Curriculum Coverage in the Department of Technology: Engineering

	Year 7 Two Rotations	Year 8 Two Rotations	Year 9 One Rotation	Year 10	Year 11
Autumn Term 1	**Topic: Door Plaque Activity** **Overview:** This project will give you the opportunity to learn more about Engineering techniques, processes, skills and manufacturing. You will be introduced to several different materials and the tools used for each material. The work you will undertake will replicate the same process as would be completed within industry; you will learn how to use a range of tools and equipment safely and accurately within time scales. Design Brief • Design and make a Bedroom Door plaque using a range of workshop skills. • The target user group will be teenagers and trendy young adults. • The plaque should look appealing but also functional. **Assessment:** Completion of booklet with four assessment points, Research, Designing, Manufacturing and Evaluation. 3 homework's are set during the rotation.	**Topic: Lamp Project** **Overview:** The project that you complete in engineering CAD this year is to design and make a desk lamp, we will focus on topics that relate to this. Therefore, we will learn about electronic components, design strategies and fabrication of a prototype using 2D design. Once these topics have been covered, we will focus on developing our drawing skills and the ability to produce CAD drawings then print out the lamp design to assemble. **Assessment:** Completion of booklet with three assessment points, Research, Designing & Manufacturing and Evaluation.	**Topic:** **Overview:** This project will give you the opportunity to learn more about Engineering techniques, processes, skills and manufacturing. You will be introduced to 3rd angle projection drawings, also known as working drawings. These drawings are an important feature in the engineering process, they contain all the information needed to manufacture and assemble products. The work you will undertake will replica the same process as would be completed within industry, you will learn how to use a range of tools and equipment safely and accurately within time scales. •How to interpret engineering drawings and the information they contain. •Safe and correct use of tool and equipment in production of engineering products •Use a range of different engineering processes in production of engineered products **Assessment:** Completion of booklet with four assessment points, Understanding engineering drawings, Isometric Drawing, Manufacturing and Evaluation. 3 homework's are set during the rotation.	**Topic: Preparing Engineering drawings.** **Overview:** From the work that was carried out in year 9, year 10 students will look at the layout of technical working drawing and the information that they contain. • Title block • Scale. • Materials • Symbols • Metric units of measurement Students will also become more confident in being able to convert between isometric sketches and 3rd angle orthographic projections: Convert • Section views • Construction lines • Centre lines • Hidden detail • Standard conventions Interpret standard engineering symbols, such as: • diameter • radius • surface • angle • offset • tolerances • read information, such as: • third angle projection • isometric views • exploded views	**Topic: Preparation for Unit 1 Assessment Manufacturing Engineering Products** **Overview** Unit 1: Manufacturing Engineering Products Controlled assessment: 20 hours 40% of qualification This unit introduces learners to interpreting different types of engineering information in order to plan how to produce engineered products. Learners will develop the skills needed to work safely with a range of engineering processes, equipment and tools. With these skills, learners will acquire knowledge of a range of engineered processes that are fit for purpose for producing an end product. Finally, learners will learn how to test the final product against the information given in the technical information to ensure that they have met the given standards of the assigned brief. 1.1 Understanding engineering drawings 1.2 Planning operations 1.3 Using engineering tools and equipment 1.4 Implementing engineering processes **Assessment: N/A - preparation**

				• sectional views • orthographic projection • detail views • interpret drawings to obtain information on: • finishes • title blocks • calculations (linear dimensions and dimensions from a datum) • understand sketches, such as: • simple sketches giving clarification or information on construction details • sketched engineering drawings of the manufactured parts produced to recognised standards • interpret specific requirements provided in an engineering specification. **Assessment:** Decoding Engineering Drawings Planning practical activity assessment	
Autumn Term 2	**Topic: Introduction to Sketching** **Overview:** You will explore and investigate some of the different techniques for producing design Sketches, As a designer/ engineer we have a responsibility to be able to clearly communicate your ideas to other people. These can be clients that have commissioned work or work colleagues that you need to share your ideas with when working on a project together or even just having someone else's opinion on the designs.	**Topic: Shaky Hand Game** **Overview:** The project that you complete in the engineering workshop this year is to manufacture a phone holder, we will focus on topics that relate to this. Therefore, we will learn about the correct use of tools, the use of orthographic drawings and Jigs. **Assessment:** Completion of booklet with three assessment points, Research, Designing & Manufacturing and Evaluation.	**Students complete one rotation within this academic year. Details of the project are found above**	**Topic: Manufacturing Skills and knowledge** **Overview:** Learners have workshop experience in order to produce a tap and drill gauge Skills and knowledge include: • marking out • cutting • finishing • preparing • shaping • drilling • milling • turning	**Topic: Unit 1 Assessment Manufacturing Engineering Products** **Overview** Unit 1: Manufacturing Engineering Products Controlled assessment: 20 hours 40% of qualification This unit introduces learners to interpreting different types of engineering information in order to plan how to produce engineered products. Learners will develop the skills needed to

	Design ideas can be quick rough hand drawn designs, this is usually used to help you think things through and to get ideas down on paper quickly. They will have plenty of notes to help explain the ideas. Next you have hand drawn rendered designs, these will be produced more neatly and with the use of colour to portray what the final product might look like, the notes for these design will be of an annotation style. They will be in more depth explaining the material used how they product will function and fit together. When showing these rendered drawings to a client they will be extremely detailed through the use of colour and different forms of drawings to show a true picture of the product. **Assessment:** Completion of booklet with four assessment points, 1 point and 2 point perspective, Rendering, Isometric and Overall design 3 homework's are set during the rotation.			• brazing • joining • filing • soldering • forming. Learners should be able to apply appropriate Health and Safety practices when undertaking practical tasks. Learners should know and understand which engineering processes and tools are appropriate for different materials, including: • metals • non-metals – • plastics • composites • woods • resins. **Assessment:** Planning and production of a prototype.	work safely with a range of engineering processes, equipment and tools. With these skills, learners will acquire knowledge of a range of engineered processes that are fit for purpose for producing an end product. Finally, learners will learn how to test the final product against the information given in the technical information to ensure that they have met the given standards of the assigned brief. 1.1 Understanding engineering drawings 1.2 Planning operations 1.3 Using engineering tools and equipment 1.4 Implementing engineering processes **Assessment:** Coursework task Unit 1 worth 40%
Spring Term 1	**Students complete two rotations within this academic year. Details of the two projects are found above**	**Students complete two rotations within this academic year. Details of the two projects are found above**	**Students complete one rotation within this academic year. Details of the project are found above**	**Topic: Workshop machinery** **Overview:** Students develop key skills in the principle of a range of workshop machinery. Plan, create and evaluate a protype nut and bolt activity using machines with a range of tools within set tolerances.	**Topic: Unit 2 preparation and Assessment Designing Engineering Products** **Overview:** This unit allows learners to experience and gain understanding of how an engineered product is adapted and improved over time.

				Learners should be able to identify and select the equipment that is needed for each stage of the production of a product: • centre lathe • drills • milling machine • laser cutter • bandsaw • linishers • brazing hearth • welding equipment • buffer/polisher • sheet metal bender Students need to be confident in the use of and understanding of a range of hand tools. • scriber • centre punch • callipers • standard • internal • external • odd leg • soldering iron • steel rule • engineers square • file • dividers • micrometer • Vernier callipers • rivet sets • taps and dies • hacksaw • fret saw • former • jig • pliers • screwdriver. **Assessment:**	The unit is linked to the engineering product produced in Unit 1 of the qualification. It will require the learner to work to a given brief to adapt an existing component, element or part of the engineering outcome that they produced for Unit 1. 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 **Assessment:** Unit assessment worth 20% - coursework task

				Completion of unit 1 prototype project and marking using exam board criteria.	
Spring term 2	**Students complete two rotations within this academic year. Details of the two projects are found above**	**Students complete two rotations within this academic year. Details of the two projects are found above**	**Students complete one rotation within this academic year. Details of the project are found above**	**Topic: Primary Features of Engineered Projects** **Overview:** Students will work on skills in the workshop and a depth of understanding surround the developments in Engineering and there use in society. Learners should be able to identify primary features of the product, such as: • electrical components: • connections • LEDs • resistors • fuses • diodes • power supplies • mechanical components: • fixings (nuts, bolts, washers, etc) • clamping devices • adjusting mechanisms • properties of component materials: • conductivity • friction • durability Learners should be able to explain the **functional properties of their** **design solutions focusing on areas, such as:** **• mechanical function** **• electrical function** **• how components interrelate with one another.**	**Topic: Unit 2 Assessment Designing Engineering Products** **Overview:** This unit allows learners to experience and gain understanding of how an engineered product is adapted and improved over time. The unit is linked to the engineering product produced in Unit 1 of the qualification. It will require the learner to work to a given brief to adapt an existing component, element or part of the engineering outcome that they produced for Unit 1. 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 **Assessment:** Unit assessment worth 20% - coursework task

				Assessment: Individual tasks – quizzes and workshop activities to assess both knowledge and understanding	
Summer Term 1	**Students complete two rotations within this academic year. Details of the two projects are found above**	**Students complete two rotations within this academic year. Details of the two projects are found above**	**Students complete one rotation within this academic year. Details of the project are found above**	**Topic: Generating a range of engineered solutions** **Overview:** Students will work on developing an understanding of a 3D CAD Program to help develop solutions. They will do a complete assessment run through for Unit 1 and included content for Unit 2. This will be in preparation for the project at the start of year 11 for the actual projects they will be externally assessed on. Learners should be able to: • identify existing solutions already available that meet or partly meet the problem of the brief • generate ideas related to the engineered solution • generate a range of solutions that meet the given brief and address the problem set • explore implementation of ideas. Learners should be able to develop a range of ideas through to a solution including testing and modelling.	**Topic: Unit 3 Written Examination - Solving Engineering Problems** **Overview:** This unit introduces learners to how engineering design is impacted by a range of external considerations such as the properties of materials, both traditional and smart developing materials, as well as methods of manufacturing in both the traditional and new and emerging technologies. The unit also gives the learner the opportunity to explore how engineering achievements have had an impact on modern day life at home, work and in society in general. Finally, the unit allows learners to develop understanding and skills to assist them in the solving of engineering problems. 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

				Learners should be able to communicate design ideas in a suitable media appropriate to the information being presented. This should: • convey meaning • use appropriate language • have a logical structure • clearly present the information using either ICT or traditional handwritten/ illustration methods • use appropriate terminology • include visual support such as simple models, CAD visuals or test rigs. **Assessment:** Complete unit 1 practice exercise and focused parts of unit 2. Quizzes and questions to be used weekly.	**Assessment:** Written examination worth 40% of course
Summer Term 2	**Students complete two rotations within this academic year. Details of the two projects are found above**	**Students complete two rotations within this academic year. Details of the two projects are found above**	**Students complete one rotation within this academic year. Details of the project are found above**	**Topic: Developing ideas through to a conclusion.** **Overview:** Skills and knowledge reviewed for completion of both pieces of coursework to be covered in this half term. Workshop time will be used to practice skills required and feedback from the planning activities. Learners should be aware that design solutions must meet a range of	

				specific criteria, including any limitations set by the brief such as those relating to: • materials • sizes • tolerances • cost • operational parameters Learners should determine the most suitable engineering solution by using a suitable evaluative method such as: • a SWOT analysis • a review/evaluation against the given design specification • a review/evaluation against the brief. Learners should know and understand the physical properties of materials, including their: • tensile strength • compressive strength • hardness • toughness • malleability • ductility • conductivity • corrosive resistance • environmental degradation • elasticity and how they can be applied in an engineering context. Learners should know and understand the properties needed for the following engineering products: • mobile phones • security alarm found in the home • bicycles • children's play areas. **Assessment:**	

				Exam paper for unit 3. Feedback from planning and workshop activities. Quizzes and questions weekly**.**	

Curriculum Coverage in the Department of Technology: Food and Cook

	Year 7	Year 8	Year 9	Year 10	Year 11
Autumn Term 1 (10-week rotation)	**Topic: Healthy Eating** **Overview** The aim of this topic is to instil the love of food and food preparation for all year 7 students. Students will gain an understanding of nutrition, diet and basic cookery skills, by successfully producing a range of practical outcomes. This will be achieved through developing students' skills in using the correct ingredients, equipment or techniques and process suitable for the task given. They will also be introduced to the fundamental concepts of health and safety legislation and requirements. Year 7 will be within a rotation and will have 1 point of contact throughout the year **Assessment:** Work is completed in a booklet, and we cover the following- Eatwell guide, Health and safety, Planning, Making and evaluating food	**Topic: World Food** **Overview** Having learnt key food skills and Knowledge in Year 7, in Year 8 students are challenged to apply these to a more in-depth situation. The Year 8 curriculum is also designed to challenge students to question the different styles of food and ingredients from around the world. We aim to foster an appreciation for the different cultures and religions through the impact of food. We wish to make the students more confident within the kitchen environment, through using the more advanced equipment and higher skilled techniques. Year 7 will be within a rotation and will have 1 point of contact throughout the year **Assessment:** Work is completed in a booklet, and we cover the following- Different foods from around the world, Packaging, Health and safety, Planning, Making and evaluating food	**Topic: NEA1 Project Mock- Raising agents.** **Overview** This project concentrates on the skills required for the Non-Exam Assessment 1 in year 11. The project is based on a food related experiment. Students will draw on prior and cross curricular knowledge to complete the project to a high standard. It has a practical based experiments so students will embed their practical cooking skills. The combination of their theory and practical lessons will encourage students to be confident, independent learners whilst giving them a taste of what would be in years 10 and 11 if they chose the subject. **Assessment:** There are 3 assessment points where students will receive feedback before being given the opportunity to improve their work on the next experiment. Work is completed in a booklet, and we cover the following- Research,	**GCSE Food Preparation and Nutrition AQA** **Overview** Throughout the year students will learn a wide range of topics. Each topic will be supported with a relevant practical covering the following skills.... Skills: 1. General practical skills including: weighing, measuring, preparing ingredients and equipment, correct cooking times, testing for readiness and sensory testing. 2. Knife skills including: fruit, vegetables, meat fish or alternatives. 3. Preparing fruit and vegetables. 4. Using the cooker including: the hob, grill and oven. 5. Use of equipment including: blenders, food processors, mixers, pasta machines and microwave ovens. 6. Cooking methods including: steaming, boiling, simmering,	**GCSE Food Preparation and Nutrition is 50 % exam paper. 35% NEA2 and 15 % NEA1.** **How it is assessed- N**EA1 Written or electronic report (1,500-2,000 words) including photographic evidence of practical investigations. **NEA2** Written or electronic report including photographic evidence of the three final dishes must be included. **Overview** Non-exam assessment. **Task 1- Food investigation (30 marks)** Students will understand the working characteristics, functional and chemical properties of ingredients. Practical investigations are compulsory. Section A- Research (6 marks) Section B Investigation (15 marks Section C-Analysis and Evaluation (9 marks)

	outcomes and finally adapting recipes. There are 3 assessment points, which include Self-assessment/Peer assessment and teacher assessment. The assessment criteria is taken from the GCSE Food preparation and Nutrition marking criteria to ensure continuity between the key stages. **Homework** will be set 3 times throughout the rotation and will be practical based. It will be set via Satchel one.	outcomes, adapting recipes and finally Menu design. There are 3 assessment points, which include Self-assessment/Peer assessment and teacher assessment. The assessment criteria is taken from the GCSE Food preparation and Nutrition marking criteria to ensure continuity between the key stages. **Homework** will be set 3 times throughout the rotation and will be practical based. It will be set via Satchel one.	Planning/carrying out/evaluating an experiment and data analysis. There are 3 assessment teacher led points. The assessment criteria is taken from the GCSE Food preparation and Nutrition marking criteria to ensure continuity between the key stages. **Homework** will be set 3 times throughout the rotation and will be practical based. It will be set via Satchel one.	blanching, poaching and frying. 7. Techniques to prepare, cook and combine different ingredients. 8. Sauce making including: starch based, reduction and emulsions. 9. Tenderising and marinating different ingredients. 10. Making dough including: bread, pastry and pasta. 11. Use of raising agents including: eggs, chemical, steam and biological. 12. Setting of mixtures through use of heat and egg protein. To demonstrate and apply the principles of food safety and hygiene when cooking. To demonstrate a good working routine in the food room. To explain how the dish meets the requirements of the new Eatwell Guide The functions of carbohydrate in the diet. The main sources of carbohydrate. The effects of deficiency and excess of carbohydrate in diet. The	Total 30 marks

				amount of carbohydrate needed for everyday life. The definition of dietary fibre and the functions of dietary fibre. The different types of dietary fibre. The effect of excess and deficiency of dietary. The dietary reference values for fibre. How to modify an existing recipe to reduce the amount of free sugar in the recipe and/or increase the amount of dietary fibre in the recipe. The definition of Fat. The functions of fat in the diet. The main sources of fat in the diet. The effects of deficiency and excess of fat in diet. The amount of fat needed for everyday life.	
Autumn Term 2	**Students complete one rotation within this academic year. Details of the project are found above**	**Students complete one rotation within this academic year. Details of the project are found above**	**Students complete one rotation within this academic year. Details of the project are found above**	The importance of consuming the right diet at different life stages. The dietary needs of school children aged 5-12. The dietary needs of teenagers. The dietary needs of adults. The dietary needs of the elderly. How BMR and PAL work together to determine how much energy in Kilocalories is needed every day.	**NEA2** In this task, students will prepare, cook and present a final menu of three dishes to meet the needs of a specific context. Students must select appropriate technical skills and processes and create 3–4 dishes to showcase their skills. They will then produce their final menu within a single period of no

				The reasons why food is cooked. The different ways that heat can be transferred. Write a hypothesis or prediction about what way of cooking vegetable to retain freshness and nutritional values. The scientific principles underlying the use of 4 different types of raising agents used in food today: Chemical, Mechanical, Steam and Biological.	more than 3 hours, planning in advance how this will be achieved. **Section A- Researching the task (6 marks)** **Section B- Demonstrating technical skills (18 marks)** **Section C- Planning for the final Menu (8 marks)** **Making the final Dishes (30 marks)** **Analyse and evaluate (8 marks)** **Total 70 marks**
Spring Term 1	**Students complete one rotation within this academic year. Details of the project are found above**	**Students complete one rotation within this academic year. Details of the project are found above**	**Students complete one rotation within this academic year. Details of the project are found above**	What is meant by the term micro-organisms. Which microorganisms cause food to spoil and make it unsafe to eat. Conditions for growth of microorganisms in order to grow and multiply. What enzymes are and how they spoil the palatability of foods. The main sources of vitamins in the body. The effect of excess and deficiency of vitamins in the diet. The dietary reference values for the different vitamins needed every day	
Spring term 2	**Students complete one rotation within this academic year.**	**Students complete one rotation within this academic year. Details of the project are found above**	**Students complete one rotation within this academic year. Details of the project are found above**	Why the body needs energy. How energy is measured.	**Revision and exam preparation**

	Details of the project are found above			The basal metabolic rate(BMR) is and how it is measured. The meanings of the following terms: Protein denaturation, Protein coagulation, Foam formation.	
Summer Term 1	**Students complete one rotation within this academic year. Details of the project are found above**	**Students complete one rotation within this academic year. Details of the project are found above**	**Students complete one rotation within this academic year. Details of the project are found above**	To identify and discuss the different factors that influence what we eat today including: Healthy Eating and physical activity level (PAL) Dietary and medical reasons. To develop research skills and carry out research into the cuisine of another country. About the ingredients and food products from different international countries	**Exam paper** 1 hour 45 minutes 100 marks 50% of overall grade Multiple choice (20marks) Longer mark questions (80 marks)
Summer Term 2	**Students complete one rotation within this academic year. Details of the project are found above**	**Students complete one rotation within this academic year. Details of the project are found above**	**Students complete one rotation within this academic year. Details of the project are found above**	To understand the scientific principles of how starch thickens a sauce by gelatinisation. Science behind, Caramelization and dextrinization. Field to Fork. Primary and secondary processing of foods: Wheat into flour,	

				Milk into cheese or yoghurt, Fruit into jam. **Homework:** Once a fortnight students will shop for their ingredients making a note of nutrition and costings in preparation for their evaluation.	