# DESIGN & TECHNOLOGY CURRICULUM MAP



Aspiration	Design and Technology for us is about providing opportunities for students to develop their capability, combining their designing and making skills with knowledge and understanding in order to create quality products. At KS3 Design and Technology is taught as a distinct subject in our wider Design and Technology carousel. Knowledge: Design and Technology will prepare students to participate confidently and successfully in an increasingly technological world. Students will gain awareness and learn from wider influences on Design and Technology including historical, social, cultural, environmental and economic factors. Students will get the opportunity to work creatively when designing and making, and apply technical and practical expertise. Skills: We pride ourselves on the belief that Design and Technology is about designing and making functional and decorative products in using a range of materials including papers and boards, timber, metal-based materials, polymers, textile-based materials and electronic and mechanical systems. Students will learn a range of new skills and techniques to successfully work with these materials, to produce quality products and prototypes. Understanding: Students will be able to gain understanding and application of materials, tools, CAD software and machines that are specifically design and make products that solve genuine, relevant problems within different contexts whilst considering their own and others' needs, wants and values. To do this effectively, they will acquire a broad range of subject. Howeved, and range of and won additional disciplines such as mathematics, science, engineering, computing and art.
Opportunity	<ul> <li>Within the classroom:</li> <li>At Fitzharrys, Design and Technology builds on the skills and knowledge pupils have already learnt at primary school. We have sophisticated resources, including dedicated teaching environments, manufacturing equipment and specialist teaching. As students progress through this phase, they may be given the opportunity to focus on specific aspects of the subject such as product design.</li> <li>Beyond the classroom:</li> <li>Students may wish to participate in:</li> <li>STEM club activities such as the Go Kart project</li> <li>Trip to the Design Museum</li> <li>Trip to Mini plant Oxford</li> </ul>
Integrity	<ul> <li>Knowledge:</li> <li>Students will learn to conduct themselves safely and professionally in an environment where they must share equipment and follow safety protocols. They will learn to balance self-expression with teamwork, and practise meeting deadlines, following briefs and adding their own stamp. The Design and Technology curriculum operates as a spiral: students will return to the core knowledge throughout KS3 and KS4 giving the opportunity to develop, refine, and reflect upon their progress through the years.</li> <li>Skills:</li> <li>Design and Technology is built on the foundation of genuine problem solving, therefore, the cyclical structure of: brief, research, specification, ideas, modelling, testing and evaluation must be taught and embedded in the curriculum across the key stages.</li> <li>Understanding:</li> <li>It teaches how to take risks and so become more resourceful, innovative, enterprising and capable.</li> <li>Students develop a critical understanding of the impact of design and technology on daily life and the wider world. Additionally, it provides excellent opportunities for students to develop and apply value judgements of an aesthetic, economic, moral, social, and technical nature both in their own designing and when evaluating the work of others.</li> </ul>

# FOOD PREPARATION & NUTRITION CURRICULUM MAP



Aspiration	In Food Preparation and Nutrition (Food) pupils will be taught how to cook; applying the principles of nutrition, healthy eating, hygiene and food security. <b>At KS3 food is taught as a distinct subject in our wider Design and Technology carousel</b> . Learning how to cook is a crucial life skill that enables pupils to feed themselves and others affordably, healthily, now and in later life. <b>Knowledge:</b> Students will learn what foods are healthy and which foods are not and how a balanced healthy diet links to wellbeing. We will consider where food comes from, how it is farmed and how to be more sustainable cooks for the future. Students will gain knowledge of how nutrients work in the body enabling them to plan meals for different dietary requirements. <b>Skills:</b> Students will explore a range of cooking techniques such as selecting and preparing ingredients; using utensils and electrical equipment; applying heat in different ways; using awareness of taste, texture and smell to decide how to season dishes and combine ingredients; adapting and using their own recipes. They will cook a repertoire of predominantly savoury dishes so that they are able to feed themselves and others a healthy, varied diet. <b>Understanding:</b> Through their time in Food Technology students will gain an understanding of the principles of nutrition and health; fostering life long healthy eating habits coupled with practical skills and knowledge of health and hygiene principals. Students will gain the confidence to work with a broad range of ingredients and techniques to create a range of healthy dishes; recognising the impact of food on the environment and the future of food security.
Opportunity	<ul> <li>Within the classroom:</li> <li>Skills – Working progressively from KS 3 –KS 4 - hygiene and safety, cake making methods, knife skills, multicultural dishes, doughs, cooking methods, adapting recipes, use of equipment, hygiene level 2 certificate, pastries, sauces, desserts, fresh pasta, jointing and filleting, shaping and decorating.</li> <li>Guest speakers – food and farming, cake decorating, themed events.</li> <li>Food Preparation – Open evening, school shows, Fitzactive, carol service.</li> <li>Beyond the classroom:</li> <li>Abingdon Food Festival, visits to restaurants, cooking competitions.</li> </ul>
Integrity	<ul> <li>Knowledge:</li> <li>Students will learn to conduct themselves safely and professionally in an environment where they must share equipment and follow safety protocols. They will learn to balance self-expression with teamwork, and practise meeting deadlines, following briefs and adding their own stamp.</li> <li>Students will be equipped with the knowledge required to cook and apply the principles of food science, nutrition and healthy eating. Pupils will be encouraged to cook and make informed decisions about ingredients and techniques. They will be introduced to a wide range of further learning opportunities and career pathways.</li> <li>Skills:</li> <li>Students will explore and demonstrate effective and safe cooking skills by planning, preparing and cooking using a variety of food commodities, cooking techniques and equipment.</li> <li>Students will explore a range of ingredients and processes from different culinary traditions (traditional British and international), to inspire new ideas or modify existing recipes. Above all they will develop vital life skills that enable them to feed themselves and others affordably and nutritiously, now and later in life.</li> <li>Understanding:</li> <li>Students will develop an understanding of the relationship between diet, nutrition and health, including the physiological and psychological effects of poor diet and health. The will explore the economic, environmental, ethical, and socio-cultural influences on food security, production processes, and diet and health choices.</li> </ul>

# SUBJECT CURRICULUM MAP Design Technology: KS3

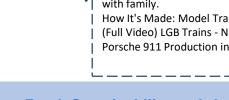
#### **Mechanical Toy**

Across this double module students will work to design and make a mechanical toy, exploring key mechanisms and prototype modelling before working to realise their final design using a range of resistant materials in the workshop.

Assessment focus: the generation of ideas and the use of models and prototypes will be assessed along with the understanding of supporting theory knowledge via a resistant materials based test assessment Multi - Cultural Menu Planning

Across two terms students will work to understand the principles of nutrition and food hygiene working to explore food from around the globe and create their own multi-cultural dishes for a variety of different dietary requirements.

Assessment focus: Food Hygiene certificate level 2 along with supporting food evaluation following practical cooks including peer feedback and supporting nutritional terms including functions and sources of carbohydrates, vitamins, minerals, fats and oils and protein.



#### **Electronic Point of Sale Display**

Students will work to design and make an electronic shop point of sale display for a product of their own choice. The project has an electronics focus and will focus on designing and making an electronic circuit, soldering, PIC programming, control flowcharts and product marketing

Assessment focus: Planning with a focus on flowcharts and a systems and control based test.

Note: Topics may vary depending on the subject specialist within the rotation. Students develop the skills across the Keystage to cover the same theoretical knowledge.

Year

Documentaries to be watched and discussed at home with family.

How It's Made: Model Trains - Toy Trains Factory Tour (Full Video) LGB Trains - Nürnberg, Germany Porsche 911 Production in Germany (video series)

# Food Sustainability and the future of food

Exploration of food sustainability and where food comes from 'from farm to fork' along with the 'future of food'. The Year 8 cooks are more complex and build upon the skills developed in Year 7.

Assessment focus: supporting food evaluation following practical cooks and supporting assessment questions based on sustainability and 'farm to fork'

#### **Boom Box**

Designing and a portable speaker making an amplifier circuit using a range of electronic components and PCB along with resistant materials for the supporting case Assessment focus: Systems and Control Test

# **Bird Feeder**

Designing and making a bird feeder using resistant materials and appropriate joining and manufacturing techniques.

Assessment focus: Analysing the design problem and responding to the brief.

The Energy Gap Cooking and adapting dishes using

**Food & Nutrition** 

A 1 hour walk in the woods taking photos of

different birds along the way.

Trips and visits

complex carbohydrates. Assessment focus: Exam style questions on the energy balance and healthy eating.

#### Food & Nutrition Healthy Eating

Cooking and adapting dishes using healthy ingredients

Assessment focus: Product Evaluation.

# CAD Pods

Workshop introduction to thermoforming and plastics cutting, shaping and finishing

Assessment focus: Resistant Materials plastics assessment



### Product Design & Marketing (Pt 1&2)

A business and enterprise themed technology module where you will work to explore product design and marketing via the creation of a new 'Ben and Jerrys' ice cream and a new Aztec themed chocolate bar for Cadburys.

Assessment focus: responding creatively to the brief and supporting enterprise assessment test.

Assessment takes place throughout each project and term. Each project will focus on different aspects of the Design and Technology 'common assessment tasks'. This enables students to build their knowledge and understanding of the design process as they progress through KS3 and onto KS4.

# It's all Technical

Introduction of technical drawing skills and CAD via Google Sketchup and 2d Design

Assessment focus: generating ideas using learnt techniques

# LED Lights

Designing and making an LED light along with the supporting case.

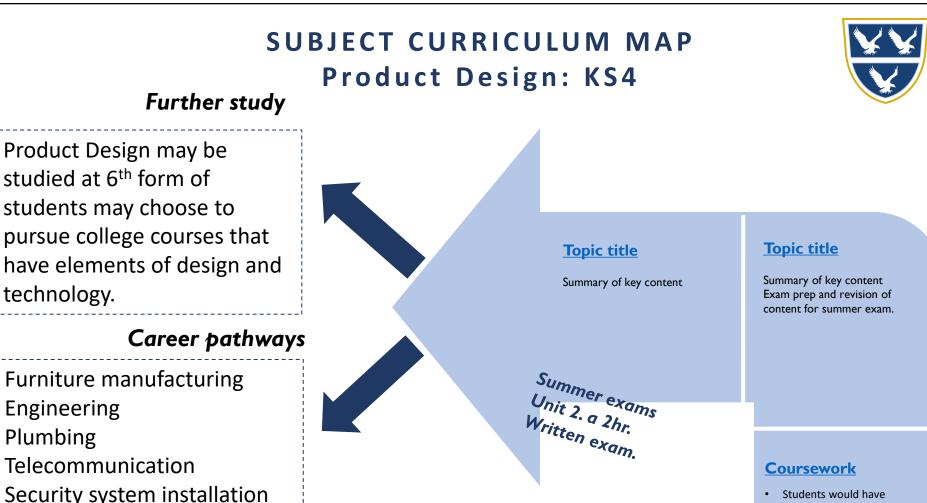
Assessment focus: Systems and Control Test Electronic components, soldering, Vacuum forming

#### **Crackers**

Designing and making a set of four crackers along with the supporting packaging.

Assessment focus: Responding creatively to the brief CAD – 2d design CAM – Laser cutting





- Motor vehicle engineering
- Construction etc.

#### <u>coursework</u> portfolio

There are 3 equally weighted objectives in this section of the course (OA1, OA2 & AO3). The portfolio will build evidence towards these between term 6 in year 10 and term 4 of year 11. Students will be set themes by AQA for them to select and develop into an item. This accounts for 50% of final exam grade. The following sections will be covered in term 6 of year 10:

During term 6 students will focus on completing a summary of key content, Design Brief, Analysis of Brief, Research plan and client interview, Analysis of researched items, a Specification and initial Design Ideas.

#### Specialist Technical Principles cntd.

Students will learn the key principles of how to cut and shape wood, metal and plastic. They will also learn about and demonstrate the use of finishing materials as they apply them to wood and metal surfaces.

#### Specialist Technical Principles

Students will learn the key principles of Forces and Stresses on Materials and Objects, Improving functionality of materials, Ecology and Social Footprint, The 6 Rs of sustainability and Scales of Production.

#### Year II Summ Invest second of oth

#### Coursework

Term 1 of year 11 will see students fine tuning the areas that were covered in term 6 of year 10. They will do a final Summary of key content, Investigation, primary and secondary data, and the work of others and a design strategy

#### Coursework

Final assessment of

exam board criteria

coursework using the

Students will then move onto the Communication of Design Ideas and Prototype. After which, they will look at the Selection of materials and components for making their final design.

#### of their items and now need to apply appropriate finishing. They now need to focus on the use of Specialist tools, equipment and processes, Surface treatments and finishes, Testing and evaluation and then the

completed the rough making

Coursework

Modifications.

Students will plan and demonstrate their use and understanding of materials through the use of Tolerance and allowance, Material management and marking out

Mock exams

Unit I is 50% of the total grade. Students will be tested only on the content covered to date.

• A 2hr. Written exam focusing on the core principles covered. This is usually previous exam with the mark scheme and grade boundaries applied

Trips and visits

Trip to BMW during term 4

Trip to Design Museum during term 6

#### Materials and their Working Properties

Mock

exams

Students will learn about and apply their knowledge of Papers and Boards, Natural and Manufactured Timber, Metals and Alloys, Polymers and Textiles.

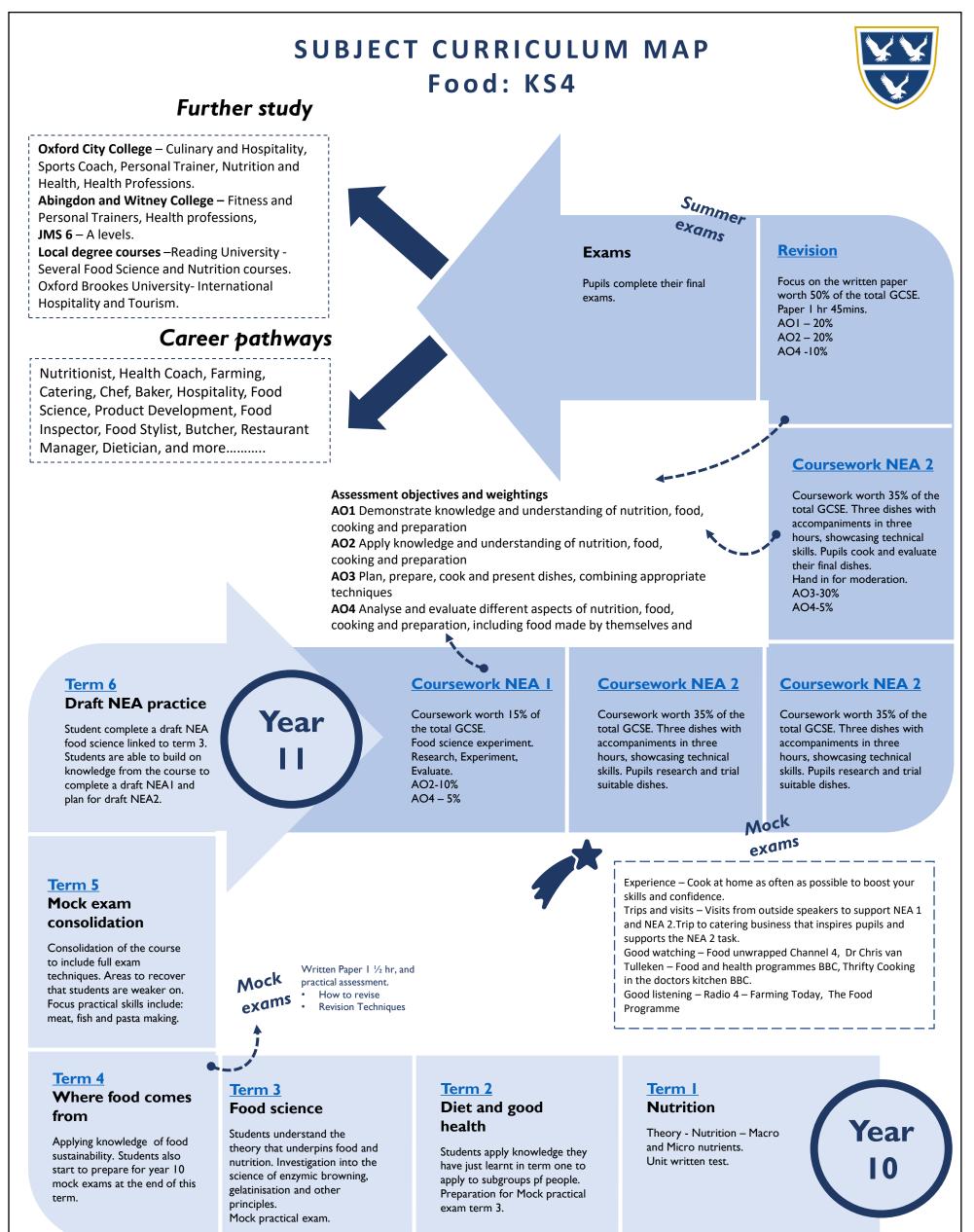
#### Energy, Materials, Systems and Devices

Students will learn the key principles of Energy Generation, Energy storage, Modern Materials, Smart Materials, Composite Materials and Technical Textiles. They will also study Systems approach to Designing, Electronic Systems Processing and Mechanical Devices.

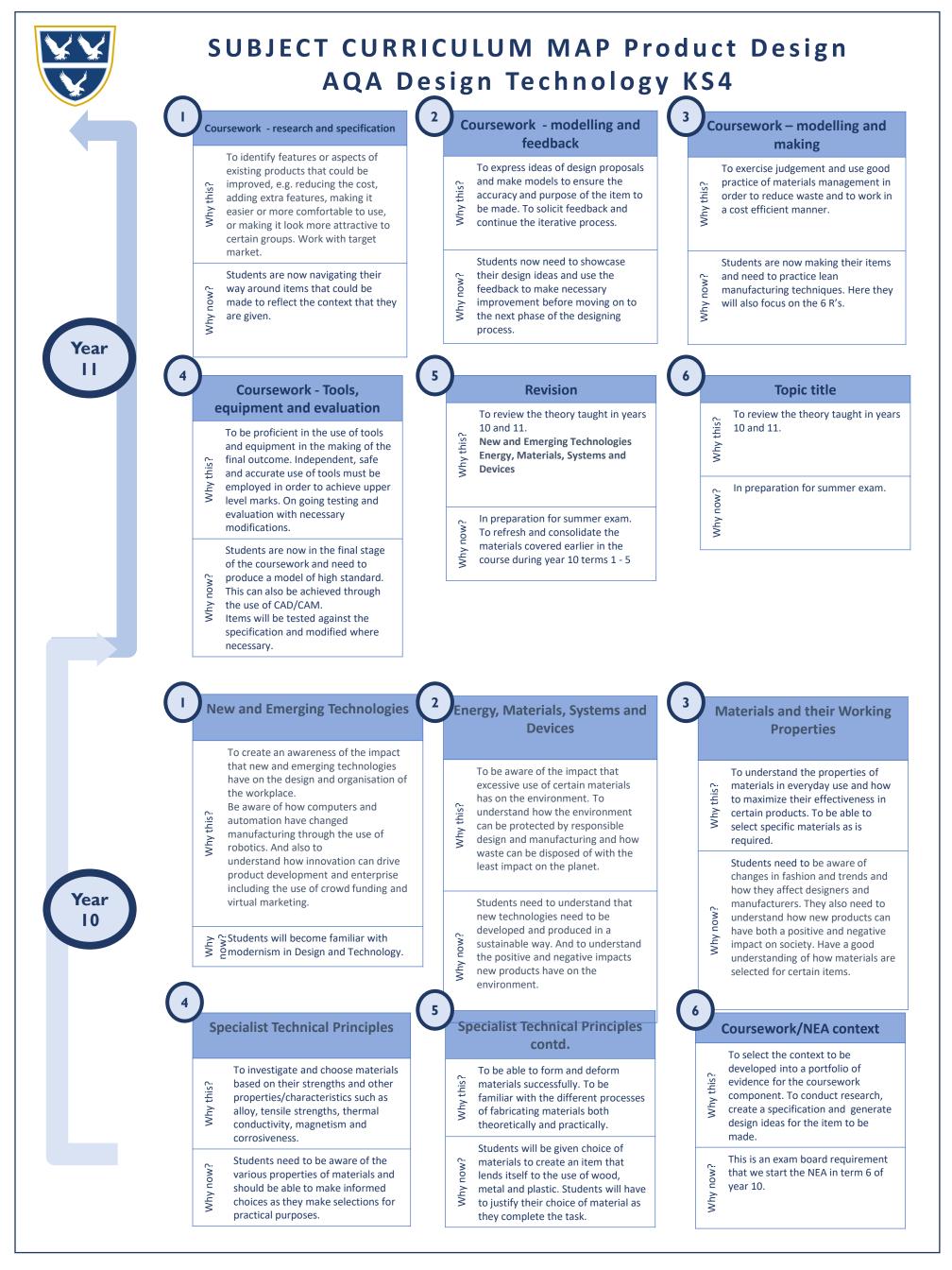
#### New and Emerging Technologies

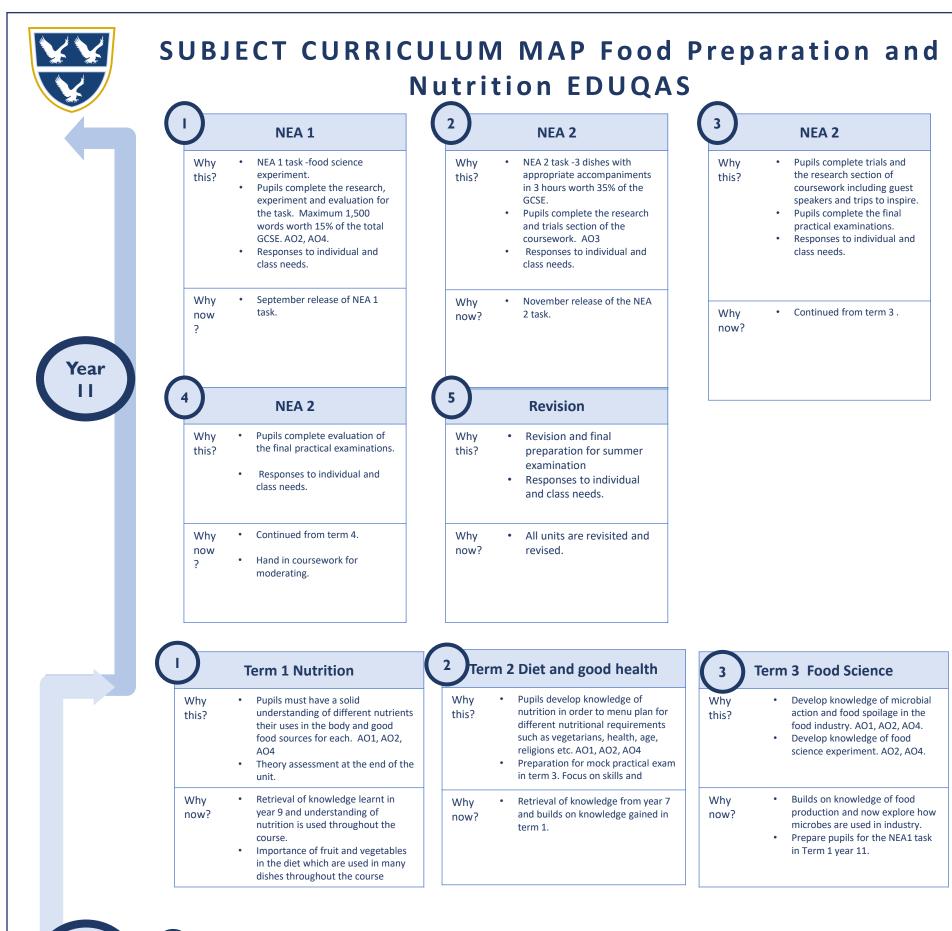
Students will study the operations of Industry and Enterprise, Sustainability and the Environment, People, Culture and Society, Production Techniques and Systems and the process of Informing Design Decisions.





( ) Ele	ctronic PoS Display Pt 1		Mechanical Toy Pt 1	5 Mu	Ilti-Cultural Menu Planning Pt 1
Why this?	Design element of the project enables students to design a solution to a real life context design problem	Why this?	Design element of the project enables students to work to create a mechanical toy	Why this?	Project explores the principles of food and nutrition along with food from cultures around the world.
Why าow?	Design activities reflect those associated with the GCSE NEA activity with the systems and control focus supporting further study	Why now?	Design activities reflect those associated with the GCSE NEA activity with a focus on modelling and the use of resistant materials.	Why now?	Builds upon Year 8 cooks and develops skills and confidence in the kitchen working to complete more challenging cooks
Ele	4	Mechanical Toy Pt 2	6 s	oecial Diet Menu Planning Pt 2	
Why this?	Practical element of the project exposes students to soldering advanced PCB and PIC programming as well as graphic element to make final DaS display	Why this?	Practical element of the project exposes students to the realisation of their own designs and the practical use of a range of tools and equipment in the workshop	Why this?	Focus on function and sources of proteins, fats/oils, vitamins, minerals and carbohydrates in support of next steps at GCSE.
Vhy ow?	final PoS display Skills and techniques covered in this project offer a good foundation for inclusion in GCSE projects next year as well as exam part of course	Why now?	Skills and techniques covered in this project offer a good introduction and foundation for the GCSE Technology course next year	Why now?	Meals cooked from scratch working with high risk food and flavours from around the world. Modules offer a good introduction to GCSE Food and Nutrition.
Pro	duct Design & Marketing	3	Bird feeder	5	Food & Farming
Why this?	Project explores how products are developed and marketed with a focus on a new ice cream product for Bena and Jerrys	Why this?	Project explores modelling and prototyping along with timber based knowledge and understanding within the workshop context	Why this?	Students develop an understanding of where food comes from and 'farm to fork' exploring theory and supported by 'cooks'
Why now?	Project provides opportunity to introduce students to business studies and to develop design based skills through graphics activities	Why now?	Project provides opportunity for the development of timber practical activities and skill development	Why now?	Builds upon Year 7 cooks and develops skills using locally sourced ingredients with the further development of practical skills.
2 Pro	duct Design & Marketing	4	Boom Box	6	The Future of Food
Why this?	Project builds upon the ice cream product and considers how marketing focuses on brand awareness and expectations	Why this?	Project exposes students to more advanced circuit and components with clear design and make activity of an engaging problem	Why this?	Builds upon food and farming module to explore issues around food sustainability and production for the future.
Why now?	Project supports students understanding of business studies via Technology module prior to the Year 9 options process	Why now?	Circuit is soldered using a PCB and builds upon the previous systems and control project laying further foundation for advance work	Why now?	Students begin to adapt recipes and complete more complex cooks working under pressure to complete these within the hour
)	Crackers	3	It's all Technical	5	Healthy Eating
Why this?	Interactive design and make project which offers a good introduction to the design process and CAD/CAM	Why this?	Good quality design drawing is an essential part of the design cycle and is a key part of all projects	Why this?	Introduction to food and nutrition and cooking in school via some simple cooks and supporting theory
Why now?	CAD/CAM knowledge and understanding is essential to modern day Technology and problem solving and early exposure to 2d design and laser cutter is important	Why now?	Project aims to develop sketching confidence which can be used to support designing activities across all modules moving forward through the project carousel	Why now?	Students to adapt dishes to be healthier and work to develop knowledge of healthy eating and practical cooking skills and techniques in the kitchen environment
	LED Lights	4	CAD Pods	6	The Energy Gap Pt 2
Why this?	Introduction to systems and control work and industrial manufacturing process of vacuum forming	Why this?	Introduction to plastics, types and material groups along with thermoforming press forming techniques	Why this?	Builds upon healthy eating module and incorporates knowledge of carbohydrates and the energy balance.
Why now?	Exposure to soldering and designing and making high quality products in terms of systems and control is essential.	Why now?	Plastic theory is a key component of knowledge and a new area to most students, early exposure supports future success	Why now?	Theory and practical cooks support the development of food and nutrition theory and how it is important to eat a balanced diet





Year 10

14/1	Develop be evilades of where food				prepared for Year 11.
Why this?	<ul> <li>Develop knowledge of where food comes from and the impact that food production and farming is having on the environment. AO1, AO2, AO4</li> <li>Revision for mock exam at the end of this term.</li> </ul>	Why this?	<ul> <li>Consolidation of the course to include exam technique</li> <li>Areas students struggled on in exam in term 4.</li> <li>Recapping areas students have struggle on.</li> </ul>	Why this?	<ul> <li>Draft food science NEA. This all teaching to prepare students for 11.</li> <li>Allows areas to be covered in n detail and how to structure.</li> <li>Focus on NEA2 through skills ar analysing a brief.</li> </ul>
Why now?	<ul> <li>Retrieval and development of knowledge gained from year 8.</li> </ul>	Why now?	<ul> <li>Retrieval focus from last term.</li> <li>Allows students to create revision materials for year 11.</li> </ul>	Why now?	Last in students memory before