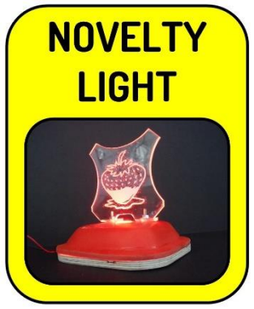
DESIGN & TECHNOLOGY – CURRICULUM OVERVIEW 2019/2020

PROJECT TITLE	EXAMPLE OUTCOME	PROJECT OVERVIEW	TOPICS	KNOWLEDGE & SKILLS	LESSON OUTLINES
YEAR 7 **Term 1:** **Cookie Cutter (Baseline assessment)**		Building on the theme of shaping plastics the students learn how to use the vacuum forming process to shape polystyrene sheet as they manufacture a cookie cutter. They work through the design process before manufacturing the wooden former used to shape the sheet plastic. Moving into the food technology area the students prepare the cookie dough before using their cutter to shape a batch of cookies.	-Understanding plastics -Working with plastics -Testing the product in Food Technology **Wider topics explored…** -Sustainability issues -Environmental effects -Recycling and re-using -User feedback	-The source of plastics -How plastics are processed -Categories of plastics -Types of plastics -Basic workshop safety -Working through the design process **<u>-The vacuum forming process</u>** -Former production -Profile cutting -Cutting and shaping MDF	1.Project introduction/demo – The vacuum forming process **(Cookie cutter market research H/W)** 2. Design ideas/development 3. Final design/template production 4. Former manufacture 5. Former Manufacture 6. Vacuum forming and profile cutting 7. Product testing and evaluation
YEAR 7 **Term 1:** **Cookie packaging**		This project focusses on card modelling using surface developments. The students learn how to work with a range of graphical materials as they design, develop and manufacture an appropriate package for their cookies.	-Packaging design -Nets and surface developments -Packaging manufacturing techniques **Wider topics explored…** -The environmental impact of packaging -Sustainable packaging design -Commercial packaging manufacture	**<u>-Basic Net/Surface development design</u>** -Net design using CAD/DTP -Card modelling	1.Project introduction – basic net theory/practical experimentation 2. Design ideas 3. Development/ Final design (CAD/2D Designer) 4. Packaging manufacture 5. Packaging manufacture **(Product testing, evaluation and modification H/W)**
YEAR 7 **Term 2:** **Battery powered novelty LED light**		This project focusses on introducing basic electrical components as the student's design, develop and manufacture a small battery powered novelty LED light. Whilst the base and circuit construction elements of the project are essentially focussed practical tasks there is an opportunity for the students to design the illuminated acrylic part of their product.	-Understanding circuits -Constructing circuits -Working with mixed materials -Using CAD/CAM **Wider topics explored…** -Energy efficiency -Product Life Cycle -Sustainability -Exploring target markets -User feedback	-Basic component identification -Basic electronic circuit design -Using CAD (2D Designer) -Using CAM (Laser cutting) -Forming and shaping plastics **<u>-Basic circuit construction/components (The LED, switch and cell)</u>** **<u>-Basic terminology (Voltage, Current and Resistance)</u>** -Cutting, shaping and finishing acrylic -Vacuum forming and assembly techniques	1.Project introduction: Basic circuit design/terminology **(Market research: applications of LEDs in existing products H/W)** 2. Design/development of novelty LED light 3. Development, final design and template production 4. Cutting and shaping acrylic components 5. Shaping and finishing acrylic components 6. Vacuum forming, trimming and finishing casing 7. Circuit construction and final product assembly 8. Product testing, evaluation and modification
YEAR 7 **Term 3:** **Helicopter launcher**		This project builds on the student's knowledge of basic circuits as they apply what they have learnt so far to construct a helicopter launcher toy. In addition, the students learn about ergonomics and anthropometrics as they design and develop a product which is comfortable to hold and easy to use. They will also	-Understanding the importance of ergonomics and anthropometrics in the design of inclusive products. -Exploring the types of movement and mechanisms -Understanding basic circuits -Working with mixed materials -Constructing circuits **Wider topics explored…** -Inclusive design -Considering the needs of the user -Exploring fashions and trends -Feedback from the user	-Types of basic mechanism -Motor circuit design -Circuit assembly skills	1. Project introduction 2. Researching ergonomics and anthropometrics 3. Design / development of ergonomic handle 4. Modelling and testing ergonomic handle designs 5. Final design/template production 6. Marking out and cutting handle design 7. Handle shaping and finishing 8. Circuit manufacture 9.Casing forming and launcher assembly 10. Launcher assembly and testing 11. Adding product graphics 12. Final testing and evaluation

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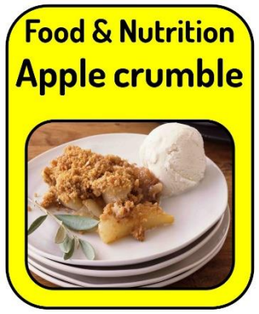
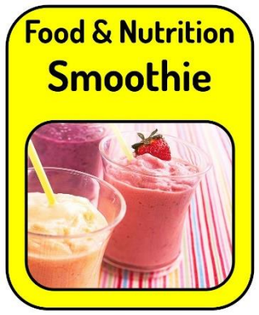
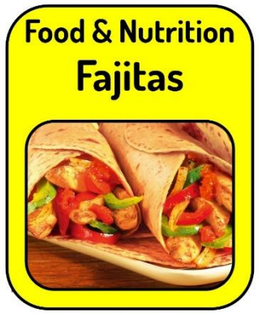
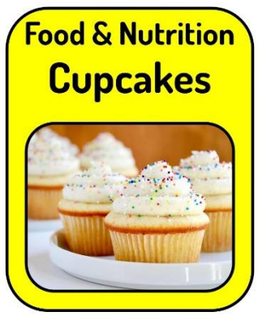
YEAR 7 **Food and Nutrition** **Term 1:**		This project students will use the rubbing in method to create their apple crumble. They watch a demonstration and answer questions around why we are making this dish. We talk about safety when using the vegetable knives and hygiene when talking about which chopping boards to use. Students will then create their product after seeing the demonstration, using their previous knowledge on how it should look when it's finished. Students then answer questions about the topic in their booklets showing their understanding and complete a WWW and an EBI to reflect on their making skills.	- Understanding how to use the rubbing in method - Using the correct chopping skills (bridge and claw) - Health and safety throughout practicals. - Referring back to the Eatwell Guide. **<u>Wider topic explored:</u>** - Discussing fruits that are in season, and food miles - Adapting the dish to meet suitability needs for consumers (coeliac)	- S.1. General Practical skills - S.2. Knife Skills - S.3. Preparing fruits - S.4. Use of the cooker - S.6. Cooking method	1. Demonstration and discussion about the project 2. Practical- create the dish 3. Evaluate the project and explain WWW and EBI
YEAR 7 **Food and Nutrition** **Term 2:**		Students create a yoghurt based berry smoothie. The students will watch a demonstration on creating smoothies, the nutritional values and health and safety aspects of using the blenders. Students will reflect on their previous practical's based on the correct chopping techniques, coloured boards, timings and cleaning their work stations.	- Correctly using the blender - Safety and techniques when chopping their fruits. - Health and safety throughout the practical. - Referring back to the eatwell guide **<u>Wider topic explored:</u>** - Talking over adaptations you can have. - Discussing allergies that some consumers may have and alternatives they can have, (vegan, lactose intolerant)	- S.1. General practical skills - S.2. Knife Skills - S.3. Preparing fruit and vegetables - S.5. Use of equipment	1. Demonstration and discussion about the project 2. Practical- create the dish 3. Evaluate the project and explain WWW and EBI
YEAR 7 **Food and Nutrition** **Term 3:**		This is one of the more complicated practicals the students complete. There are a lot of techniques that the students will show and health and safety has to be a prime focus. When cooking their chicken, the students will need to make sure they know what it should look like, ie colour and texture change. The students will be preparing their chicken breast, vegetables too, recapping on their knowledge from their other practical lessons.	- Knowing how to use the hob on the cooker - Showing their board and knife knowledge and showcasing safe chopping skills **<u>Wider topic explored:</u>** - Discussing flavours and different cultures. - Health benefits of the elements of the dish.	- S.1. General practical skills - S.2. Knife Skills - S.3. Preparing vegetables - S.4. Use of the cooker - S.6. Cooking methods - S.9 Tenderise and marinate	1. Demonstration and discussion about the project 2. Practical- create the dish 3. Evaluate the project and explain WWW and EBI
YEAR 7 **Food and Nutrition** **Term 3:**		Students create this dish to show their basic making skills. These are created in a batch and they need to be identical. Most of the students will have created these at home and are asked to design their cupcakes after watching a demonstration.	- Creating their cupcake mix in a safe manner - Making sure the mixtures are even - Knowing when the cupcakes are ready to come out of the oven - **<u>Wider topic explored:</u>** - Talking about relevant programs (Bake off) - Showing prior knowledge.	- S.1 General practical skills - S.4. Use of cooker - S.5. Use pf equipment - S.11. Raising agents	1. Demonstration and discussion about the project 2. Practical- create the dish 3. Evaluate the project and explain WWW and EBI

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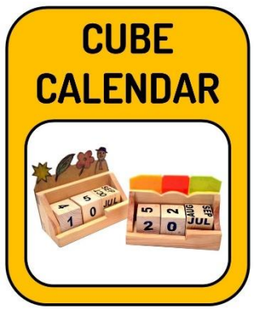
YEAR 8 **Term 1:** **Chocolate mould**		The students extend their understanding of vacuum forming as they apply the process to the production of a chocolate mould. They are required to design, develop and manufacture two different moulds which they then use to mould identical chocolates in the food technology area.	-Understanding how plastics are used -Understanding packaging design **Wider topics explored…** -The 6 R's -Reducing the impact of packaging -Designing a re-usable product -Considering the needs of the consumer	-Selection and application of plastics -Drawing surface developments -Working with paper and board -Moulding chocolate **-Former production for vacuum forming** **-The moulding of chocolate**	1.Project introduction: Former production and the vacuum forming process **(Research: Theme ideas mind-map H/W)** 2.Vacuum forming research/demo 3.Design/development of ideas 4.Final design, template production and marking out 5.Former production 6.Former production 7.Vacuum forming/trimming 8. Product evaluation
YEAR 8 **Term 1:** **Confectionary packaging with vacuum formed insert**		Linking with the previous project the students design, develop and manufacture a packaging to complete their confectionary product. They apply their knowledge of surface developments and card modelling techniques as they model a professional package for their moulded chocolates.	-Packaging design -Nets and surface developments -Packaging manufacturing techniques **Wider topics explored…** -The environmental impact of packaging -Sustainable packaging design -Commercial packaging manufacture	**-Working with surface developments** **-Card modelling techniques** -Vacuum forming -Card modelling -2D CAD and DTP where appropriate	1.Project introduction – experimentation with nets 2.Design/development 3. Final design (using CAD?) 4. Final design (using CAD?) 5. Packaging assembly – **(Final product testing, evaluation and modification H/W)**
YEAR 8 **Term 2:** **Decorative USB desk lamp**		This project focusses on the use of low voltage lighting technologies such as LEDs in place of traditional filament lamps. The must design, develop and manufacture a USB powered, decorative desk lamp using the high power LED provided. They will explore alternative ways of encasing the LED in order to produce a decorative lighting effect.	-Understanding circuit design and layout. -Graphical presentation techniques **Wider topics explored…** -Considering the social and cultural impact of a product -Reducing the environmental impact of products	-Understanding circuit symbols and layouts -Exploring themes **-Technological advancements: LEDs v Filament lamps** **-The applications of LEDs** -Using LEDs in circuits (Basic calculation of protective resistor value V=IR) -Circuit construction techniques	1.Project introduction: The application of LEDs (Demo: Using LEDs) **(Research: Investigating how LED technology is replacing filament lamps H/W)** 2. Lamp design - generation of design ideas 3. Development of ideas 4. Final design and template production 5. Planning assembly-LED circuit assembly 6. Cutting and shaping lamp components 7. Shaping and finishing lamp components 8. Lamp assembly and testing 9. Testing, evaluation and modification
YEAR 8 **Term 3:** **Cube calendar**		The students build on their wood working skills as they manufacture a cube calendar, marking out using templates before cutting a series of more complex wood joints.	-Understanding woods and timbers -Exploring wood joints and construction techniques -Working with woods and woodworking tools and equipment **Wider topics explored…** -Responsible wood sources. -Deforestation -Regulation and the FSC	-Exploring the source of woods -Categories of woods -Working with jigs and templates -Fabricating a wood-based product **-Types, properties and uses of common woods** **-Vinyl cutting and application** -Use of templates -Finger joint -Cutting and shaping softwood	1.Project introduction: Types, properties and applications of common woods **(Research: Application of different woods H/W)** 2. Marking out using templates and cutting to length 3. Cutting and shaping wood joints 4. Shaping, finishing and calendar frame assembly 5. Demo: vinyl cutting and application, cube manufacture 5. Final finishing and calendar assembly 6. Product testing, evaluation and modification

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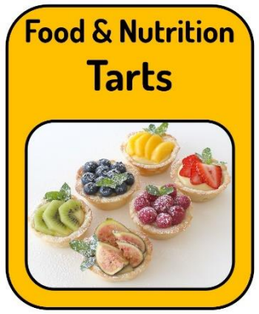
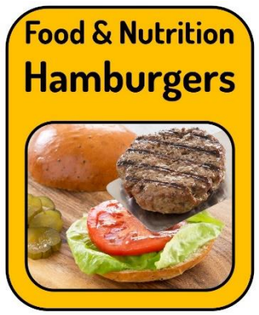
YEAR 8 **Food and Nutrition** **Term 1:**		This project will help the students learn the basics for creating pastry. They will need to know the correct texture the pastry needs to be before rolling it out to create their tart shapes. Students will fill these with fruits, or jam.	- Discussing the correct texture needed. - How to roll their pastry out and the thickness. **<u>Wider topics explored:</u>** - Discussing excess of foods - Why we need energy and what foods provide us with it	- S.1. General practical skills - S.3. Preparing fruit - S.4. Use of cooker - S.7. Prepare, combine and shape - S.10. Dough	1. Demonstration and discussion about the project 2. Practical- create the dish 3. Evaluate the project and explain WWW and EBI
YEAR 8 **Food and Nutrition** **Term 2:**		Students will watch a demonstration on how to create their burgers. They will construct the burger themselves using minces beef and onion. Students will showcase their knife skills when cutting the onions and use their knowledge on how to test to see if their food is cooked properly either through use of the thermometers or by sight.	- Discuss why we need to cook our burgers properly, why we can't have rare burgers? - Showcasing cooking skills and knife skills - Creating a dish from scratch. **<u>Wider topics explored:</u>** - Looking at where their food is coming from. - Nutritional information (proteins) - Rules for handling raw meat	- S.1. General practical skills - S.2. Knife skills -S.4. Use of cooker -S.6. Cooking methods - S.7. Prepare, combine and shape - S.9. Tenderise and marinate.	1. Demonstration and discussion about the project 2. Practical- create the dish 3. Evaluate the project and explain WWW and EBI
YEAR 8 **Food and Nutrition** **Term 3:**		When creating their cheesecake, the students will have previously watched a demonstration. They will know that this dish is not a baked dish and this is made to chill. Students will construct the biscuit base by crushing biscuits and adding melted butter. They will then add their cream cheese and sugar mixture on top to create their cheesecake. If students want to add additional toppings they can to make them more individual.	- Understanding why this dish needs to be chilled - Knowing the right consistentency for the biscuit base. **<u>Wider topics explored</u>** - Vitamins and minerals - Discussing the danger zone (temperatures) - Dietary guidelines that are recommended	- S.1. General practical skills - S.5. Use of blender	1. Demonstration and discussion about the project 2. Practical- create the dish 3. Evaluate the project and explain WWW and EBI
YEAR 8 **Food and Nutrition** **Term 3:**		Students are to create a roux sauce, students need to make sure they are paying attention to their sauces whilst they are cooking to make sure they don't burn the pans. They need to manage their sauce, and cooking their pasta at the same time. This shows how well the students can multitask and follow instructions.	- Creating a basic sauce that is a staple for a meal - Learning how the oven works - How we know when pasta is cooked **<u>Wider topics explored</u>** - Key temperatures when cooking foods - Knowing why we need carbohydrates in our diets.	-S.1. General Practical skills -S.4. Use of cooker -S.6. Cooking method -S.8. Sauce making	1. Demonstration and discussion about the project 2. Practical- create the dish 3. Evaluate the project and explain WWW and EBI

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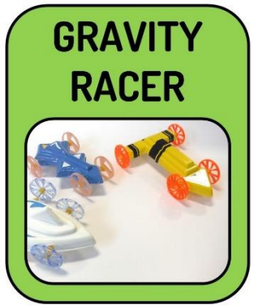
YEAR 9 **Term 1:** **L2 Engineering Design** **Pewter casting**		During this project the students learn about the casting process as they design, develop their own pewter cast product. The students get the opportunity to follow the whole process from the initial mould design and manufacture through to the finishing of the product they have cast. Time permitting the students are able to experience both manual and CNC mould production techniques.	-Casting and shaping metals **Wider topics explored…** -Exploring the origins of casting processes. -How is casting used in industry? -What products have been made using the casting process?	-Mould production -Exploring casting processes -Using the pewter casting process -Finishing metals -Mould production using CAD/CAM **-The gravity casting process/ mould design and manufacture/ finishing techniques.** Extending the learning: -How can CAD and CAM be used during mould production.	**Pewter casting project** 1.Researching (H&S homework) 2.Design & development 3.Planning 4.Product manufacture 5.Evaluation 6.End of project assessments **Pewter casting project (CAD/CAM version)** 1.Researching (Homework) 2.Design & development 3.Planning 4.Product manufacture 5.Evaluation 6.End of project assessments
YEAR 9 **Term 2:** **L2 Engineering Design** **Rechargeable /wind-up torch**		Although this project focusses on two specific areas of Design and Technology there are opportunities for teachers to explore many other related topics as an extension activity. The students learn about the different types of motion as they explore how mechanisms are used in a range of products and how energy can be generated and stored. They focus on the effect different gear ratios have on movement before using this concept in the manufacture of their own rechargeable wind up torch	-The types of mechanism -Exploring charging circuits and the components used. -Packaging design **Wider topics explored…** -Exploring the work of the famous inventor Trevor Bayliss and the wind-up radio he created for use in developing countries.	-How are mechanisms are used to convert motion? -How is electricity generated? -Designing a charging circuit **-The types of motion/Using mechanisms to create motion** **-Generating energy and the dynamo** Extending the learning: -The storage of energy (Capacitors/batteries) -The charging circuit and the diode	1.Project introduction: Situation, design brief and specifications 2.The types of motion (Rotary, Linear, reciprocating and oscillating) **(Research: application of basic mechanisms in products H/W)** 3.Generating electricity – motors as generators (demo) 4. Circuit assembly 5. Circuit assembly 6. Circuit assembly 7. Expanded PVC case manufacture 8. Expanded PVC case manufacture 9. Final torch assembly and testing 10. Product evaluation
YEAR 9 **Term 3:** **L2 Engineering Design** **Gravity racer**		The students work in small teams, competing to design, develop, manufacture and race a freewheeling, gravity powered vehicle. They explore the factors which affect the performance of their vehicles as they work with a range of materials, tools and processes to construct their racers.	-Forces and types of motion -Working from a design specification **Wider topics explored…** -From the fun soap box race to international competition between multinational companies. -Exploring the automotive engineering sector.	-Exploring factors which effect vehicle performance. -Comparing traditional and automated production methods. -Using hand manufacturing techniques. -Using CAD/CAM -Laser cutting -3D Printing -Vinyl cutting **-Vehicle and chassis design** **-Friction and aerodynamics and factors effecting performance** -Working with a wide range of materials to construct vehicle chassis -Vacuum forming an aerodynamic shell	1.Project introduction: Harnessing the power of gravity (Demo: Gravity racing) Research: Vehicle chassis design **(Research: Factors affecting the performance of vehicles H/W)** 2. Generation of ideas: Vehicle chassis and body shell 3. Development of ideas and presentation of final solution. 5. Modelling of ideas in card 6. Template production and marking out 7. Cutting and shaping chassis components 8. Competition – testing of racers 9. Evaluation

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YEAR 9 **Term 1:** **GCSE Design & Technology** **Design styles clock**		During this project the students explore a range of design movements before selecting an appropriate style/theme which they use to influence their own unique clock design. The students work through the design process as they develop their own designer clock. Whilst the manufacture of the clock builds on their existing knowledge of the vacuum forming process the students develop their skills as they learn how to use CAD and the vinyl cutting process to add graphics to their products.	-Exploring design styles -Applying CAD/CAM to product design. **Wider topics explored…** -Design styles and periods through history. -Exploring the work of famous designers.	-What are the key design styles? -Who are the key designers within each period? -What products did they design? -How does a design style influence product design?	**Design styles clock project** 1.Researching (H&S homework) 2.Design & development 3.Planning 4.Product manufacture 5.Evaluation 6.End of project assessments **Design styles clock project (CAD/CAM version)** 1.Researching (Homework) 2.Design & development 3.Planning 4.Product manufacture 5.Evaluation 6.End of project assessments
YEAR 9 **Term 2:** **GCSE Design & Technology** **Sweet dispenser**		This project builds on the student's knowledge of basic circuits as they learn how to design their own circuits. They will work through the design process to develop the style and shape of their own sweet dispenser before learning how to use basic electronic calculations to select the correct electronic components and connect them up effectively.	-Circuit design and construction **Wider topics explored…** -What do we mean by corporate identity and branding? -What impact does branding have on society?	-What techniques can be used to aid circuit design? -What is Ohms law? How is it used in circuit design? -How are electronic circuits manufactured and assembled?	**Novelty sweet dispenser project** 1.Researching (Homework) 2.Design & development 3.Planning 4.Product manufacture 4.Product manufacture (continued) 5.Product evaluation 6.End of project assessments
YEAR 9 **Term 3:** **GCSE Design & Technology** **Retro game project**		This project focusses on developing the student's graphical skills through the use of CAD. Although the students will need to draw on their existing modelling and making skills, the emphasis will be on designing and developing a product that will meet the needs of a specific target market. During the research stages of the project the students will learn about the importance of using anthropometric data to develop products which are comfortable and easy to use.	-Graphical communication -Ergonomics and anthropometrics **Wider topics explored…** -How have children's games evolved? -What impact have technological developments had on children as they grow up?	-What is inclusive design? -How is the study of ergonomics used to design inclusive products? -How is anthropometric data used during the design process? -How can graphical communication skills be used to enhance a product?	**Retro game project** 1.Researching 2.Design & development 3.Planning Solidworks (Game board layout) 1.Introduction to Solidworks 2.Basic techniques 3.Advanced techniques 4.Working drawings 5.3D rendering **Solidworks (Game board layout)** 4.Product manufacture 5.Product evaluation 6.End of project assessments

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YEAR 9 **GCSE Food and Nutrition** **Term 1:**	During year 9, students who have chosen to take GCSE food will create a variety of dishes. This is the year that students will gain there general knowledge about the subject, learning more of the theory related to the GSCE and putting some of these into practice through practical's.	Eatwell guide Using the cooker Personal, Food and Kitchen Hygiene Rules 4 C's in Safety and Hygiene What sort of eater are you? Knife skills Planning of swiss roll Short crust pastry How far has my Christmas dinner travelled	S.1. General practical skills S.2. Knife skills S.3. Preparing fruit and vegetables S.4. Use of Cooker S.5. Use of equipment S.6. Cooking methods S.7. Prepare, combine and shape S.8. Sauce Making S.9. Tenderise and Marinate S.10. Dough S.11. Raising agents S.12. Setting mixtures	Theory based around specific topics with practical's included to help students see and create dishes from real life situations. EG. Bread making, knife skills, swiss roll making, pastry, elements of a roast dinner.
YEAR 9 **GCSE Food and Nutrition** **Term 2:**	Students will carry on learning the basic knowledge needed for their GCSE through theory and practical lessons.	Protein Vegetarianism Vitamins Minerals Fats Functions of eggs Carbohydrates	S.1. General practical skills S.2. Knife skills S.3. Preparing fruit and vegetables S.4. Use of Cooker S.5. Use of equipment S.6. Cooking methods S.7. Prepare, combine and shape S.8. Sauce Making S.9. Tenderise and Marinate S.10. Dough S.11. Raising agents S.12. Setting mixtures	Theory based around specific topics with practical's included to help students see and create dishes from real life situations. EG. Protein based meal, Vegetarian dish, Unsaturated fat meal and dish containing carbohydrates. Science test about functions of eggs.
YEAR 9 **GCSE Food and Nutrition** **Term 3:**	Students will use this term to practice creating meals based on a brief. They will create a report explaining their choices. Students will then have to taste test or get other people to assess their foods and evaluate if their dishes met the criteria.	**<u>Nea2.</u>** Students will use this term to practice creating meals based on a brief. They will create a report explaining their choices. Students will then have to taste test or get other people to assess their foods and evaluate if their dishes met the criteria.	S.1. General practical skills S.2. Knife skills S.3. Preparing fruit and vegetables S.4. Use of Cooker S.5. Use of equipment S.6. Cooking methods S.7. Prepare, combine and shape S.8. Sauce Making S.9. Tenderise and Marinate S.10. Dough S.11. Raising agents S.12. Setting mixtures	Students are to plan and prepare an NEA 2. They will set out their research and plan meals according to the AQA guideline. Students will create 3 dishes in 3 hours and display them and explain how they meet the brief.

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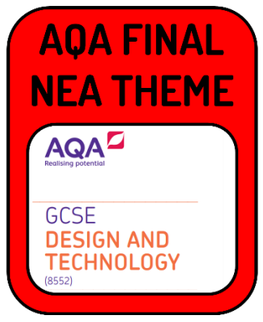
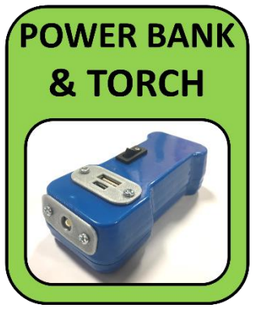
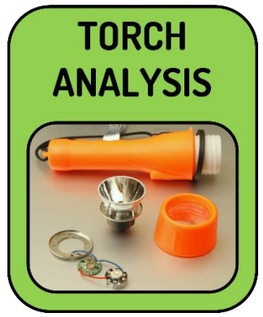
YEAR 10 **GCSE Design & Technology** **Term 1:** **Co-ordination game**		During this project the students work through the design process to develop an electronic co-ordination game. Although the students learn about traditional alarm latching circuits during the research stages of the project, they move on to explore the use of the modern microcontroller as a more versatile alternative.	-Exploring SMART and modern materials -Exploring compliant materials (paper and board) -Exploring control technology -What impact has technology had on the development of children? -How do toys help children develop? -What is a sustainable product?	-What are SMART and modern materials? -How are SMART and modern materials used in products? -Embedding control technology -From the traditional control circuit to the programmable device (BBC Microbit)
YEAR 10 **GCSE Design & Technology** **Term 2:** **Computer mouse project**		This project focusses on the design and development of ergonomic products. The students work through the design, development and modelling process before manufacturing their own working computer mouse. The project has been designed so that students will need to explore several of the exam theory topics as part of the research stages of their work.	-Designing inclusive products -Exploring modelling techniques -What impact has the microcontroller had on society? -Case study: From the first computer to the fully embedded technology of today's society.	-What is inclusive design? -How are ergonomics and anthropometrics used in the design of products? -How can modelling techniques be used in the development of products?
YEAR 10 **GCSE Design & Technology** **Term 3:** **NEA Themes released**		During the last term the NEA themes are released by the exam board. The students will make a start to their own projects by exploring the three themes they have been provided with before selecting one two focus their project on.	NEA: Section 1 – Exploring and investigating design possibilities. -Exploring a theme -Working from a design brief -Researching and investigating -Exploring design concepts -The NEA focusses of working from a design brief set by a real client. Students must respond to client feedback throughout their project to ensure their designs meet the needs of the end user.	-How do you explore a theme? -How do you write a design brief? -How are primary and secondary sources used in research? -What are the design possibilities?
YEAR 10 **GCSE Design & Technology** **1 Lesson per fortnight: Exam practice/theory activities**		**Exploring the theory topics…** During year 10 the students explored a range of materials and their working properties which gave them a sound understanding on which to build in year 11. Throughout year 11, one lesson a week is dedicated to learning new theory exam practice in the lead up to the final exam in June.	**Applying the learning…** Students gain a better understanding of the new knowledge they have been taught as they are encouraged to apply what they have learnt to solve problems in their independent projects.	

PROJECT TITLE	EXAMPLE OUTCOME	PROJECT OVERVIEW	TOPICS	KNOWLEDGE & SKILLS
YEAR 10 **L2 Engineering Design** **Term 1:** **Rechargeable power bank & torch project**		This project focusses on the design and development of ergonomic products. Students learn about the importance of using anthropometric data to ensure their own product is comfortable and easy to use. Students work through the design process as they develop their own rechargeable torch and power bank. There is an emphasis on the modelling and testing process to ensure their final outcome meets the needs of the consumer.	-Inclusive design: ergonomics and anthropometrics -Designing products using 3D CAD (Solidworks) **Wider topics explored…** -What is inclusive design? -How are common products designed to suit the needs of a range of users? -How has Computer Aided Design evolved? -How has it influenced product design?	-How does ergonomics influence product design? -How is anthropometric data used during the design process?
YEAR 10 **L2 Engineering Design** **Term 2:** **Torch analysis**		Whilst this unit of work links into the rechargeable torch and power bank project the research the student present will be submitted as evidence for the R106 unit. The students will carry out a series of investigations and detailed research tasks, analysing existing torches before drawing conclusions and using their findings to influence their own torch designs.	-Unit R106 – Product analysis **Wider topics explored…** -How are products manufactured in industry? -How has lighting technology evolved? -How do products impact on the environment? -What is the impact of legislation and quality standards?	-Torch material and component identification -Torch comparison-strengths and weaknesses -Torch disassembly-material and component identification -Investigating the manufacturing techniques used -Exploring the environmental impact of the torches Exploring how the torches compare to the 6 R's of sustainability -Considering the impact of legislation, quality and safety standards
YEAR 10 **L2 Engineering Design** **Term 3:** **Gadget tidy**		This project has been designed to develop the students 2D and 3D drawing skills. Whilst it includes the use of a wide range of materials, components and processes the emphasis is on the effective presentation of ideas using traditional drawing techniques and CAD.	-3D Drawing techniques -Metal machining processes **Wider topics explored…** -How has rapid prototyping been of benefit to society?	-2D and 3D drawing techniques. -Traditional and CAD methods of drawing. -Effective use of 2D and 3D CAM -Exploring metal machining techniques.
YEAR 10 **L2 Engineering Design** **1 Lesson per fortnight: Exam practice/theory activities**		**Applying the learning…** Students gain a better understanding of the new knowledge they have been taught in preparation for the R105 exam as they are encouraged to apply what they have learnt to solve problems in their independent projects. **Practical application of knowledge and skills…** The students have the opportunity to work independently to apply what they have learnt in real life situations as they work through the design process to solve problems.	-Understanding the design cycle and the relationship between design briefs and specifications. -Understanding the requirements of design specifications for the development of new products. **Wider topics explored…** -What makes good design? -Case study: Great design successes and design failures. -What impact has the evolution of products had on society?	-What is the design cycle? -What is a design brief? -How is a design brief used? -What is a specification? -How do the brief and specification relate? -What are the requirements of products?

PROJECT TITLE	PROJECT OVERVIEW	TOPICS	KNOWLEDGE & SKILLS
YEAR 10 **GCSE Food and Nutrition** **Term 1:**	Students learn about the different compartments that create their knowledge for their GCSE. They work through booklets that are based on the main areas of AQA Food and Nutrition. Students will then create dishes based on each section and show knowledge as to why they are relevant.	**Food safety-** Hygiene, high risk foods, personal hygiene, bacteria's, storing foods, HACCP, **Food Commodities-** fats and oils, fruit and vegetables, proteins, alternative proteins, preparing meat and poultry, eggs, carbohydrates, cereals, dairy. **Principles of nutrition-** Micro and macronutrients, sugar V starch, cholesterol, vitamins and minerals, water. **Diet and good health-** Eatwell guide, nutritional needs throughout life, diet related medical conditions, allergies and intolerances, religious diets and vegetarians and vegans.	S.1. General practical skills S.2. Knife skills S.3. Preparing fruit and vegetables S.4. Use of Cooker S.5. Use of equipment S.6. Cooking methods S.7. Prepare, combine and shape S.8. Sauce Making S.9. Tenderise and Marinate S.10. Dough S.11. Raising agents S.12. Setting mixtures
YEAR 10 **GCSE Food and Nutrition** **Term 2:**	Students learn about the different compartments that create their knowledge for their GCSE. They work through booklets that are based on the main areas of AQA Food and Nutrition. Students will then create dishes based on each section and show knowledge as to why they are relevant.	**Science of food-** Methods of cutting and preparing, combining and shaping, methods of cooking, cuts of meat, types of fish, denaturisation and coagulation, enzymic browning, science in bread making **Food Provence-** Food and the environment, where food comes from, sustainability, animal welfare, packaging, 3 R's Reduce Reuse and Recycle. **Food Production-** Dairy production, wheat milling, fortifying and modifying foods for better health.	S.1. General practical skills S.2. Knife skills S.3. Preparing fruit and vegetables S.4. Use of Cooker S.5. Use of equipment S.6. Cooking methods S.7. Prepare, combine and shape S.8. Sauce Making S.9. Tenderise and Marinate S.10. Dough S.11. Raising agents S.12. Setting mixtures
YEAR 10 **GCSE Food and Nutrition** **Term 3:**	Students will use this term to practice creating meals based on a brief. They will create a report explaining their choices. Students will then have to taste test or get other people to assess their foods and evaluate if their dishes met the criteria.	<u>NEA2</u>. Students will use this term to practice creating meals based on a brief. They will create a report explaining their choices. Students will then have to taste test or get other people to assess their foods and evaluate if their dishes met the criteria.	S.1. General practical skills S.2. Knife skills S.3. Preparing fruit and vegetables S.4. Use of Cooker S.5. Use of equipment S.6. Cooking methods S.7. Prepare, combine and shape S.8. Sauce Making S.9. Tenderise and Marinate S.10. Dough S.11. Raising agents S.12. Setting mixtures

PROJECT TITLE	PROJECT OVERVIEW	TOPICS	KNOWLEDGE & SKILLS
YEAR 11 **GCSE Design & Technology** **Term 1:**	**A focus on the NEA controlled assessment task…** The students make an immediate start on their projects following the release of the set task from the exam board at the end of year 10. They start year 11 having completed the identifying and exploring design possibilities section of their projects. During the first term in year 11 students complete the producing a design brief/specification and development sections of their project before moving onto the realising, analysing and evaluating sections in the second term.	**NEA: Controlled assessment task** -Identifying and investigating design possibilities -Producing a design brief and specification -Generating design ideas -Developing a design ideas **Core specialist principles…** 1.Key ideas in Design & Technology 2.An introduction to materials and systems 3.Properties and selection of materials 4.Woods, Metals and Polymers 5.Designing and making principles	**Exploring theory topics…** -What are the key ideas in Design & Technology? -What are the main materials and systems used in Design and Technology? -What are the properties of the materials? How do these properties influence the selection of materials for different applications? **Applying their skills…** Theory and coursework based lessons run side by side throughout term 1 and students have the opportunity to apply their new knowledge and skills in their own independent projects.
YEAR 11 **GCSE Design & Technology** **Term 2:**	**The final assessment…** The students must complete their NEA tasks by the February half term ready for final assessment.	**NEA: Controlled assessment task (completion and final assessment)** -Realising a design solution -Analysing and evaluating **Specialist technical principles…** -Exploring woods, metals and polymers	**Exploring theory topics…** -What are working properties of Woods, Metals and Polymers? -What are the key designing and making principles?
YEAR 11 **GCSE Design & Technology** **1 Lesson per fortnight: Exam practice/theory activities**	During year 10 the students explored a range of materials and their working properties which gave them a sound understanding on which to build in year 11. Throughout year 11, one lesson a week is dedicated to learning new theory exam practice in the lead up to the final exam in June.		

PROJECT TITLE	PROJECT OVERVIEW	TOPICS	KNOWLEDGE & SKILLS
YEAR 11 **L2 Engineering** **Term 1:** **Portable speaker project**	**Preparing for the final R105 written exam…** During the first half term one lesson a week will be dedicated to practice for the R105 external exam. Students will have the opportunity to recap on the topics they explored in year 10 and apply what they have learnt to exam questions in the lead up to the written exam in January. **Completing the R106 units ready for final assessment…** Students will have the opportunity to review and reflect on the work they completed in year 10 for the R106 product analysis unit and prepare their project work ready for final assessment. **Working from the design brief to design and develop the final product (R107)…** To balance the curriculum and vary the content of lessons the students will also focus on the design/development sections of their coursework project assignment as part of the R107 unit.	**R105 Exam preparation…** -The design cycle -Identification of design needs -The relationship between the design brief and specification -Requirements of a design specification -Wider influences on new products **R106 Product analysis and research (completion and final assessment for November)** **R107 Developing and presenting engineering designs**	**Exploring the design process…** -What is the design cycle? -What are the needs of the client/user? -How do the design brief and specification relate? -What are the requirements of the design specification? -How does the design process influence the development of products?
YEAR 11 **L2 Engineering** **Term 2:**	**The final assessment…** Students must complete their R107 and R108 units by February half term ready for final assessment ahead of the May assessment window.	**R105 external exam (January)** **R107 Developing and presenting engineering designs (continued)** **R108 3D Design realisation**	**Applying the new learning…** The students have the opportunity to apply what they have learnt in preparation for the R105 exam as they work through the design process to solve real life problems as part of the R107 section of their projects.
YEAR 11 **L2 Engineering** **Term 3:**	**An opportunity to re-sit the R105 final exam…** In the final term there will be an opportunity for the students who did not pass the R105 written exam to re-sit the paper in June.	**R108 3D Design realisation (continued)** **R105 resit opportunity (June)** **R107 and R108 final assessment June**	**Practical application of new knowledge and skills…** The students draw on the knowledge and skills they gained during the year 10 projects and learning about the design process as they manufacture their final products

PROJECT TITLE	PROJECT OVERVIEW	TOPICS	KNOWLEDGE & SKILLS
YEAR 11 **GCSE Food and Nutrition** **Term 1:**	Students are given their NEA1 Brief within the first few weeks of coming back to school. This is a report based scientific experiment based on a brief set by AQA.	**Task 1:** Food investigation (30 marks) Students' understanding of the working characteristics, functional and chemical properties of ingredients. Practical investigations are a compulsory element of this NEA task. **Task 1:** Written or electronic report (1,500–2,000 words) including photographic evidence of the practical investigation.	S.1. General practical skills S.2. Knife skills S.3. Preparing fruit and vegetables S.4. Use of Cooker S.5. Use of equipment S.6. Cooking methods S.7. Prepare, combine and shape S.8. Sauce Making S.9. Tenderise and Marinate S.10. Dough S.11. Raising agents S.12. Setting mixtures
YEAR 11 **GCSE Food and Nutrition** **Term 2:**	Students will plan, prepare and cook 3 dishes based on a brief. Students will use their previous knowledge and apply it to the brief. Students will	**Task 2:** Food preparation assessment (70 marks) Students' knowledge, skills and understanding in relation to the planning, preparation, cooking, presentation of food and application of nutrition related to the chosen task. Students will prepare, cook and present a final menu of three dishes within a single period of no more than three hours, planning in advance how this will be achieved. **Task 2:** Written or electronic portfolio including photographic evidence. Photographic evidence of the three final dishes must be included.	S.1. General practical skills S.2. Knife skills S.3. Preparing fruit and vegetables S.4. Use of Cooker S.5. Use of equipment S.6. Cooking methods S.7. Prepare, combine and shape S.8. Sauce Making S.9. Tenderise and Marinate S.10. Dough S.11. Raising agents S.12. Setting mixtures
YEAR 11 **GCSE Food and Nutrition** **Term 3:**	Revising topics that students need more guidance with.	**AQA Food preparation and nutrition exam.** Theoretical knowledge of food preparation and nutrition from Sections 1 to 5. Written exam: 1 hour 45 minutes 100 marks 50% of GCSE Multiple choice questions (20 marks) Five questions each with a number of sub questions (80 marks	Applying all their lessons on revising topics learnt in year 9 and 10 ready for their exam.

PROJECT TITLE	OVERVIEW	TOPICS	KNOWLEDGE & SKILLS
YEAR 12 **A Level Design & Technology:** **Term 1:**	**Exploring theory topics…** Throughout year 12, one lesson a week is devoted to learning new theory and exam practice. Designing and making principles is the focus of theory lessons as this will support the students in completing the independent projects that the students are completing as part of the controlled assessment. **Making headway on the independent coursework project…** The independent coursework project is the main focus during the first year of the course. Students use dedicated coursework based lessons to work through their own unique projects as part of the controlled assessment element of the course. **Laying the foundations for year 13…** By the end of year 12 the students will have a good understanding of the designing and making principles that they have explored in theory lessons. Their knowledge and understanding of these key areas will have been further improved as they have applied what they have learnt to their own coursework project.	**Designing and making principles…** -Design methods and processes	**Exploring theory topics…** -Design theory -Technical and cultural changes -Design processes -Critical analysis and evaluation -Selecting appropriate tools, equipment and processes
YEAR 12 **A Level Design & Technology:** **Term 2:**		**Designing and making principles…** -Design methods and processes continued	**Exploring theory topics (continued) …** -Accuracy in design and manufacture -Responsible design -Design for manufacture and project management -National and international standards in product design.
YEAR 12 **A Level Design & Technology:** **Term 3:**		**Technical principles…** -Materials and their applications	**Exploring theory topics (continued) …** -Performance characteristics of materials -Enhancement of materials -Forming, redistribution and addition processes -The use of finishes -Modern and industrial scales of practice

PROJECT TITLE	OVERVIEW	TOPICS	KNOWLEDGE & SKILLS
YEAR 13 **A Level Design & Technology:** **Term 1:**	**Practical application of knowledge and skills…** The students have the opportunity to work independently to apply what they have learnt in real life situations as they work through the design process to solve problems. **Making historical links…** There are opportunities throughout the theory to make links back to the past as students consider the origins of materials, processes, their applications and how they have evolved. **Making links with current affairs…** The introduction of new topics and concepts are often supported by making links with current affairs and topical debate. Students are encouraged to consider the impact our use of resources, technology and manufacturing has on the world around us.	**Technical principles…** -The requirements for product design and development **Final coursework assessment**	**Exploring theory topics…** -Digital design and manufacture -The requirements for product design and development -Health and safety -Protecting designs and intellectual property
YEAR 13 **A Level Design & Technology:** **Term 2:**		**Technical principles…** -Designing for manufacturing	**Exploring theory topics (continued) …** -Designing for manufacturing, maintenance, repair and disposal -Feasibility studies -Enterprise and marketing in the development of products -Design communication
YEAR 13 **A Level Design & Technology:** **Term 3:**		**Final written exams…**	