orthographic projection drawings.</p> <p>Skills: Use of isometric drawings, 3rd angle orthographic projection drawings. Product analysis. Examination technique to focus on extended writing. Mathematical skills</p> <p>AOs: WJEC Engineering Level1/2 Specification.</p> <p>FOOD:</p> <p>Topic: Revision & Final Examinations</p> <p>Knowledge: Knowledge of all learnt core skills, food nutrition and health, food science, food safety, food choice, food Provenance,</p> <p>Skills: Written skills, evaluation skills</p> <p>AOs: AQA Food preparation and nutrition Specification.</p>
Cross Curricular Link				<p>Maths: Dimensions, scale, GCSE PE: food nutrition</p> <p>Health and social care:</p>	<p>Maths: Range of data presentation and analysis skills</p>
Summer Term 2				<p>Topic: Manufacturing skills</p> <p>Knowledge: the students will need to identify.</p> <ul style="list-style-type: none"> • Symbols • Conventions 	

				<ul style="list-style-type: none"> • Information • Calculation • Job sheets • Tolerances. <p>Skills: students to identify the resources they need to plan the sequence of activities in order to manufacture a product.</p> <p>AOs: WJEC Engineering Level1/2 Specification</p> <p>FOOD: Topic: Theory, research, planning. Knowledge: research different areas of core theory knowledge needed. This approach mirrors planning processes used within the food industry Skills: Applying the theory they have learnt into practical lessons. AOs: AQA Food preparation and nutrition Specification.</p>	
<p>Cross Curricular Link</p>				<p>Maths: Dimensions, scale, GCSE PE: food nutrition Health and social care:</p>	