

Design & Technology Curriculum: Long Term Plan

In KS3 we use a unitised approach to facilitate learning using a variety of different materials and skills including food ingredients. Students study a range of core competencies that are applied and embedded within different contexts. Annually, all students will be inducted into health & safety practices across the Design and Technology facilities in readiness for the academic year.

“We cannot solve our problems with the same thinking we used when we created them.” Albert Einstein

In **Year 7**, our students have encountered a varied experience of Design & Technology throughout KS1 & KS2.

YEAR 7	Communication Skills 1	Materials 1	Systems & Control 1	Knowledge 1	Cooking & Nutrition 1
What will be covered?	<p>Introduce students to basic skills in presenting a range of ideas and how to sequence and annotate them.</p> <ul style="list-style-type: none"> • Sketching techniques – freehand • Rendering • Formal drawing techniques 	<p>Coat Hook</p> <p>Introduce students to marking out, wasting and finishing skills when using metal.</p> <ul style="list-style-type: none"> • Health & Safety • Using templates • Heat treatment 	<p>Mechanisms</p> <p>Introduce students to the principles of input, process and output for mechanical systems. Students will look at how adapting systems affect movement (distance & direction of travel) & force.</p> <ul style="list-style-type: none"> • What is a mechanical system? • What types of mechanical systems are there? • Solving a mechanical problem with linkages 	<p>Students will be provided the opportunity to explore the core principles of Design and Technology through a range of contexts. They will be encouraged to apply their broader understanding of D&T and the wider curriculum.</p> <ul style="list-style-type: none"> • Healthy Eating – What is The eatwell guide? • Paperclip challenge • Marble Run • Seasonality & Food miles • Systems –Linkages • Iterative design 	<p>Introduce students to the basic equipment in the food room and develop the core skills in preparing food.</p> <ul style="list-style-type: none"> • Hygiene & Safety • Knife skills
Core principles	User, Purpose, Functionality, innovation & authenticity	Purpose & Functionality	Purpose, Functionality & design decisions	User, Purpose, Functionality, design decisions, innovation & authenticity	Functionality & authenticity

In Year 8, our students will build upon the skills & knowledge that has been developed throughout year 7.

“Recognising the need is the primary condition for design.” Charles Eames

YEAR 8	Communication Skills 2	Materials 2	Systems & Control 2	Knowledge 2	Cooking & Nutrition 2
What will be covered?	<p>Net developments</p> <p>Students will investigate and develop the skills in designing and manufacturing a case for an electronic circuit from a card net.</p> <ul style="list-style-type: none"> Designing for a client 	<p>Jewellery/ key fob design</p> <p>Allow students to refine their manufacturing skills using Acrylic. Introduce the concept of designing for client.</p> <ul style="list-style-type: none"> Alternative communication skills – 2d modelling Investigating the work of others Developing an idea Adhesives 	<p>Mood Light Circuit</p> <p>Provide students an understanding of basic components and their function in a circuit.</p> <ul style="list-style-type: none"> Soldering Function of components 	<p>Students will be provided the opportunity to explore the core principles of Design and Technology through a range of contexts. They will be encouraged to apply their broader understanding of D&T and the wider curriculum.</p> <ul style="list-style-type: none"> Healthy Eating – How does the eatwell guide influence what we eat? Introduction to Structures Product Analysis – ACCESS FM New and emerging technologies Work of others 5 senses 	<p>Develop student’s awareness of different equipment in the food room and develop the wider skills in preparing food.</p> <ul style="list-style-type: none"> Evaluating Dishes The senses
Core Principles	User, Functionality, design decisions, innovation & authenticity	User, Purpose, Functionality, design decisions, innovation & authenticity	User, Purpose & Functionality	User, Purpose, Functionality, design decisions, innovation & authenticity	User, Functionality & design decisions

In Year 9, our students will use their understanding of design and technology to independently demonstrate their designer & manufacturer capabilities.

“Design creates culture. Culture shapes values. Values determine the future.” Robert L Peters.

YEAR 9	Communication Skills 3	Materials 3	Systems & Control 3	Knowledge 3	Cooking & Nutrition 3
What will be covered?	<p>CAD – 3d modelling on a computer using TinkerCAD</p> <p>Students will develop their skills in presenting 3d models of a product.</p> <p>They will be introduced to the key terminology and methods for producing an item suitable for 3d Printing.</p>	<p>3D Design development – Modelling</p> <p>Students to use the knowledge, skills and techniques to design, develop and model a prototype of an object. Refine understanding of specification requirements.</p> <ul style="list-style-type: none"> • Iterative design for a context • Prototyping • Applying prior knowledge • Evaluation 	<p>Flowol</p> <p>Students will develop an understanding of how computer systems can be used to control every day items such as traffic lights.</p> <p>They will be introduced to the concepts of inputs, processes, outputs and feedback loops using virtual scenarios.</p>	<p>Students will be provided the opportunity to explore the core principles of Design and Technology through a range of contexts. They will be encouraged to apply their broader understanding of D&T and the wider curriculum.</p> <ul style="list-style-type: none"> • Healthy Eating – How can I plan a menu for an event considering the Eatwell guide? • Sustainability – 6Rs & lifecycles • Ergonomics/Anthropometrics • Reverse Engineering (Product Analysis) • Big Life Fix – User needs • Intro to 2d Design 	<p>Embed students understanding of preparing and manufacturing different dishes. Provide students the opportunities to transfer cooking skills from one dish to another.</p> <ul style="list-style-type: none"> • Nutrition • Modifications
Core Principles	Purpose & Functionality	User, Purpose, Functionality, design decisions, innovation & authenticity	User, Purpose, Functionality, design decisions & authenticity	User, Purpose, Functionality, design decisions, innovation & authenticity	User, Functionality & design decisions

KS4 Hospitality & Catering: As the fourth largest industry in Britain, we aim to provide students with the practical skills and understanding of the Hospitality and Catering sector to allow them to make informed choices relating to career progression in their chosen industry.

“The best way to find yourself is to lose yourself in the service of others.” Ghandi

Our Hospitality & Catering curriculum is designed to develop students’ knowledge and understanding related to a range of hospitality and catering providers; how they operate and what they have to take into account to be successful.

- **What is Hospitality and catering?** Students will learn about the different types of providers within the hospitality and catering industry. They will also learn about the operation of hospitality and catering establishments and the factors affecting their success.
- **Hospitality & catering operations:** Students will learn about operation within a kitchen and front of house, how this relates to customers and their requirements.
- **What are the transferrable skills essential to the Hospitality & catering industry?** Students will develop important transferrable skills such as problem solving, time management & organisation, planning and communication that are essential in the workplace.
- **Health & safety requirements:** Using a range of contexts students will develop learn about personal safety, requirements and control measures. They will also investigate food safety. Students will research the different legislations surrounding health and safety in the Hospitality & catering sector, applying them to different scenarios.
- **Nutrition & menu planning:** Students will further develop their understanding of healthy eating from KS3 and investigate the dietary requirements of different groups. They will use different scenarios to develop an understanding of the importance of menu planning for specific groups.
- **Food preparation & cooking:** Students will be given opportunities to develop and refine their practical skills using a range of different techniques. They will look at how to prepare ingredients prior to service. Students will have the opportunity to develop presentation techniques.

YEAR 10 H&C	Autumn 1	Autumn 2	Spring 1	Spring 2	Summer 1	Summer 2
What will be covered?	You will... Know how food can cause ill health (Unit 1 - LO4) Be able to cook dishes (Unit 2 – LO3)	You will... Know how food can cause ill health (Unit 1 – LO4) Understand the importance of nutrition when planning meals (Unit 2 – LO1) Be able to cook dishes (Unit 2 – LO3)	You will... Understand how hospitality and catering provision operates (Unit 1 – LO1) Be able to cook dishes (Unit 2 – LO3)	You will... Understand how hospitality and catering providers operate (Unit 1 – LO1) Be able to cook dishes (Unit 2 – LO3)	You will... Understand how hospitality and catering provision meets health and safety requirements (Unit 1 – LO3) Understand menu planning (Unit 2 – LO2) Be able to cook dishes (Unit 2 – LO3)	You will... Understand the importance of nutrition when planning meals (Unit 2 – LO1) Understand menu planning (Unit 2 – LO2) Be able to cook dishes (Unit 2 – LO3)

YEAR 11 H&C	Autumn 1	Autumn 2	Spring 1	Spring 2	Summer 1
What will be covered?	<p>You will... Be able to propose a Hospitality and catering provision to meet specific requirements. (Unit 1- LO5)</p> <p>Be able to cook dishes (Unit 2 – LO3)</p>	<p>You will... Understand how hospitality and catering provision meets health and safety requirements. (Unit 1 – LO3)</p> <p>Be able to cook dishes (Unit 2 – LO3)</p>	<p>You will... Understand how hospitality and catering provision operates. (Unit 1 – LO2)</p> <p>Complete the Unit 2 Assessment (LO1, LO2 & LO3)</p>	<p>You will... Revise Unit 1 – Hospitality and catering in action, ready for the final examination.</p>	<p>You will... Revise Unit 1 – Hospitality and catering in action, ready for the final examination.</p>

KS4 Engineering: to promote Engineering by developing an enthusiasm for the many wide and diverse aspects of the manufacturing and engineering industry.

“Strive for perfection in everything you do. Take the best that exists and make it better. When it does not exist, design it.”

- Sir Henry Royce

Our Engineering curriculum will further develop the knowledge and skills of Design & Technology from KS3 to be able to solve engineering problems and independently produce an engineered product.

- **The design Process, analysing:** students will learn how to analyse a product so they can see what features make it work and how it meets certain requirements. They will learn how to take ideas from different products in order to produce a design specification for a product. Students will develop their formal and informal communication techniques in order to present a creative and relevant solution. Students will use technical drawing equipment and CAD to provide pictorial engineering information using British standard drawing conventions.
- **Plan and interpret engineering information:** Using a range of different products and scenarios students will learn to interpret different types of engineering information in order to plan how to make an engineered product.
- **Materials, their properties and manufacturing techniques, including H&S requirements:** Students will be given a range of opportunities to develop and refine the KS3 technology skills needed to work safely with a range of engineering processes, equipment and tools. They will learn to use a range of engineered processes that are fit for purpose.
- **The impact engineering has on society and the environment:** Students will explore different engineering achievements and how they have influenced the development of a range of products and processes. Students will learn about how environmental issues affect engineering applications throughout the lifecycle of a product.
- **What are the transferrable skills essential to the Engineering industry?** Our students will become familiar with the generic and transferrable engineering skills, language and processes that allow them to work alongside others and present their solutions in a professional manner.

YEAR 10 Engineering	Autumn 1	Autumn 2	Spring 1	Spring 2	Summer 1	Summer 2
What will be covered?	<p>You will...</p> <p>Understand engineering drawings (Unit 1 – LO1)</p> <p>Use Engineering tools & equipment and implement engineering processes (Unit 1 – LO3 & LO4)</p> <p>Understanding methods of preparation, forming, joining & finishing of engineering materials (Unit 3 – LO3)</p>	<p>You will...</p> <p>Plan manufacturing (Unit 1 – LO2)</p> <p>Use Engineering tools & equipment and implement engineering processes (Unit 1 – LO3 & LO4)</p> <p>Communicate an engineered design solution (Unit 2 – LO3)</p>	<p>You will...</p> <p>Propose & communicate engineered design solutions. (Unit 2 - LO2 & LO3)</p> <p>Understand function & meeting requirements. (Unit 2 – LO1)</p> <p>Understand the properties of Engineering materials. (Unit 3 – LO2)</p>	<p>You will...</p> <p>Propose & communicate engineered design solutions. (Unit 2 - LO2 & LO3)</p> <p>Complete the Unit 1 Mock design Assessment</p>	<p>You will...</p> <p>Understand the effects of engineering achievements (Unit 3 – LO1)</p> <p>Complete the Unit 3 focused investigations – theme park and mobile phone/ smart technology)</p>	<p>You will...</p> <p>Complete the Unit 2 Mock manufacturing Assessment</p> <p>Complete the Unit 1 assessment – Analysis & planning)</p>

YEAR 11 Engineering	Autumn 1	Autumn 2	Spring 1	Spring 2	Summer 1
What will be covered?	<p>Unit Two</p> <p>Producing Engineering Products Assessment</p> <ul style="list-style-type: none"> Interpreting and developing engineering information (LO1, LO2) Use Engineering & forming processes (LO3, LO4) Machining based ‘making task’ (LO3, LO4) Evidence of 9 machining processes used - TBC, potentially 6 as in 2021. (LO3, LO4) Sequencing manufacture (LO2) 	<p>Unit Two</p> <p>Producing Engineering Products Assessment</p> <ul style="list-style-type: none"> Interpreting and developing engineering information (LO1, LO2) Use Engineering & forming processes (LO3, LO4) Machining based ‘making task’ (LO3, LO4) Evidence of 9 machining processes used. (LO3, LO4) Sequencing manufacture (LO2) Evaluating the quality of a product (LO4) 	<p>Unit One</p> <ul style="list-style-type: none"> Reviewing a brief (LO1) Product Analysis (LO1) Engineering products (LO1) Converting between Isometric & 3rd angle Orthographic Freehand sketching Review drawing conventions (LO4) <p>Unit One Assessment – Engineering Design</p> <ul style="list-style-type: none"> Students to complete the portfolio based task. 7/8 pages re engineer a product (LO1, LO2 & LO3) 	<p>Unit One Assessment – Engineering Design</p> <ul style="list-style-type: none"> Students to complete the portfolio based assessment task. 7/8 pages Re engineer a bike light. (LO3, LO4) 	<p>Unit Three – Solving Engineering Problems</p> <p>preparation (exam) – 5 week plan. (LO1-4)</p> <p>Post exam - Tasks relating to next steps provision will be put into place that supports and reinforces transferrable skills and deepening practical abilities.</p>

