PONTEFRACT ACADEMIES TRUST

Creative Technology

		Autumn 1	Autumn 2	Spring 1	Spring 2	Summer 1	Summer 2
Year 7	**Topic**	**Food Technology**	**Food Technology**	**CAD / CAM**	**CAD / CAM**	**Resistant Materials**	**Resistant Materials**
	Enquiry Question	Introduction to food hygiene, health and safety, and basic cookery skills.	How to develop cookery skills in the kitchen?	Introduction to CAD / CAM. How to produce a CAD / CAM clock design in 2D Design?	How to manufacture a clock design using CAD/ CAM?	Introduction to workshop safety. How to design a wood based product?	How do we apply our skills in manufacturing a bespoke sweet dispenser?
	Key Knowledge and skills	• Introduction to health and safety within the kitchen. Students explore safety within the kitchen and good hygiene practises. • Students will develop compulsory health and hygiene procedures within the food room through consistent routines. • Students will begin to recap (Key stage 2) knowledge of food and begin to understand the importance of food safety and food hygiene and begin to recognise the difference between the two. • Students learn the bridge and claw cutting methods and are able to put these in to practise within practical cookery lessons. • Students observe and record their findings. • Students will gain knowledge of healthy balanced diets and begin to understand the different sections of the eat well plate and their benefits. • Develop understanding on key nutrients and their impact within the body. Recognise the importance of healthy eating and how cooking healthy foods promote good health. • Acquire and develop cooking skills through cooking a range of dishes • Understand the difference between baking and cooking. • Develop safe working practises within the kitchen through practical exercise. • Develop recognition of sensory analysis through applying sensory testing.	• Further develop skill set within the kitchen applying cookery skills to create skilled dishes. • Students learn further cooking methods, i.e.; using the hob and grill. • Ongoing development an ability to observe and record. • Acquire knowledge on food miles and how far food travels around the globe. • Students will develop knowledge of food miles, where food comes from and the effects this can have on the environment. They will develop skills in batch cooking and cooking family meals. Pupils will also develop skills in making alternative meals to prevent wastage. • Students will develop sensory analysis skills to enable them to describe using keywords and terminology. • Use kitchen tools, equipment and cooking resources to extend skills set.	• Introduction to health and safety within the classroom, students are introduced to the laser cutter and 2D Design. • Students develop knowledge of Computer aided design and computer aid manufacture. • Acquire knowledge and build on existing computing skills. • Students are provided with the theme and concept and explore ideas around the restraints of the theme. • Students generate arrange of initial design ideas inspired by emoji's and their design and appeal. • Students finalise ideas and generate a final idea which they will apply tonal work too and include detailed annotations describing their ideas. • Students understand the importance of design and manufacturing through selecting appropriate materials. • Students consider the environment when designing and making the tasks, • Students use tools and machinery safely.	• Students develop the manufacture of a clock using CAD and CAM? • Students will focus on the theme of emoji clocks. • Students continue to build and develop their knowledge of CAD and CAM and learn links to everyday items around the home / school environment. • Students use the workshop to manufacture their clocks. • Students assemble their clocks under supervision from staff. • Students carry out quality control checks and test for a quality working product. • Students evaluate their final products discussing the strengths and weaknesses of the final product.	• Introduction to health and safety within the workshop. Students develop knowledge of the workshop and machinery. • Students learn about safe working practises and rules and regulations in place to ensure student and staff safety. • Students explore the difference in woods focusing up Hardwood and Softwood. • Students explore measuring and marking out procedures and measure out their wood that will form their sweet dispenser. • Students explore sweet dispensers within the current market and consider CAFEQUE to analyse existing products. • Students explore ICT by creating a bespoke client profile based on who the sweet dispenser is intended for. • Students develop their understanding and recognition of working with a range of specialist tools and equipment. • Students confidently develop their skills using the sanding machines, pillar drill and G clamps. • Students understand the difference between hand tools and electrical tools. • Students develop their knowledge of resistant materials within the workshop.	• Students continue to develop their skills during the manufacture of the sweet dispenser. • Students explore wood finishing techniques to ensure accuracy (hand sanding and machine sanding • Students acquire knowledge of the design process and how this is an essential tool within the design industry. • Students undertake VIP assessments based upon their recent learning and can articulate their learning journeys. • Students learn about sustainable wood sources and how we can introduce the 6 R's within the design and manufacture of products making them econ friendly. • Students evaluate their final product discussing the strengths of the project and any further development points they may face.
	End Point	Students develop their understanding of health and safety within the kitchen. Students gain an insight in to the kitchen and learn about the importance of hygiene. Students learn the bridge and claw cutting methods and are able to apply these within future lessons as well as within the home environment. Cookery skills are developed as students cook a variety of sweet and savoury dishes reflecting a range of cooking methods. Pupils are able to apply their knowledge and understanding through classwork and VIP assessments.	Students continue to build upon their newly acquired skills within the kitchen. Students develop their interests of cookery by exploring further recipes. Students have a more sustainable and eco-friendly outlook on food miles and food waste. Ongoing VIP assessments to explore and embed formative and summative assessment.	Students develop their understanding of computer aided design and computer aided manufacture. Students design an emoji clock using 2D design and learn the fundamental skills of computer based skills. Pupils are able to learn a variety of skill based learning practices such as using the computer, creating designs on 2D design and using the laser cutter to complete the design task. Students develop knowledge of industrial processes and learn about professional finishes.	Students learn about assembly lines and have the opportunity to build their own clock. Students learn about plastics and their properties. Skill based learning develops as students build their skills within the classroom creating their bespoke clocks. Students justify their final designs and analyse their clocks using the ACCESSFM criteria discussing the areas of strength based on their final product.	Students develop their skill based learning within the workshop. Students build on their skills using arrange of specialist tools and equipment successfully. Skill based tasks include marking out and measuring accurately. Students develop their accuracy skills through measuring in mm. Pupils are able to apply their knowledge and understanding through classwork and VIP assessments.	Students complete the sweet dispenser working with a range of tools and equipment Students carry out quality control testing and accuracy checks throughout Skill based learning improves as students working confidently and independently Students evaluate their final sweet dispenser discussing the strengths and areas of improvement. Ongoing VIP assessments to explore and embed formative and summative assessment.
Year 8	**Topic**	**Food Technology**	**Food Technology**	**CAD / CAM**	**CAD / CAM**	**Resistant Materials**	**Resistant Materials**
	Enquiry Question	Which nutrients are essential within the body?	How can we adapt our existing cookery skills further?	How can we create a bespoke lamp using recycled materials?	How do LED's function and how do we solder correctly and safely?	How can we work with aluminium and timber to create a coat hook?	How can we use specialist machinery to present practical work with accuracy and care?
	Key Knowledge and skills	• Introduction to health and safety within the kitchen. Students explore safety within the kitchen and good hygiene practises. • Students will continue to develop compulsory health and hygiene procedures within the food room through consistent routines. • Students will learn about all the benefits of nutrients and their impact upon the body. • Students will be able to identify the needs of different groups of people from young children to adults. • Students follow health and safety practices within the kitchen environment.	• Further develop knowledge of cookery through learning new cookery skills. • Students learn how to use the hob with confidence and how to fry. • Ongoing development an ability to observe and record. • Gain an insight in to the effects on the body due to a poor diet and poor nutrient intake. • Understand the difference between a vegetarian and vegan and the reasons why people may chose this diet. • Acquire and develop cooking skills through cooking a range of dishes	• Introduction to the project. Students are made aware of the restraints of the brief. • Students explore the given concept and produce a bespoke theme board based on the theme they have chosen. • Students develop their ICT skills working on computers using new software programmes, • Students develop their knowledge of design and create their own bespoke design of the lamp they will create. • Students become familiar with sustainability and eco design and develop understanding of how they can produce a sustainable product.	• Students learn the key aspects of how an LED functions and identify every day products that feature the use of LED's. • Students construct their lamps with accuracy and care. • Students continue to use specialist tools to construct lamps. • Ongoing VIP testing to measure progression. • Final evaluations conducted to demonstrate pupil progress and performance within the project.	• Introduction to health and safety within the workshop. Students develop knowledge of the workshop and machinery and build upon their existing skillset. • Students learn about safe working practises and rules and regulations in place to ensure student and staff safety. • Students explore the different materials and their uses. • Students learn about the properties of metal. • Students begin the manufacturing task of creating a well measured and accurate coat hook. • Student's accuracy measure out and cut wood using specialist machinery.	• Students are introduced to the wet and dry papers to ensure accuracy and a high quality finish to their aluminium. • Students work with precision to polish their products. • Students use the pillar drill and screws to join the two materials together. • Students carry out accuracy and quality checks, to check the durability and overall finish of the coat hook. • Ongoing VIP assessments measure and aid student progression. • Final evaluations conducted to demonstrate pupil progress and performance within the project.

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		• Hygiene procedures followed during practical cookery lessons. • Ongoing student observations and record taking. • Students acquire new skills within the kitchen. • Students learn how to make complex dishes with further independence. • Ongoing health and safety	• Acquire information on sugars – how much sugar is in drinks and how drinks this impacts the body and teeth. • Where does Food come from, from farm to plate? • How food is sourced? • Pupils develop knowledge of egg farming and cook recipes that include the use of eggs. • Ongoing VIP assessments to measure student performance. • Final evaluation based upon students cooked dishes demonstrate student awareness throughout.	• Students develop their knowledge and skill set of marking out and measuring working within the restraints of the brief. • Student use hand tools to cut the wood in which will form the frame work of the lamp. • Ongoing VIP assessments to promote progress and student performance. • Students explore new techniques of design, i.e. the use of LED's and the skill of soldiering safely.		• Students develop their skills using the drill by counter sinking their blocks to show precision. • Students acquire knowledge on how working with metals, an introduction to new tools and equipment such as hand files, drills and the buffer. • Students experience new concepts undertaking the task in using new tools within the workshop.	
	End Point	Students will learn the importance of a healthy and balanced diet and develop their knowledge of healthy eating, Students will be able to plan, prepare and cook meals confidently within the kitchen. Students will develop their confidence through tasks. As practical skills develop students deepen their skill set and become more independent and able learners Students acquire further knowledge on the hygiene polices followed in the kitchen.	Students develop their knowledge of poor dietary needs and how the body reacts to port choices. Students learn about the effects of obesity and how a poor and unbalanced diet contributes to this, Students learn about the eggs and cook egg based dishes. Students are tested through ongoing VIP's designed to challenge and extend the learning of all.	Students develop their CAD / CAM skills through designing elements of their desk top lamp on 2D design. Students develop their knowledge of health and safety in the workshop and put new skills in to practise as they begin to make the wood lap joints. Students use specialist machinery to do so, students also create arms for their lamps and begin to construct the initial stages of their lamps. Students are introduced to sustainability and attach the recycled lampshade to their lamps.	Students develop their soldering skills through creating and building their own LED light source. Students attach the light source to their existing product and assemble the final stages. Student's quality control their lamps and evaluate the strengths and areas of improvement. Students gain feedback from peers on their performance. Students are tested through ongoing VIP's designed to challenge and extend the learning of all.	Students deepen their knowledge of health and safety within the workshop and put their new learning in to practise as they work through various practises within the workshop. Students continue to develop their interest within the workshop working with a variety of materials. Students learn how to countersink using the pillar drill and how to cut and curve their aluminium. Students learn about applying finishing techniques to woods and metals and use the buffer machine to buff their aluminium.	Students conduct quality control checks and final testing to their coat hooks. Students explore fastening techniques and create a bespoke swing tag to their coat hook for appeal and point of sale. Students are tested using the VIP's assessments to showcase and highlight their progress and performance within the workshop.
Year 9	**Topic**	**Food Technology**	**Food Technology**	**CAD / CAM**	**CAD / CAM**	**Resistant Materials**	**Resistant Materials**
	Enquiry Question	Food & Nutrition & Food Provenience	How Foods are rated using sensory testing & Food allergies and intolerances	How can we use historical design movements to inform our design thinking?	What is casting?	How can we ensure sustainability when designing and making products?	What are the 6 R's of sustainability and how can we maximise them through designing and making?

	Key Knowledge and skills	• Students gain knowledge of nutrition and the effects of diet on key groups, for example diet during teenage years to adulthood.
		• Students develop key knowledge about where our food comes from, using the concepts, 'from field to fork' and 'food miles'.
		• Working independently during food practical lessons.
		• Learn how to ensure Ingredients are weighed accurately.
		• Students can select correct equipment, utensils, and will use these competently.
			• Students learn how the process of testing their dishes and individual ingredients informs their ingredient selection, leading to a more successful final outcome.
			• Finished dishes are prepared to a high standard (store quality).
			• Time management is successful to complete products on time with areas cleared and clean.
			• The taste & texture of prepared final dishes is excellent.
			• Students develop knowledge and skills of sensory taste testing.
				• Understanding a design brief and client needs through mind mapping
				• Develop and communicate design ideas using rendered and annotated sketches.
				• Research using inspiration from existing products, art movements, and understand the limitations of the material and the process being used in order to complete a quality outcome.
				• Develop specifications to inform designs, using art deco and art nouveau design as inspiration.
					• Select from and use specialist tools, techniques, processes, equipment and machinery precisely, including computer-aided manufacture:
					  ◦ 2d Design V2
					  ◦ Laser Cutter
					  ◦ Screws / semi-permanent fixing
					  ◦ Marking
					  ◦ Measuring
					  ◦ Cutting
					  ◦ Filing
					  ◦ Sanding, wet and dry process, buffing and polishing
					• Select materials considering their properties: Alloys and manufactured Boards
					• Test, evaluate and refine their ideas and products against a specification, considering the views of intended users and other interested groups
						• Develop and communicate design ideas using annotated sketches.
						• Research using inspiration from design movements, existing designs and understand how research is used by designers to complete design generation.
						• Develop specifications to inform their designs, using the De Stijl design movement as inspiration.
							Select from and use specialist tools, techniques, processes, equipment and machinery precisely, including computer-aided manufacture:
							- 2d Design V2
							- Laser Cutter
							- Soldering
							- Screws / semi-permanent fixing
							- Marking
							- Measuring
							- Cutting
							- Filing
							- Sanding
							- Gluing / permanent fixing
							
							Select materials considering their properties:
							- Hard woods
							- Soft woods (pine)
							- Manufactured Boards
							
							Test, evaluate and refine their ideas and products against a specification, considering the views of intended users and other interested groups
							• Sustainability- Designers and manufacturers use the 6 R's when designing and making products.

	End Point	Students will be able to identify nutrients in all ingredients and explain functions. Students will be able to identify high, medium and low risk foods. Students will be able to identify at risk people and how food needs to be prepared for a variety of groups, i.e. pregnant women.	Students will understand how nutrients are lost through cooking and give examples of the best way to cook foods so less nutrients are lost. Understand heat transfer and give examples of how it is used through conduction, convection and radiation. Students will be able to list dishes that include commodities for example to encourage children to have calcium in their diet.	Students can effectively analyse the design brief and create a specification to design to that meets the points of the brief. Students can creatively design and develop a set of design solutions using the specification to guide them to meet the brief. Students develop their ability to research and investigate a given theme to inspire design developments.	Students are able to work confidently in the workshop and work independently with the tools and equipment to produce a high-quality product. Students understand how to work towards an end point with their product, working to achieve a highly polished surface finish to the pewter alloy. Students are able to test their product against their specifications and identity any improvements to their final product.	Explore the role of electronics in products manufactured around the world. Working safely using tools and machines, whilst supporting peers. Sustainability- Effects on the environment when making product and how designers need to consider renewable energy sources when designing and making products.	Students can work competently and independently in the workshop environment. They can select tools and equipment accurately and apply skills when using them. Machine use is developed and with support of teacher and technician quality products are produced. Circuit components are placed in the correct location and soldered well to ensure circuit functions as intended. Students can assemble their final product and finish it to a high standard.

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WJEC Level 1/2 Hospitality & Catering

Year 10

Topic	Unit 2 ~ The importance of Nutrition (2.1)	Menu Planning (2.2)	The Skills & Techniques of Preparation, cooking and presentation skills (2.3)	Evaluating Cooking Skills (2.4) Examination Brief	Menu Planning (2.3)	Skills, techniques of preparation, cooking and presentation of dishes (2.3)
Enquiry Question	How do nutrients consume impact upon general health & wellbeing?	Why do special deity needs need to be considered?	How does food cause illness and how can this risk to customers be reduced?	Unit 2 Brief ~ Hospitality & Catering in action ~ WJEC Examination brief Including the Practical assessment	What are the factors that affect menu planning?	How do the skills, techniques of preparation, cooking, and presentation of dishes develop complex skills?
Key Knowledge and skills	• Develop knowledge of nutrients • Acquire information on how the body needs nutrients for growth, repair and maintenance to function for good health • Develop an ability to observe and record. • Acquire and develop cooking skills through cooking a range of dishes • Understand the difference between macronutrients and micronutrients • Develop knowledge of vitamins and minerals • Understand the different life stages pf babies, toddlers, teenagers, adults and elderly. • Develop recognition between diet and health	• Further develop knowledge of special diets based on lifestyle, occupation, age and activity level. • Ongoing development an ability to observe and record. • Gain an insight in to medical conditions • Understand food allergies ad reactions • Acquire and develop cooking skills through cooking a range of dishes • Acquire information on Cardiovascular disorders ~ Coronary heart disease and strokes	• Identify sources of food borne illness and causes of food poisoning. • Develop knowledge of Food Intolerances • Develop awareness of the specific types of food poisoning. Know and be able to recognise the visible and non-visible symptoms of allergies/intolerance. • Acquire and develop cooking skills through cooking a range of dishes • Introduction of WJEC Hospitality & Catering brief	The Learner Assessment Brief is contextual. Students are asked to think and act as if they are an apprentice in a restaurant. • Student response to brief ~ exploring the brief, analysing the content and research • Use ICT to respond to the constraints of the brief. • Develop an ability to observe and record. • Acquire and develop cooking skills through cooking a range of dishes • Experiment with cookery skills in the kitchen to deepen knowledge and skill-based learning. • Develop skills and techniques of preparation, cooking and presentation of dishes through practical cookery.	Explore the factors that affect menu planning. • Develop knowledge of type of establishments, quality of foods & portion control & time of day. • Acquire more detailed knowledge on balanced diets and current nutritional advice ~ UK Government advice • Understand how environmental issues impact upon the planet focussing on ways in which less energy can be consumed, avoid waste, reduce water consumption and recycle and reuse. • Develop an ability to observe and record. • Know how to reduce, reuse and recycle to create a more sustainable environment • Demonstrate how seasonality affects foods at different times of the year.	• Explore ideas in response to starting point ~ gain insight to previous skill set. • Learn how to develop menus that take in to account the needs of the customer (Practical cookery sessions included) • Develop an understanding of preparation techniques which are basic, medium and complex • Understand how preparations skills are categorised by level of difficulty • Ongoing Development an ability to observe and record. • Acquire and develop technical skills through group / individual practical cookery tasks • Use kitchen tools, equipment and cooking resources to extend skills set
End Point	Students will learn the functions, sources and deficiencies of macro and micronutrients and what the specific nutritional needs are throughout the main life stages (toddlers, young children, teens, young adults, pregnant women and older adults). They will investigate how different cooking methods affect the nutritional value of foods and which are healthier (desirable) methods to use.	Students understand specific dietary needs and how recipes can be adapted to meet various different life styles (which ingredients need substituting and what they can be replaced with)	Students will have awareness of allergies, intolerance and food-borne illnesses. Students will feel ready for their practical exam.	Students will apply their hygiene and safety knowledge when practicing their dishes. In addition to this will use equipment safely and skilfully. Students should be able to show their knowledge and understanding of appropriate accompaniments for the chosen dishes as well as professional presentation techniques. Students will have decisions regarding their choice of final dish/es based on how successful cooking trials and final cooking assessment. Students respond to the given brief and scenario and complete their written assignments within an allocated time frame (12 hours)	Students will be able to describe how restaurants and hotels can run sustainably. For example, chefs could compost the peelings instead of disposing of them to reduce food waste and pubs can provide paper straws to reduce plastic waste etc. Students will discuss a range of factors that they have to consider when planning menus such as time of year, dietary requirements, age range etc. and how the dishes on the menu can be adapted to meet the needs of customers e.g. customers with a gluten or lactose intolerance etc.	Students will apply their hygiene and safety knowledge when practicing their dishes. In addition to this will use equipment safely and skilfully. Students should be able to show their knowledge and understanding dishes as well as professional presentation techniques.

Year 11

Topic	Unit 1 ~ Hospitality and catering provision (1.1)	Unit 2 ~ How hospitality and catering providers operate (1.2)	Health and Safety in Hospitality and Catering (1.3)	Food Safety in Hospitality & Catering (1.4)	Revision for Written Examination (40 % of Examination)	Revision for Written Examination (40 % of Examination)
Enquiry Question	What makes up the Hospitality and catering industry and how does it operate?	How are special dietary needs considered in the Hospitality & Catering sector?	Why is it important to follow Health & Safety within the Hospitality and catering provision?	Why is it important to follow Food Safety regulations within the Hospitality & Catering sector?	Revision for Exam	Revision for Exam
Key Knowledge and skills	• Gain knowledge and understanding of Hospitality and catering provider. • Develop knowledge of commercial and non-commercial establishments. • Understand the difference between table services and counter service. • Develop awareness of hotel star ratings (1 ~ 5) • Study restaurant standards and have awareness of • Michelin Star • AA Rosette Awards • The Good Food Guide Reviews • Develop an ability to observe and record. • Understand the different employment opportunities within the Hospitality and Catering industry. • Acquire knowledge of the kitchen brigade, knowing the various roles of the staffing structure. • Have an awareness of personal attributes within the Hospitality & Catering industry.	Develop an understanding of the operation of the front and back of house. • Explore the importance of meeting dietary needs in Hospitality and Catering • Recognise how the Hospitality and Catering provisions meet specific needs of customers (none dietary) • Know how a successful work flow operates and the importance of an efficient work flow. • Acquire and develop knowledge of cross contamination and ways in which food poisoning be avoided (Reducing risk factors) • Recognise the ways in which food waste can be reduced and how the UK is aiming to reduce waste within the Hospitality and Catering sector. • Explore equipment and materials including materials for cleaning, first aid and safety materials.	• Recognise the Food Safety documentation (Food safety regulations) • Know customer rights and inclusion and the consumer protection act 1987 and consumer rights act 2015. • Develop knowledge of the Equality act 2010. • Develop knowledge and understanding of Health & Safety in Hospitality & Catering and Food Safety. • Recognise the control of substances hazardous to health (COSHH) Regulations 2002 act • Recognise the symbols used to identify different types of substances and how they can harm people. • Understand the importance of Risk Assessments and the Health & Safety act. • Develop an awareness of the manual handing operations regulation 1992 act. • Know the regulations for personal protective equipment at work act (PPER) 1992 • Recognise the risks to Health & security and be able to identify risks and hazards. • Know the levels of risk (potential risks to employees, suppliers and customers)	• Know how foods can become contaminated • Recognise food related causes of ill health • Have an awareness of allergies and know the difference between an allergy and allergen • Understand the harmful & pathogenic • bacteria's and where these bacteria come from • Know the harmful chemicals in food such as cleaning fluids & bleach • Recognise the importance of Food labelling laws • Know the food safety regulations and food safety act • Know the symptoms of food poisoning • Know how cross contamination occurs and ways in which it should be avoided • Understand the food temperature danger zone and how temperature probes are used effectively • Know the responsibilities of the Environmental Health Officer (EHO) • Know the importance of inspecting businesses for food safety	Focus on Hospitality & Catering revision notes / books/ flash cards for written examination	Focus on Hospitality & Catering revision notes / books/ flash cards for written examination

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	End Point	Students will develop their awareness of the how the Hospitality & Catering industry operates successfully and how it continues to grow successfully. Students will learn about the different styles of service as well as understand the importance of personal attributes and the various job roles within the Hospitality and Catering industry.,	Students will deepen their understanding of how to meet the needs of various people within the Hospitality & Catering industry including special dietary requirements. Students will plan a meal and cook a meal for a client on a special diet and demonstrate how they would adapt a men. Students recognise the workflow of a kitchen and learn the various different roles and structure of the kitchen brigade.	Students will showcase their understanding of Health and Safety by writing a report based on food safety. Students will respond to exam style questions based on food safety as well as looking a risks within the Hospitality & Catering industry,	Students will know how foods can become contaminated and will look at the food laws developing their awareness. Students will look at case studies and be able to highlight their recognition of what should happen in given scenarios.	Students prepare of their forth coming WJEC Hospitality & Catering examination.	Students prepare of their forth coming WJEC Hospitality & Catering examination.

WJEC Level 1/2 Engineering

Topic	**1/** Product Engineering *Aluminium Bottle Opener*	**2/** Structural Engineering *Team Bridge Building Project*	**3/** Unit 1 - Manufacturing Engineering Products	**4/** Unit 1 - Manufacturing Engineering Products	**5/** Unit 1 - Manufacturing Engineering Products. Unit 3 - Solving Engineering problems Revision Exam technique.	**6/** Preparation for unit 2. Unit 2 – Designing Engineering Products.
Enquiry Question	Can you design and manufacture a new and unique aluminium bottle opener?	How do you construct a bridge as a team that will hold as much weight as possible before breaking?	Why is planning so important in the manufacture of engineered products?	Can you interpret the engineering drawings and work accurately to manufacture the individual component parts of the product?	What skills do you need to be able to evaluate your outcomes from the manufacturing processes?	What are the benefits of CAD and what skills are required to produce CAD models and engineering drawings?
Key Knowledge and skills	• To demonstrate accurate skilled working with hand tools to work with metal. • To be able to use different workshop machines proficiently and safely. • To follow a finishing process to achieve high quality outcome • Fully test and evaluate their engineering product.	• To explain and demonstrate how a structural design can support load. • Calculate load baring amounts. Safely test the structural integrity of their product.	• To be able to considerer all aspects of manufacture in order to plan precisely. • To demonstrate knowledge of processes that will be used to manufacture the particular component part. • Knowledge of safe working practices. Show how quality control is used to produce accurate products.	• To perform all manufacturing tasks according to plans • To evidence all making activities. • To demonstrate the use of quality control (QC) to produce accurate individual components to form a complete engineering product.	• To explain how the manufacturing progressed from start to finish, focussing on what went well and what did not, and to explain why. To be able to reflect on manufacturing activities and to understand how to improve.	• To explain how CAD is used in the engineering industry. • To explain what CAD is. To demonstrate how to produce basic orthographic engineered drawings by hand and digitally.
End Point	To demonstrate how to produce an engineered product. Candidates will show how to research, design, manufacture, test and evaluate an engineered product. Candidates will develop skills in manufacture and safe workshop practices.	To understand, demonstrate and explain how structures hold loads and can be improved by using engineering techniques. Candidates can demonstrate how products and materials can be tested to destruction and non-destruction.	Candidates can show in-depth planning of specific manufacturing activities interpreted from engineering drawing supplied as a brief from the exam board. These plans will then be used to produce engineering components to form parts of a complete product.	To show a complete set of manufacturing skills that demonstrates how to produce specific engineered components from a given brief. To show high levels of quality control and evidenced all tasks.	To understand and be able to explain how manufacturing tasks turned out in relation to the geometric dimensions of the engineering drawings. To understand how to make improvements.	Candidates can produce engineering drawing to BS standards either by hand in a basic fashion or digitally using CAD packages. Candidates can model in 3D using CAD packages.
Topic	**1/** Unit 2 - Designing Engineering Products	**2/** Unit 2 - Designing Engineering Products	**3/** Unit 3 - Solving Engineering problems	**4/** Unit 3 - Solving Engineering problems	**5/** Unit 3 - Solving Engineering problems	
Enquiry Question	How do you improve an existing design according to a brief?	How do you improve an existing design according to a brief?	How do engineering developments impact the design of the world around us?	What are the physical properties of engineering materials, needed for a range of engineered product?	N/A	N/A
Key Knowledge and skills	• To show how research has informed design concept ideas. • To demonstrate design development skills into a final design solution. • Show how CAD modelling developments have been completed through screenshot recordings.	• To demonstrate how their design solution meets the brief. • To transform their final solution into a fully working engineering drawing. To explain how the design could be produced for manufacture, focusing on materials and manufacturing processes.	• Know how engineering developments impact design. • How are products impacted by changes in: Materials, SMART technologies (voice activated, Bluetooth, Wi-Fi, Electronics/microelectronics • Know how Life Cycle Analysis including material development and costs • Understand material properties and uses • Understand the physical properties of materials.	• Understand DT (destructive) and NDT (non-destructive) testing • Processes to manufacture products • Understand the processes for the following; Material Removal, Shaping and manipulation Joining and assembly, Heat and chemical treatment • Work safely in a workshop • Use calculations to solve problems • Understand key details on technical drawings	N/A	N/A
End Point	To have answered the brief with; analysis, research, design solutions, CAD modelling, engineering drawings and to state which materials to use for manufacture and what processes would be suitable.	To have answered the brief with; analysis, research, design solutions, CAD modelling, engineering drawings and to state which materials to use for manufacture and what processes would be suitable.	Candidates understand how engineering developments impact design. They can state how products are impacted by changes in various engineering circumstances. Know about Life Cycle Analysis and understand material properties and uses.	Candidates are able to demonstrate knowledge of different testing methods. They can apply knowledge of manufacturing processes in an engineering context to answer a design problem. Candidates understand risk assessments and safe working practices in a workshop.	N/A	N/A