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Creative Technology

Design Technology ~ Year 7

Our curriculum offers pupils the opportunity to learn new skills and develop exciting ones across Key Stage 3,
Students work within a rotation system whereby projects last 2 school terms.
Each rotational area covers key skills, knowledge, skill based learning and practical elements of Design Technology.
The rotation areas are: Food Technology, CAD/ CAM & Resistant Materials ~ Students will experience each area and spend 2 terms within each domain exploring their emerging skill set producing practical projects within all three areas.

	Autumn 1	Autumn 2	Spring 1	Spring 2	Summer 1	Summer 2
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 concepts	**Year 7 -** At the start of year 7 pupils will complete a baseline test in order to understand the subjects they will be introduced to during their first year in Design and Technology. During year 7 students get to fully experience all aspects of DT whilst studying 3 material areas. Students will work on rotation basis whereby they will spend time in each domain developing and building their skills to provide basic life skills alongside specialist staff. All pupils study The National Curriculum on a rotation throughout the year within Creative Technology and find projects enjoyable and highly valuable due to their relevance and importance to everyday life. Students will learn how to confidently and safely use a range of equipment within Food Technology, Resistant Materials and CAD / CAM. Students explore a wide variety of topics that provide them with an understanding of the three areas. These are life skills which are essential for everyday life. Working in a practical environment, students will experience independent work and also group work, which will help develop their confidence and resilience. All 3 material areas rotate across two terms throughout the year. Food Technology: KS3 helps our pupils develop confidence in preparing and cooking a range of skilful dishes with consideration to health, safety and good hygiene practices, food choice and food provenance, Practical exercises develop knowledge needed to know how to store, prepare and cook a variety of sweet and savoury dishes safely and hygienically.					
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 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 • Develop safe working practises within the kitchen through practical exercise.	• 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 develop the manufacture of a clock using CAD and CAM? • • Students use tools and machinery safely. • 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. • Clocks are manufactured using CAD & CAM techniques (Laser Cutter) • 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 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 design their swing tag and label using CAD skills and 2D design (ICT Programme) • 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 develop their understanding and recognition of working with a	• 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.

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					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.	
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.
Prior Knowledge	Within Key stage 2 pupils will have studied some elements of Design Technology however the skill set of learners will be basic. It may be that students have not experienced a cookery kitchen or workshop environment. Students will have been experienced teacher led Design Technology and may not be familiar with independent tasks.					
Key Misconceptions	New and unfamiliar words associated with Food Technology. Students may think that Baking and Cooking are the same. Students may believe that Food Technology is very practical based therefore think they may not need to complete any written tasks. Students may believe that health and safety is the same as hygiene.	Students may not value the importance of cookery. Students may be unfamiliar with working under time restraints and may believe dishes do not require cooking /baking for the correct required time frames, Students may not value the healthy eating and may not see the importance or impact of unhealthy eating. Pupils may not consider confuse sensory characteristics (e.g.: confused taste / texture)	Students may think that CAD/ CAM is the same and not fully understand the differences. Students may have limited computer skills therefore designs may lack flare and originality – pupils may not be able to see areas of improvement within their design work. Students may think that CAD/ CAM is only carried out in large scale industrial practises and not value the importance or ease of use of CAD/ CAM.	Students may think that all plastics are the same and not recognise the properties of different materials Students may have not entirely followed the brief and clocks may not meet the demands of the theme. Students may not be able to identify area of development or how they could improve their final product when evaluating.	.Students may think that measuring using mm is the same as cm. Students may think that Resistant materials is the same as CAD/ CAM. Students may believe that no theory work is covered and that all lessons are practical based. Students may confuse machinery names and key terminology. Students may be unfamiliar with working under time restraints within the workshop. Students may not recognise the dangers of potential hazards within the workshop and may deem health and safety as unimportant. Students may believe that tools are the same i.e. Tenon Saw and Coping Saw, Pillar drill and hand drill.	
Core Key Words	• Health and Safety • Bridge & Claw Method • Hygiene • Danger Zone • Sanitizing • Cross Contamination • Scald / Burn • Bacteria • Pathogen • Heathy eating • Eat Well Guide • Digestive system • Weight loss • Weight gain	• Dietary needs • Sweet dishes • Savoury dishes • Sensory Analysis (Taste/ Texture/ Aroma & Appearance) • Healthy Eating • The Eat Well Guide • Food Miles • Sustainability • Food Waste	• CAD / CAM • Emoji Clock • Designs • Tools and Equipment • Workshop • Hazards • Dangers • Marking out • Measuring • Acrylic • Manufacture	• Sustainability • Plastic • Machinery • Hand machinery • Accuracy • Quality Finish • Standards of finish • Evaluation • Point of Sale High quality outcomes	• Health and Safety • Workshop • Hazards • Googles • Dangers • Sweet Dispenser • Marking out • Measuring • Tools and Equipment • Hard Wood • Soft Wood • Wood Sources	• Eco Friendly • Sustainability • 6 R's • Machinery • Hand machinery • Accuracy • Quality Finish • Standards of finish • High quality outcomes

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Design Technology ~ Year 8

Students continue to work within a rotation system whereby projects last 2 school terms.
Each rotational area covers key skills, knowledge, skill based learning and practical elements of Design Technology.
The rotation areas are: Food Technology, CAD/ CAM & Resistant Materials ~ Students will experience each area and spend 2 terms within each domain exploring their emerging skill set producing practical projects within all three areas.
Skill based learning continues to develop within year 8 as students explore more opportunities within the Design Technology environment.

	Autumn 1	Autumn 2	Spring 1	Spring 2	Summer 1	Summer 2
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 work with timber to create a passive amplifier?	How can we use specialist machinery to present practical work with accuracy and care?	Develop our practical skills in the design and manufacture of a bespoke Coat Hook?	Explore finishing techniques to the Coat Hook
Key concepts	**Year 8 -** Students complete a baseline assessment to retrieve knowledge and skills from Year 7. The material areas remain the same for year 8 and students rotate around the 3 areas of Food Technology, CAD & CAM & Resistant Materials. The skills which pupils will learn throughout their time in Design Technology will be essential for real life. Year 8 is a more challenging year in terms of the skills learnt and knowledge acquired. In Food Technology pupils will use a range of specialist equipment and learn how to make healthy food choices. Students will have a greater understanding of where food comes from and how it is processed within the food industry. During Resistant Materials pupils will work with a range of materials and conduct research, create designs and produce a Speaker within the workshop. Within CAD / CAM students design and create a bespoke coat hook exploring various materials including woods and metals. Students will learn how to confidently and safely use a range of equipment within Food Technology, Resistant Materials and CAD / CAM. These are life skills which are essential for everyday life. Working in a practical environment, students will experience independent work and also group work, which will help develop their confidence and resilience. All 3 material areas rotate across two terms throughout the year.					
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. • 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 safe	• Further develop knowledge of cookery through learning new cookery skills. • 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 • 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? • 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.	• 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 a passive speaker in which pupils manufacture. • Students become familiar with sustainability and eco design and develop understanding of how they can produce a sustainable product. • Pupils explore 2D design and create a bespoke speaker panel developing ICT skills and recognising how ICT is a vital process in the design of products (2 Hour timed task) • 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 speaker. • Ongoing VIP assessments to promote progress and student performance.	• Students learn the key aspects of how the product will function. • Students construct their speakers 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 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.	• 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 use ICT skills to create bespoke promotional items based upon the coat hook brief. • Pupils explore CAM and create a bespoke swing tag based upon the concept that will be featured on the final product. • 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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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 hand skills throughout the design and manufacture of the bespoke speaker. 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 joints, Students use specialist machinery to do so, students use a range of specialist machinery in the production of the speaker (including the pillar drill, sander and sanding belt) Students are introduced to sustainability and look at how plastic is recycled, pupils can use recycled materials on their final plastic panel.	Students develop their workshop skills building their own bespoke speaker. Students attach the bespoke front panels to their product and assemble the final stages. Student's quality control their speakers 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.
Prior Knowledge	In KS3 students will have already explored cookery and health and safety, students will have basic skills within the work shop from their prior learning in year 7. Year 7 projects have developed the knowledge, skills and practical elements exploring Technology and its principles. Student will have already worked through elements of the assessment objectives.					
Key Misconceptions	New and unfamiliar words associated with Food Technology. Cooking and baking are the same. Cooking methods are the same. Students may believe that they do to need to complete any written work – students may think the course is a practical course only and no theory is undertaken.	Students may not understand what foods are grown and which foods are reared. Students may be unfamiliar with food miles and that some foods travel in to the UK. Students may think some drinks do not contain high levels of sugar. Students may not recognise how poor diets affect the body internally and externally.	Students may not be familiar with different types of wood Students may think that recycling is not important and reducing landfill is not essential Students may confuse key term ology and not call equipment by its given name (Tenon saw – saw, marking out – drawing lines)	Students may think that LED's are shop bought and they cannot be home made Students may not understand the construction process and turn their wood joints the incorrect way when joining the arms Students may not drill holes in the correct areas therefore the lamp may not be successful in appearance	Students may not be familiar with working with aluminium and may think it is easily curved and modelled. Students may not understand the difference between stain and paint and use the incorrect terminology. Students may not recognise the importance of marking out. Students may not be familiar with joining techniques and think glue is used to hold materials together	
Core Key Words	• Food Safety • Hygiene • Health & Safety • Food provenance • Reared • Accessibility • Culture • Ethical beliefs • Fairtrade • Organic • Season • Origin	• Food miles • Food processing • Food production • Conduction • Convection • Radiation • Bacteria • Contaminant • High quality outcomes	• Soft Woods • Hard Woods • Metals • Aluminium • Workshop • Health & Safety • Workshop practices • Goggles • Accuracy • Precision • Marking out • Measuring out • Cutting out	• Recycling • Lampshade • Base • Arms • Wood Joints • Pillar Drill • Countersink • Sanding • Buffer • Buffer Soap • High quality outcomes	• Health and Safety • Tools and Equipment • Workshop • Hazards • Googles • LED light source • Dangers • Marking out • Measuring • Hard Wood • Soft Wood • Wood Sources •	• Eco Friendly • Sustainability • 6 R's • Machinery • Hand machinery • Accuracy • Quality Finish • Standards of finish • High quality outcomes

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Design Technology ~ Year 9

Year 9 Prepares students for Key Stage 4 by allowing opportunities to extend their learning participating in a variety of challenging projects that provide learners with the skills and knowledge that will assist learning within Year 10.
Students continue to work within a rotation system whereby projects last 2 school terms.
Each rotational area covers key skills, knowledge, skill based learning and practical elements of Design Technology.
The rotation areas are: Food Technology, CAD/ CAM & Resistant Materials ~ Students will experience each area and spend 2 terms within each domain exploring their emerging skill set producing practical projects within all three areas.

	Autumn 1	Autumn 2	Spring 1	Spring 2	Summer 1	Summer 2
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 concepts	**Year 9 –** Students further develop their skill-based learning through a continued rotation-based approach. Pupils build upon a range of practical skills and explore the study of Design Technology in detail. Pupils will learn a range of skills and techniques that further challenge them in order to meet the demands of options within the Creative Technology department within Key Stage 4, Students undertake more of an independent approach within each material area and start to adapt and develop designs and concepts for themselves. This will give students the opportunity to express their independence and ideas which will enable learners to become confident individuals. Students continue to explore the three material areas focussing upon Food Technology, CAD/ CAM and Resistant Materials – learners explore a more demanding curriculum in preparation for Key Stage 4.					
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. • Use ICT to design and make a bespoke key ring template (2 Hour Timed Session) • Use CAD / CAM to manufacture the template (1 Hour Timed Session)	• 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 pupil designs, using the De Stijl design movement as inspiration. • • Pupils use ICT to research existing designs and explore how The Art deco theme as evolved from the 1920's. • Students research materials using ICT and observe visual video links of the process of manufacture. • Students produce their own bespoke lamp design using ICT that is a final feature of the lamp shade once the lamp is fully assembled.	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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Prior Knowledge	In KS3 students will have already explored cookery and health and safety in years 7 and 8. KS3 projects have developed the knowledge, skills and practical elements exploring Food Technology and its principles. Student will have already worked through elements of the assessment objectives.			During year 7 and 8 students have completed research for design and making projects including the use of CAD and a variety of machinery and hand tools. This project builds on these prior units and develops knowledge of large-scale manufacturing processes, introducing hot metal forming as a means to produce high quality products		
Key Misconceptions	Some students will be unaware of how different foods should be stored specifically the difference between dried and cooked foods for example pasta/noodles. All vegetables must be chopped evenly (quality control).	Students will not be aware of how different processes remove bacteria. Conduction and convection quite similar ways of cooking, conduction used when frying through pan and convection uses air in an oven	Students will need to adapt the design brief and select their own target audience.	Students should be adding solutions to problems when designing to avoid mistakes when manufacturing.	Students will need to adapt the design brief and select their own target audience. Some students may fix on one type of renewable energy and not understand the disadvantages of Theme	Students should be able to identify the input for the circuit of a solar light, Light dependent Resistor explain how this works with a solar light covering the light.
Core Key Words	• Nutrition • Macronutrients • Micronutrients • Vitamins • Minerals • Reference intake • Portion • British • International • Cuisine	• Food Safety • Hygiene • Health & Safety • Food provenance • Reared • Accessibility • Culture • Ethical beliefs • Fairtrade • Organic • Season • Origin	• Specifications • Aesthetics • Customer • Cost • Environment • Safety • Function • Materials • Annotate • Creative • Design • CAD/ CAM • Print Screens	• Mould • Assembly • Blocks • Low temp casting • Acrylic • Accuracy • File, wet, dry papers, buffing and polishing. • Drilling.	• Annotate • Creative • Render • Design • Stereotype • User group • Target Audience • De Stijl Design	• Filing • Drilling • Assembly • Preparing • Wing nut • Screws • Bolts • Soldering • Upcycle • Wood joints • Permanent • Non-permanent • Adjustable

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WJEC Level 1/2 Hospitality & Catering ~ Year 10

	Autumn 1	Autumn 2	Spring 1	Spring 2	Summer 1	Summer 2
Topic	**Unit 1 ~ Food Safety in Hospitality and Catering** **1.4.1 – 1.4.4** **1.3.1 – 1.3.2**	**Unit 2 ~ The importance of Nutrition** **2.1** **2.2**	**Unit 2 ~ The importance of Nutrition** **2.3** **2.4** **The Skills & Techniques of Preparation, cooking and presentation skills (2.3)** **Unit 2 ~ NEA** **Assessment 60% Examination Brief**	**Unit 2 ~ The importance of Nutrition** **2.3** **2.4** **The Skills & Techniques of Preparation, cooking and presentation skills (2.3)** **Unit 2 ~ NEA** **Assessment 60% Examination Brief**	**Unit 1 ~ How Hospitality and Catering providers operate?** **1.2.1** **1.2.2** **1.2.3**	**Unit 1 ~ How Hospitality and Catering providers operate?** **1.2.1** **1.2.2** **1.2.3**
Enquiry Question	How Food can become contaminated? Why it is important that the Hospitality and Catering environment is safe at all times?	Why is Nutrition key to a healthy lifestyle?	Unit 2 Brief ~ Hospitality & Catering in action ~ WJEC Examination brief Including the Practical assessment	Unit 2 Brief ~ Hospitality & Catering in action ~ WJEC Examination brief Including the Practical assessment	Why is it important to be organised and ensure the workflow is effective?	How do Hospitality & Catering providers operate?
Key concepts	In Unit 2 students will apply their knowledge and understanding of why nutrition is important, and learn how to plan nutritious meals. Students will learn a range of practical cooking skills that they will need to prepare, cook and present dishes. Students will also learn how to review their own work effectively. The unit is assessed by a controlled assessment lasting approximately 12 hours and there are 120 marks available, it is worth 60 percent of the total qualification. An assignment brief will be provided by the examination board, which will include a scenario and details of the several tasks that students will need to complete.					
Key Knowledge and skills	• Gain and develop knowledge and understanding of food related causes of ill health, symptoms and sins of food induced ill health, preventative control measures of food induced ill health and the Environmental Health Officer (EHO) • • Acquire knowledge om food allergies and food intolerances and how reactions occur • • Develop knowledge of Allergy's, allergens and intolerances. • • Recognise harmful and pathogenic bacteria and know their sources. • • Develop knowledge of Food Intolerances • Develop awareness of the specific types of food poisoning. • Identify sources of food borne illness and causes of food poisoning. • Know the symptoms and signs of food induced ill health and the preventative control measures, • Know and be able to recognise the visible and non-visible symptoms of allergies/intolerance. • Understand chemicals in food and food labelling laws and food safety regulations. • Develop knowledge of the Environmental Health Officer including the responsibilities.	• Develop knowledge of how the body needs nutrients for growth, repair and maintenance to function for good health. • Acquire information on how the body needs nutrients for growth, repair and maintenance to function for good health • Acquire and develop cooking skills through cooking a range of dishes that include meat / fish handling, deep fat frying, pastry making coating and enrobing skills. • 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. • Develop knowledge of special diets and how lifestyle, occupation, age, activity level and medical conditions all impact upon good health. • Know how Religious beliefs impact food choices, • Know about Vegetarians, Vegans and Pescatarians, • Acquire and develop cooking skills through cooking a range of dishes developing learner independence and skill.	• Introduction to NEA ~ controlled assessment task • Students are guided to explore the NEA brief and given tasks. • The Learner Assessment Brief is contextual. Students are asked to think and act as if they are an apprentice commis chef in a given situation. • Students response to brief ~ exploring the brief, analysing the content and research using prior learning from HT 1 and HT 2. • Use ICT to respond to the constraints of the brief. • Further Explore ideas in response to starting point ~ gain insight to previous skill set. • Acquire and develop cooking skills through cooking a range of dishes – students will explore potential dish ideas and experiment with food styling. • Further develop knowledge of special diets based on lifestyle, occupation, and age and activity level. • Learn how to develop menus that take in to account the needs of the customer (Practical cookery sessions are included) • Develop an ability to observe findings and evaluate cookery techniques and performance.	• Continuation of controlled assessment task. • Students respond to brief ~ exploring the brief, analysing the content and research using prior learning from HT 1 and HT 2. • Use ICT to respond to the constraints of the brief. • Further Explore ideas in response to starting point ~ gain insight to previous skill set. • Acquire and develop cooking skills through cooking a range of dishes – students will explore potential dish ideas and experiment with food styling. • Further develop knowledge of special diets based on lifestyle, occupation, and age and activity level. • Learn how to develop menus that in to account the needs of the customer (Practical cookery sessions are included) • Develop an ability to observe findings and evaluate cookery techniques and performance. • 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.	Develop an understanding of the operation of front and back of house • Explore the workflow of the front of house • Understand the work flow of the catering kitchen and recognise equipment and materials. • Understand how documentation and administration requirements in a catering kitchen. • Recognise the dress code requirements of back of house. • Know how a successful work flow operates and the importance of an efficient work flow. • Acquire and develop knowledge of customer needs, rights and inclusion. • Develop knowledge on consumer protection act, consumer rights act, GDPR and The Equality Act. • Recognise the need for customer requirements and how life style plays an important factor. • Know how customer expectations should be met and how customer loyalty is valued. • Further develop knowledge of customer demographics	• Understand how meeting customer needs is important within the H&C industry? • • Develop knowledge on customer expectations • • Learn about trends, media influences and seasonality • • Learn about customer demographics of age, location, accessibility and money available. • • Develop knowledge of health and safety • • Learn the Health and Safety Act 1974, Manual Handling Operations • • Regulations 1992 and the PPER 1992 • • Know how RIDDOR is used by the Health and Safety Executive (HSE) • Develop knowledge of the HACCP system and food safety management systems. • • Learn about risk assessments and food safety training • Ongoing Development an ability to observe and record.

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	• Acquire knowledge on food laws and complaints • Identify COSHH Regulations and Health and Safety at Work Act 1974 • Develop knowledge on RIDDOR and risks to health and safety. • Understand The HACCP system and safety management system	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. • Know how to reduce, reuse and recycle to create a more sustainable environment Demonstrate how seasonality affects foods at different times of the year.				
End Point	Students will apply their knowledge and understanding of food related causes of ill health to answer a range of questions, PCD tasks and KMP. Students will develop their knowledge of the preventative control measures of food induced ill health. In addition to this will use food technology equipment safely and skilfully. Students should be able to show their knowledge and understanding dishes as well as they prepare their dishes with care and follow hygienic practises throughout.	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 due to allergies / intolerances) 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 will have awareness of allergies, intolerance and food-borne illnesses. Students will feel ready for their practical exam.	Students respond to the given brief and scenario and complete their written assignments within an allocated time frame (12 hours)	Students respond to the given brief and scenario and complete their written assignments within an allocated time frame (12 hours) Students will apply their hygiene and safety knowledge when creating 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 will showcase their understanding of Health and Safety. Students will respond to exam style questions based on work flow and complete questions to ensure knowledge is strong and well adapted. Students will be able to effectively describe and explain the work flow of the catering kitchen, know the difference of small and large scale catering equipment, understand the documentation and administration requirements in the kitchen and apply this knowledge within the classroom through a range of learning based tasks.	Students will showcase their understanding of customer expectations and work flow. Students will answer questions in class and record learning of topics within their class books. Students explore the importance of media and how advertising creates profit. Students will complete a series of PCD tasks, book work and KMP based work to adapt knowledge and understanding of topics.
Prior Knowledge	In KS3 students will have already explored cookery and health and safety in years 7, 8 and 9. KS3 projects have developed the knowledge, skills and practical elements exploring Food Technology and its principles. Student will have already worked through elements of the assessment objectives.			Students have been required to respond a teacher led project heavily influenced by the course content. Students undertake the WJEC Vocational award in H&C. During learning opportunities students will work independently to apply their knowledge, understanding and skill to menu planning and focus on developing their cooking skills and techniques to prepare themselves for year 11.		
Key Misconceptions	New and unfamiliar words associated with the Hospitality and Catering Industry. Skills and Qualifications are the same Students may believe that they do to need to complete any written work – students may think the course is a practical course only and no theory is undertaken.	Students may not understand the importance of all nutrients within the body. Students may be unfamiliar with how the body requires various nutrients for survival. Water may not be considered as a nutrient. Students may disagree medical conditions as a link to poor diet / poor health.	Students may not fully know the requirements of the brief. Students may think the brief is purely based on practical outcomes. Students may think that being an experienced cook is essential and that there is little time to expand their own personal cookery skills. Students may question their abilities in the kitchen. Students may confuse the skills of a commis chef with other chef related roles within the kitchen	Students may confuse cooking methods with techniques. Students may think not consider food presentation or styling. Students may not relate to the commis chef's abilities. Students may not be aware of the importance of food hygiene and health and safety within the kitchen. Students may believe that all skills and techniques explored throughout the cookery lessons are used in Hospitality and catering lessons and not further explore these at home.	Students may confuse social media with general media. Students may not realise the power that positive feedback has upon a successful business. Students may not understand how customer demographics impact the success of the food industry. Students may think that HACCP & RIDDOR are the same and not realise the difference within food safety.

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Core Key Words	• Skills • Protein • Fat • Carbohydrates • Vitamins • Minerals • Water • Energy Needs • Nutritional analysis • skeleton • observe • record	• Dietary needs • Amino Acid • High biological value protein • Low biologist protein • Fat soluble vitamins • Dietary Fibre • Immune system • Fortified cereals • High blood pressure	• Assignment brief • Research • Analysis • Decision making • Prepare, plan and present • Analysis • Evaluation	• Assignment brief • Prepare, plan and present • Analysis • Evaluation Blending • Beating • Mixing • Mashing • Melting • Proving • Shredding • Sieving • Grating • Hydrating • Juicing • Marinating • Tenderising • Creaming • Folding • Kneading • Measuring	• Loyalty scheme • Balanced diet • Budgeting skills • Confectionery • Components of dishes • Food miles • Organoleptic • Appetising • Contingency • Dovetailing • Sequencing	• Perishable foods • Non-perishable foods • Ambient temperature • Shelf life • Chilled temperature • Freezer temperature • Antibacterial spray • Condemned foods • Breach of legislation • Enforcement action

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WJEC Level 1/2 Hospitality & Catering ~ Year 11

	Autumn 1	Autumn 2	Spring 1	Spring 2	Summer 1	Summer 2
Topic	**Unit 1~ Hospitality and Catering Provision** **1.1.1**	**Unit 2 ~ How hospitality and catering providers operate** **1.2.** **1.2.2** **1.2.3**	**Health and Safety in Hospitality and Catering** **1.3.1** **1.3.2**	**Food Safety in Hospitality & Catering** **1.4.1** **1.4.2** **1.4.3** **1.4.4**	**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 ~ June examination
Key concepts	In Unit 1 students study the Hospitality and Catering industry. Students learn about the different types of providers in the hospitality and catering industry and how they operate. Students explore job roles that are available, find out what is like to work within the industry and qualifications needed within the sector. Students develop their knowledge of health and safety throughout. Learners are assessed by a written examination which contributes towards 40% of the qualification.					
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 • The exam will last 1 hour and 20 minutes. 80 marks are available of the exam and this is worth 40% of the total qualification. • The exam will include a mixture of short answers and extended response questions based around different hospitality and catering scenarios. • Students respond to exam style questions, prepare revision materials and complete past examination questions encouraging excellent examination performance.
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.
Prior Knowledge	In KS3 students will have already explored themes and art work linked to expectations for the 4 assessment objectives. Student have already worked through some elements of the WJEC Hospitality & Catering assessment objectives as they have studied Unit 2 in Year 10. Students will have already completed Unit 2 within Year 10 and focused on the following units of study: **Unit 2:** 2.1 ~ The importance of Nutrition 2.2 ~ Menu Planning 2.3 ~ The skills and techniques of preparation, cooking and presentation of dishes 2.4 Evaluating cooking skills			Throughout term 1 – 4 students respond to the various topics linked strongly to the written exam. Within this unit students are well prepared for the exam which will last 1 hour and 20 minutes. 80 marks are available of the exam and this is worth 40% of the total qualification. The exam will include a mixture of short answer and extended response questions based around different hospitality and catering scenarios. Students respond to exam style questions, prepare revision materials and complete past examination questions encouraging excellent examination performance.		

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Key Misconceptions	Students may confuse Residential & Non-residential providers with one another and confuse Commercial & Non-commercial providers. Students may not fully understand the various roles within the kitchen and not be familiar with the structure and brigade.	Students may not understand dietary needs and value their importance. Students may have never known an individual with an allergy therefore may oversee the importance of record keeping. Students may be unfamiliar with Natasha's Law.	Students may believe that risk assessments are not a requirement within the Hospitality and Catering industry. Students may not be familiar with the level of risks therefore may oversee these. Students may have never seen the hazardous symbols.		N/A	
Core Key Words	• Hospitality • Catering • Beverage • Communal • Room Service • Barracks • Mess • Boarders • Conference • Front of house • Kitchen brigade • Personal attributes • Salary • Wage	• Workflow • Stock Rotation • Stock • FIFO • Invoice • Dress Code • Toque • Equality • Discrimination • Lifestyle • Dietary Needs • Demographics • Disposable income •	• Risk Assessment • Health & Safety Policy • Personal Protective Equipment (PPE) • Health & Safety Executive (HSE) • Hazard Analysis (HACCP) • Environmental Health Officer (EHO) • Critical Control Points • Risk • Hazard • Control • Due diligence • Corrective action	• Allergy • Allergen • Food intolerance • Bacteria • Dehydration • Neutral foods • Spore • Toxin • Vulnerable groups • Farm to fork • Food safety Management system • Ingest • Cross contamination • Ready to eat foods • Temperature danger zone • Temperature probe • Perishable Foods • Non Perishable foods • Shelf life • Chilled temperature • Freezer temperature	• Revision for written examination	• Revision for written examination

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Year 10 – Year 1

WJEC Level 1/2 Engineering

	Autumn 1	Autumn 2	Spring 1	Spring 2	Summer 1	Summer 2
Topic	**Unit 3 - Engineering Sectors (x3 lessons)** **Unit 1- Manufacturing Engineering Products &** **Unit 3 – Solving Engineering Problems:** **Bottle Opener Project (x21 lessons)** 1.1 Understanding engineering drawings 1.2 Planning operations 1.3 Using engineering tools and equipment 1.4 Implementing engineering processes 3.1 Understanding the effects of engineering achievements 3.2 Understanding properties of engineering materials 3.3 Understanding methods of preparation, forming, joining and finishing of engineering materials 3.4 Solving engineering problems	**NEA Unit 1 – Manufacturing Engineering Products - 80 Marks, 40% of final qualification.** **Deadline Monday 13th April 2026.** 1.1 Understanding engineering drawings 1.2 Planning operations 1.3 Using engineering tools and equipment 1.4 Implementing engineering processes			**Unit 3 – Solving Engineering Problems:** **Bike Project (x12 lessons)** 3.1 Understanding the effects of engineering achievements 3.2 Understanding properties of engineering materials 3.3 Understanding methods of preparation, forming, joining and finishing of engineering materials 3.4 Solving engineering problems	**Unit 3 - Solving Engineering Problems:** **Phone Project (x12 lessons)** 3.1 Understanding the effects of engineering achievements 3.2 Understanding properties of engineering materials 3.3 Understanding methods of preparation, forming, joining and finishing of engineering materials 3.4 Solving engineering problems **Unit 2 – Designing Engineering products x15 lessons)** 2.1 Understanding function and meeting requirements 2.2 Proposing design solutions 2.3 Communicating an engineered design solution 2.4 Solving applied engineering problems
Enquiry Question	How does Engineering impact the world around us? Which materials would you use to create a functional bottle opener? Which tools would be used when manufacturing a metal bottle opener?	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?			How does the development of engineered products affect out modern lifestyles? How do manufacturers know which materials are best when developing products? How can the cost of products be calculated?	How have phones evolved over time? How does the development of smart technology improve the user experience? How do manufactures ensure they are sustainable, whilst ensuring customers keep returning?
Key concepts & Specification links	3.1 Understanding the effects of engineering achievements 1.1.1 interpreting engineering drawings 1.1.2 interpreting engineering information 1.1.3 Presenting engineering information. 1.2.1 identifying materials – physical properties 1.2.2 equipment selection 1.2.3 tool selection 1.2.4 planning and sequencing 1.2.5 Contingency planning. 1.3.1 using engineering tools 1.3.2 using engineering equipment 1.3.3 Health and safety. 1.4.1 apply a range of engineering processes 1.4.2 work with a range of materials 1.4.3 evaluate the quality of engineered products 1.4.4 Evaluate own practices and processes.	The unit is assessed by a controlled assessment lasting approximately 20 hours and there are 80 marks available, it is with 40 percent of the total qualification. As assignment brief will be provided by the examination board, which will include a scenario and details of the several tasks that students will need to complete. 1.1.1 interpreting engineering drawings 1.1.2 interpreting engineering information 1.1.3 Presenting engineering information. 1.2.1 identifying materials 1.2.2 equipment selection 1.2.3 tool selection 1.2.4 planning and sequencing 1.2.5 Contingency planning. 1.3.1 using engineering tools 1.3.2 using engineering equipment 1.3.3 Health and safety. 1.4.1 apply a range of engineering processes 1.4.2 work with a range of materials 1.4.3 evaluate the quality of engineered products 1.4.4 Evaluate own practices and processes.			3.1.1 History & evolution of bike design 3.1.2 Innovations of bicycle technology – pneumatic tyres, brakes & pedals 2.1.1 Key components 3.2.1 Material properties – working properties 3.3.1 Structural design – forming & joining methods (brazing, welding, jigs) 2.4.1 Understanding the application of Forces 3.2.2 Solving engineering problems – competitive cycle design 3.2.3 DT and NDT (testing) 2.4.1 Mechanisms and gears 2.4.1 Mathematical Techniques – Gear ratios 2.4.1 Mathematical techniques – Area, volume	3.1.1 Evolution of phones (design) 3.1.2 Impact of Smart Tech – smart watches, ring door bells, wireless, Bluetooth 3.1.2 Smart Materials 3.1.3 Planned obsolescence 3.1.3 Lifecycle analysis 2.2.1 Design brief, mechanical Designs & ideas 2.2.1/2.2.3 Design Ideas 2.2.2 Evaluation against brief **NEA Unit 2 Prep (5)** 2.1.1 Identifying primary features of engineered products 2.1.2 Product Analysis 2.2.1 Generating a range of engineered solutions

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Key Knowledge and skills	• To understand engineering drawings, and identify parts and/or components that will enable them to plan a final product • To be able to interpret key engineering information • To be able to present engineering information they have extracted from drawings • To be able to identify which materials are suitable for specific parts of an engineering product and present the information in planning documentation. • To demonstrate accurate skilled working with hand tools to work with metal. • To be able to use different workshop machines proficiently and safely. • To be able to identify and select the equipment that is needed for each stage of the production of a product: • Fully test and evaluate their engineering product.	• To understand engineering drawings, and identify parts and/or components that will enable them to plan a final product • To be able to interpret key engineering information • To be able to present engineering information they have extracted from drawings • To be able to identify which materials are suitable for specific parts of an engineering product and present the information in planning documentation. • To demonstrate accurate skilled working with hand tools to work with metal. • To be able to use different workshop machines proficiently and safely. • To be able to identify and select the equipment that is needed for each stage of the production of a product: • Fully test and evaluate their engineering product.	• To understand the mechanical developments and innovations of bike technology over time • To understand the design advancements of bicycles over time. • To revise knowledge of joining methods – mechanical joints, permanent and non-permanent fixtures • To understand the application of forces when designing and using a bike. • To understand the differences between DT and NDT and identify how they can be used. • To embed mathematical knowledge when considering gear ratios in relation to speed. • To apply mathematical techniques (area & volume) when considering material selection and pricing.	• To understand engineering drawings, and identify parts and/or components that will enable them to plan a final product • To be able to design and develop high-quality engineering drawings using sketches, CAD and the correct/appropriate engineering conventions. • To experience and gain understanding of how an engineered product is adapted and improved over time. • To understand how an engineering design process is used to develop or adapt products, and how these solutions help to meet the needs and demands of clients, users and environments. • To be familiar with developing problem-solving skills based on real problems and identified market needs. • To understand designer and manufacturer roles in the lifecycle of products. • To understand the economic reasons for planned obsolescence. • To understand the environmental impact of the resourcing, production, transporting and disposal stages of a products lifecycle.
End Point	To demonstrate how to produce a high-quality engineered product. Candidates will show how to research, design, manufacture, test and evaluate an engineered product. All skills and knowledge needed to enable students to complete Unit 1 NEA. Candidates will develop skills in manufacture and safe workshop practices.	Students have responded to the set NEA brief successfully by: - Applying their knowledge of engineering drawings when interpreting key information that will help them to plan their manufactured products. - Designing and implementing a robust production plan to support with the manufacture of the product. - Identifying and justifying appropriate use of materials, taking into consideration their physical and mechanical properties. - Critically analysing potential risks and hazards that may occur during the manufacturing processes. - Effectively implementing contingency planning to prevent identified risks. - Selecting appropriate manufacturing equipment and identifying appropriate tools suitable for use with a range of materials - Successfully using a range of engineering tools and equipment to apply a range of engineering processes, whist adhering to the appropriate H&S requirements. - Evaluating the quality of engineering outcomes, own practices and processes.	Candidate will have a comprehensive understanding properties of engineering materials. Candidates will be able to apply their understanding and knowledge of properties of materials to bike design and manufacture. Candidates will have a comprehensive understanding of methods of preparation, forming, joining and finishing of engineering materials. Candidates will apply knowledge and examples to bike design. Thorough understanding of these concepts will support the unit 3 written exam.	Candidates will have a comprehensive understanding of properties of materials, choices, processes needed and joining methods in relation to a mobile phone. Candidates will revise key concepts from the previous project to embed key knowledge needed for the Unit 3 written exam. Candidates will be well prepared for beginning the Unit 2 NEA next term.
Prior Knowledge	KS3 Practical lessons: H&S, PPE, workshop etiquette. Year 8 Coat Hook project – Technical drawing conventions	KS3 Practical lessons: H&S, PPE, workshop etiquette. Bottle opener project – designed to support NEA Unit 1 Year 8 Coat Hook project – Technical drawing conventions	KS3 lessons – materials, metals, timbers, polymers. Bottle opener project Unit 1 NEA – Manufacturing.	Students learning about 2D DESIGN V2 CAD software will allow them to build on those skills required for this unit. Students studied the design drawings in year 7 (emoji clock), year 8 (coat hook), and year 9 (casting and upcycled lamp).
Key Misconceptions	1. That aluminium has tensile strength. 2. The difference between ferrous and non-ferrous metals. 3. Symbols on engineering drawings (radius, diameter, countersinking)	1. Students may not fully know the requirements of the brief. 2. Students may think the brief is purely based on practical outcomes. 3. Students may question their abilities in the workshop.	1. Students often confuse hardness and toughness when discussing properties of materials, 2. How different joining methods produce variations in strength and increase surface areas.	1. Students do not often understand the reasons for planned obsolescence or the economic reasons of it.

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Core Key Words				
	• Design • Conventions • Engineering Drawing • Tolerance • Tensile • Ferrous • Non-Ferrous • Manufacture • Evaluate • Review • Reflect • Surface finish • Testing • Evaluation	• Accuracy • Tolerance • Quality Control • Feedback • Evaluate • Specification • Aluminium • Hacksaw • Rough • Scribe • Construction • Wasting • Gauge • Vernier	• Hardness • Ductility • Malleability • Corrosive • Resistance • Elasticity • Conductor • Brittleness • Toughness • Shear • Compression • Tension • Destructive Testing • Non-Destructive Testing	• Analysis • Proposing • Solutions • Components • Mechanical • Aesthetic • User • Cost • Safety • Limits • Dimensions • Metric • Scale • Features

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Year 11 – Year 2

WJEC Level 1/2 Engineering ~ Year 11

	Autumn 1 & 2	Autumn 2 Cont.	Spring 1	Spring 2 & Summer 1
Term/Topic	**NEA Unit 2 – Designing Engineering Products - 40 Marks, 20% of final qualification.** **Deadline Friday 21st November 2025** 2.1 Understanding function and meeting requirements 2.2 Proposing design solutions 2.3 Communicating an engineered design solution 2.4 Solving applied engineering problems	**Unit 3 - Solving Engineering problems. Revision for Mock Exam 40% of final qualification** **(6 Lessons)** 3.1 Understanding the effects of engineering achievements 3.2 Understanding properties of engineering materials 3.3 Understanding methods of preparation, forming, joining and finishing of engineering materials 3.4 Solving engineering problems	**Unit 3 - Solving Engineering problems: Rollercoaster Project (12 Lessons)** 3.1 Understanding the effects of engineering achievements 3.2 Understanding properties of engineering materials 3.3 Understanding methods of preparation, forming, joining and finishing of engineering materials 3.4 Solving engineering problems	**Unit 3 - Solving Engineering problems. Revision for FINAL Exam 40% of final qualification** **(30 Lessons)** 3.1 Understanding the effects of engineering achievements 3.2 Understanding properties of engineering materials 3.3 Understanding methods of preparation, forming, joining and finishing of engineering materials 3.4 Solving engineering problems
Enquiry Question	How an engineered product is is adapted and improved over time? How the engineering design process is is used to develop or adapt products? How will these solutions help to meet the needs and demands of clients, users and environments?	How do engineering achievements affect the world around us? Why are materials selected for different products? How are materials joined together and what impact does this have on a product? How can maths be used to solve engineering problems?	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?	How do engineering achievements affect the world around us? Why are materials selected for different products? How are materials joined together and what impact does this have on a product? How can maths be used to solve engineering problems?
Key concepts & Specification Links	2.1.1 primary features of the given engineered product 2.1.2 identifying features of other engineered products 2.1.3 function of the proposed solution 2.2.1 generating a range of engineered solutions 2.2.2 developing ideas through to a conclusion 2.2.3 Communicating design ideas. 2.3.1 producing an engineering specification 2.3.2 Drawing an engineering design solution that adheres to recognised standards. 2.4.1 using mathematical techniques for solving applied engineering problems 2.4.2 justifying suitable materials for use in the final engineered solution 2.4.3 Justifying suitable processes for manufacturing the final engineered solution.	3.1.1 describing engineering developments 3.1.2 explaining the effects of engineering achievements 3.1.3 Explaining how environmental issues affect engineering applications. 3.2.1 understanding materials, their properties, and their selections for specific purposes 3.2.2 describing properties required of materials for engineering products 3.2.3 Explaining how materials are tested for properties. 3.3.1 describing engineering processes 3.3.2 describing applications of engineering processes 3.3.3 Safe working practices. 3.4.1 using mathematical techniques for solving engineering problems 3.4.2 Understanding and producing engineering drawings.	3.1.2 Explaining the effects of engineering achievements and mechanical design, focusing on the development of theme park rides 3.2.1 Understanding materials, their properties, and their selection for specific purposes. 3.2.2 Describe properties required of materials for engineering products 3.3.2 Describing applications of engineering processes 3.4.1 Using mathematical techniques for solving engineering problems.	3.1.1 describing engineering developments 3.1.2 explaining the effects of engineering achievements 3.1.3 Explaining how environmental issues affect engineering applications. 3.2.1 understanding materials, their properties, and their selections for specific purposes 3.2.2 describing properties required of materials for engineering products 3.2.3 Explaining how materials are tested for properties. 3.3.1 describing engineering processes 3.3.2 describing applications of engineering processes 3.3.3 Safe working practices. 3.4.1 using mathematical techniques for solving engineering problems 3.4.2 Understanding and producing engineering drawings.
Key Knowledge and skills	• To show how research of similar engineered products has informed design concept ideas. • To demonstrate use of a range of drawing conventions to produce high quality design ideas • To demonstrate a range of development techniques to develop a final product that meets the design brief • To demonstrate practical skills when completing 3D/CAD drawings. To show how CAD modelling developments have been completed through screenshot recordings. • To demonstrate and fully justify how their design solution meets the brief. • To transform their final solution into a fully working engineering drawing using industry recognised drawing conventions. • To explain how the design could be produced for manufacture, considering a range of engineering manufacturing processes. • To identify and justify chosen materials, in line with the requirements of the brief.	• To understand how engineering design is impacted by a range of external considerations, such as: - the properties of materials, both traditional and smart developing materials, - Methods of manufacturing in both the traditional and new and emerging technologies. • To explore how engineering achievements have had an impact on modern day life at home, work and in society in general. • To develop understanding and skills to assist students in the solving of engineering problems.	• To understand and articulate how engineering developments impact design. Development of rollercoasters over 150 years. • To explore how evolution of design has been impacted by changes in: Materials, SMART technologies (voice activated, Bluetooth, Wi-Fi, Electronics/microelectronics • Know how Life Cycle Analysis including material development and costs – Justifying the expense of a new rollercoaster/theme park ride • To understand the material properties and physical properties of materials and explain their importance when considering rider safety.	• To understand how engineering design is impacted by a range of external considerations, such as: - the properties of materials, both traditional and smart developing materials, - Methods of manufacturing in both the traditional and new and emerging technologies. • To explore how engineering achievements have had an impact on modern day life at home, work and in society in general. • To develop understanding and skills to assist students in the solving of engineering problems.
End Point	To have answered the brief effectively having: - Completed an effective and detailed analysis, - Conducted research of similar engineered products, - Developed appropriate design solutions, in line with the brief, - Competed 3D/CAD modelling using a range of different methods, - Developed engineering drawings and to state which materials to use for manufacture and what processes would be suitable. Students will have experienced and gained understanding of how an engineered product is adapted and improved over time. They will understand how an engineering design process is used to develop and adapt products and how these solutions meet the needs and demands of clients, users and environments. Students will now be familiar with utilizing their problem-solving skills, based on real problems and identified market needs.	Students can confidently approach their mock exams with secure knowledge. Students can competently solve engineering problems, using a range of mathematical techniques. Students can present high quality engineering drawings in isometric, orthographic and exploded forms, using the correct engineering conventions Students can confidently and competently apply engineering knowledge to a range of theory-based questions.	Candidates understand how engineering developments impact design. They will be able to reference key changes in the design and material use in theme park ride design and justify why these changes were made. Candidates will have a comprehensive understanding of properties of materials and will be able to use knowledge to justify developments. Thorough understanding of these concepts will support the unit 3 written exam.	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. Thorough understanding of these concepts will support the unit 3 written exam.

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Creative Technology

Prior Knowledge	As part of ks3 technology the students have followed a design process throughout their projects. Unit 1 NEA - Understanding Engineering drawings Bottle opener project – Drawing convention & style (isometric, orthographic & exploded) Knowledge of materials from unit 1 guides choices.	KS3 Technology – Properties of materials KS4 – bottle opener project Unit 1 NEA – Working properties of materials Unit 2 NEA – Justifying suitable materials KS4 Phone project – Joining/forming methods KS4 Rollercoaster Project – Properties of materials KS3 & KKS4 Maths lessons – Area, volume	KS3 Technology – Properties of materials KS4 – bottle opener project Unit 1 NEA – Working properties of materials Unit 2 NEA – Justifying suitable materials KS4 Phone project – Joining/forming methods	KS3 Technology – Properties of materials KS4 – bottle opener project Unit 1 NEA – Working properties of materials Unit 2 NEA – Justifying suitable materials KS4 Phone project – Joining/forming methods KS4 Rollercoaster Project – Properties of materials KS3 & KKS4 Maths lessons – Area, volume
Key Misconceptions	Design solution sketching is supposed to be perfectly neat. That the design process is linear. Concepts can change during the development of a chosen idea. Form over function. Scaling of designs, CAD models need to be dimensioned accordingly. Materials choices are limited.	Waste removal for additional components when calculating area/volume. Confusion when applying mathematical techniques to solve engineering problems: - Estimating prices and production rates - Applying OHMs law - Calculating mechanical advantage in gears, levers, pulleys	Items/product are built to last a long time. Materials have to be made as well. Joining methods are used to fix materials together, not strengthen the shape/form.	Waste removal for additional components when calculating area/volume. Differences between SMART and modern materials Product safety as well as workshop safety are equally important. Making products safely in a manufacturing environment and making products safe to use are separate to one another.
Core Key Words	• Research • Analysis • Product features • Communicate • CAD • Properties • Manufacturing processes • Specification • Analysis • Proposing • Solutions • Components • Mechanical • Aesthetic • User • Cost • Safety • Limits • Dimensions • Metric • Scale • Features	• CAD • CAM • Sustainability • Composite • Thermoplastic • Thermosetting • Alloy • Properties • SMART • Modern • Processes • Materials • Mathematical • Engineering solutions • Engineering problems • Testing • Applications • Achievements • Developments • Cast Iron • Low Carbon Steel • High Carbon Steel Aluminium • Brass • Stainless Steel • High Speed Steel	• Hardness • Ductility • Malleability • Corrosive • Resistance • Elasticity • Conductor • Brittleness • Toughness • Shear • Compression • Tension • Destructive Testing • Non-Destructive Testing • Components • Mechanical • User • Cost • Safety • Limits • Dimensions • Scale • Constraints • Features • Reliability	• CAD • CAM • Sustainability • Composite • Thermoplastic • Thermosetting • Alloy • Properties • SMART • Modern • Processes • Materials • Mathematical • Engineering solutions • Engineering problems • Testing • Applications • Achievements • Developments • Cast Iron • Low Carbon Steel • High Carbon Steel Aluminium • Brass • Stainless Steel • High Speed Steel