

Design and Technology

Curriculum Overview

Introduction

This document outlines the curriculum and key considerations including:

- Aims and purpose
- Alignment with the whole school provision and curriculum intent
- A summary programme of study which includes sequencing of taught content

We use the National Curriculum as our statutory foundation and broadly share its principles and aims including:

- ‘To provide pupils with an introduction to the essential knowledge that they need to be educated citizens. To introduce pupils to the best that has been thought and said; and help engender an appreciation of human creativity and achievement’.
- To prepare students to be confident in themselves, to have a fulfilled and successful life beyond our school – one where they contribute positively to society.
- Our statutory curriculum is just one element in the education of every child. There is time and space in the school day and in each week, term and year to range beyond statutory specifications.
- Provision of a framework of core knowledge around which teachers can develop exciting and stimulating lessons to promote the development of pupils’ knowledge, understanding and skills as part of the wider school curriculum.
- The wider school curriculum includes an extensive range of opportunities and activities that are routinely available to students, are inclusive and reflect our diverse community.

Numeracy and literacy

Teachers should take opportunities to develop pupils’ mathematical fluency, spoken language, reading, writing and vocabulary within their specific discipline and in line with the expectations laid out in our school curriculum statement.

Purpose of study

‘Design and technology is an inspiring, rigorous and practical subject. Using creativity and imagination, pupils design and make products that solve real and relevant problems within a variety of contexts, considering their own and others’ needs, wants and values. They acquire a broad range of subject knowledge and draw on disciplines such as mathematics, science, engineering, computing and art. Pupils learn how to take risks, becoming resourceful, innovative, enterprising and capable citizens. Through the evaluation of past and present design and technology, they develop a critical understanding of its impact on daily life and the wider world. High-quality design and technology education makes an essential contribution to the creativity, culture, wealth and well-being of the nation.’ Adapted from National Curriculum, DfE, 2014.



Curriculum Aims

We help learners develop Entrepreneurial skills that could be used to create or setup businesses in the future. We encourage learners to consider the environment when designing and become sustainable and ethical thinkers. We develop confidence and resilience when working with your hands to manufacture products. We ask learners to consider the needs and wants others when designing and not just think about themselves. We make sure learners are Health and Safety conscious when working in practical environments. Ultimately, we want to develop the problem solvers and innovators of the future.

Some of the best achievements learners and adults can make is in manufacturing, be it products for people to use, one-off bespoke items, a restoration, maintenance of items or creating something for wider society to use. There is no better feeling than getting something working again that hasn't worked for years! Some of the greatest historical achievements are in the fields of Design and Technology, and Engineering.

The ability to look after resources, property, housing, vehicles etc in the future will help to look after the environment and budgets. Problem solving is a big part of society in making people's lives better. Learners also have the potential to develop new products, set up businesses and employ a workforce. Engineering supports society in almost everything we do, from the clothes we put on, the transport we use, the methods of communication available to us and how we feed an ever-growing population to name but a few. For learners to contribute to this area has the potential to be life changing.

Building on prior learning - What can students do by the end of KS2?

Design

- use research and develop design criteria to inform the design of innovative, functional, appealing products that are fit for purpose, aimed at particular individuals or groups
- generate, develop, model and communicate their ideas through discussion, annotated sketches, cross-sectional and exploded diagrams, prototypes, pattern pieces and computer-aided design

Make

- select from and use a wider range of tools and equipment to perform practical tasks, such as cutting, shaping, joining and finishing, accurately
- select from and use a wider range of materials and components, including construction materials, textiles and ingredients, according to their functional properties and aesthetic qualities

Evaluate

- investigate and analyse a range of existing products
- evaluate their ideas and products against their own design criteria and consider the views of others to improve their work
- understand how key events and individuals in design and technology have helped shape the world

Technical knowledge

- apply their understanding of how to strengthen, stiffen and reinforce more complex structures
- understand and use mechanical systems in their products, such as gears, pulleys, cams, levers and linkages
- understand and use electrical systems in their products, such as series circuits incorporating switches, bulbs, buzzers and motors
- apply their understanding of computing to programme, monitor and control their products.

What are the knowledge/skills gaps?

Generally, the technical knowledge is not covered in as much depth as design process activities. Pupils have limited exposure to mechanical systems and electronic systems in most primary schools. Some pupils arrive with limited understanding of computer programmes, although most have covered basic coding in primary school.

Lack of workshop facilities means many pupils arrive with limited fine motor skills with application to hand tools such as saws and drills.

KS3 Baseline expectations

- Ability to use different media to research
- Communicate designs using a range of techniques
- Have an understanding of basic tools and equipment and how to use them safely
- Use basic literacy skills to discuss existing products
- Show knowledge of existing materials

Curriculum Structure

KS3 Design and Technology

By the end of KS3 all pupils will be able to relate Design Technology to the real world, have a growing technical knowledge of Design Technology in a variety of material areas including food, graphics, textiles, and materials. Be able to problem solve a solve real contextualised briefs in a variety of materials. They will also know how to critique and evaluate their own work and the work of others.

KS3 Technical knowledge

- understand and use the properties of materials and the performance of structural elements to achieve functioning solutions
- understand how more advanced mechanical systems used in their products enable changes in movement and force
- understand how more advanced electrical and electronic systems can be powered and used in their products [for example, circuits with heat, light, sound and movement as inputs and outputs]
- apply computing and use electronics to embed intelligence in products that respond to inputs [for example, sensors], and control outputs [for example, actuators], using programmable components [for example, microcontrollers]

KS3 Designing and making principles

- understand that all design and technological practice takes place within contexts which inform outcomes
- identify and understand client and user needs through the collection of primary and secondary data
- demonstrate an ability to write a design brief and specifications from their own and others' considerations of human needs, wants and interests
- investigate factors, such as environmental, social and economic challenges, in order to identify opportunities and constraints that influence the processes of designing and making
- explore and develop their ideas, testing, critically analysing and evaluating their work in order to inform and refine their design decisions thus achieving improved outcomes.

- investigate and analyse the work of past and present professionals and companies in the area of design and technology in order to help inform their own ideas
- use different design strategies, such as collaboration, user-centred design and systems thinking, to generate initial ideas and avoid design fixation
- develop, communicate, record and justify design ideas, applying suitable techniques, for example: formal and informal 2D and 3D drawing; system and schematic diagrams; annotated sketches; exploded diagrams; models; presentations; written notes; working drawings; schedules; audio and visual recordings; mathematical modelling; computer-based tools
- design and develop at least one prototype that responds to needs and/or wants and is fit for purpose, demonstrating functionality, aesthetics, marketability and consideration of innovation
- make informed and reasoned decisions, respond to feedback about their own prototypes (and existing products and systems) to identify the potential for further development and suggest how modifications could be made

In relation to at least one of the material categories, students are required to develop and apply in-depth knowledge by:

- selecting and working with appropriate materials and components in order to produce a prototype
- using appropriate and accurate marking out methods including: measuring and use of reference points, lines and surfaces; use templates, jigs and/or patterns; work within tolerances; understand efficient cutting and how to minimise waste
- using specialist tools and equipment, appropriate to the materials or components used (including hand tools, machinery, digital design and manufacture), to create a specific outcome
- using specialist techniques and processes to shape, fabricate, construct and assemble a high-quality prototype, including techniques such as wastage, addition, deforming and reforming, as appropriate to the materials and/or components being used
- using appropriate surface treatments and finishes for functional and aesthetic purposes

Key Stage 3 – Food and Nutrition

Throughout Key Stage 3 learners will be taught to:

- Understand and apply the principles of nutrition and health
- Cook a repertoire of predominantly savoury dishes so that they are able to feed themselves and others a healthy and varied diet
- Become competent in a range of cooking techniques [for example, 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]
- Understand the source, seasonality and characteristics of a broad range of ingredients.

Key subject skills – Design and Technology

AO1	AO2	AO3	AO4
Identify, investigate and outline design possibilities to address needs and wants.	Design and make prototypes that are fit for purpose.	Analyse and evaluate: <ul style="list-style-type: none"> • design decisions and outcomes, including for prototypes made by themselves and others • wider issues in design and technology. 	Demonstrate and apply knowledge and understanding of: <ul style="list-style-type: none"> • technical principles • designing and making principles.

Key subject skills – Engineering

AO1	AO2	AO3	AO4	AO5
Recall knowledge and show understanding knowledge and understanding.	Apply knowledge and understanding to real-world contexts and novel situations.	Analyse and evaluate knowledge and understanding to develop analytical thinking skills to make reasoned judgements and reach conclusions.	Demonstrate and apply relevant technical skills, techniques and processes to demonstrate the essential technical skills relevant to the vocational sector by applying the appropriate processes, tools and techniques.	Analyse and evaluate the demonstration of relevant technical skills, techniques and Processes to analyse and evaluate the essential technical skills, processes, tools and techniques relevant to the vocational sector.

Key subject skills – Food and Nutrition

AO1	AO2	AO3	AO4
Demonstrate knowledge and understanding of nutrition, food, cooking and preparation.	Apply knowledge and understanding of nutrition, food, cooking and preparation.	Plan, prepare, cook and present dishes, combining appropriate techniques.	Analyse and evaluate different aspects of nutrition, food, cooking and preparation, including food made by themselves and others.

Assessment

Assessment of skills and knowledge of all years at the start of the year informs planning and teaching and learning, this establishes individual starting points. Capability is assessed through a mastery of: knowledge and understanding, designing and making and the development of informed attitudes and opinions.

Formative assessment is used throughout the year to check learners' knowledge and understanding, using feedback techniques including exit tickets and end of topic quizzes and individual verbal feedback. Summative assessment is calendared at curriculum end points within each academic year and is conducted more formally.

Year	Technology Strand	Assessment Window	Topics to be assessed
7	Design and Technology	Summer 2	Design presentation including 3D Design, Safe use of tools and equipment and practical outcomes.
	Engineering	Summer 2	Theoretical knowledge of motion, levers and mechanisms, Safe use of metal working tools
	Food and Nutrition	Summer 2	Food, nutrition and health, Health and safety in the kitchen, Food commodities
8	Design and Technology	Summer 2	Designing using Computers to Aid Design (CAD), Life Cycle Assessments, Using computers to aid manufacture (CAM), high quality product manufacture including the safe use of tools and equipment

	Engineering	Summer 2	Theoretical knowledge of circuits including power sources, circuit design and component functions. Safe use of electronic circuit construction tools and equipment
	Food and Nutrition	Summer 2	Food choice, Food provenance and food science.
9	Design and Technology	Summer 2	Selection of materials based on the working properties, the 6 R's of sustainable design leading to the manufacture of up-cycled products.
	Engineering	Summer 2	Materials properties including composites and smart materials. Safe use of tools and equipment working with a variety of materials including composites to manufacture high quality products.
	Food and Nutrition	Summer 2	Macronutrients: Carbohydrates, Proteins, Fats. Micronutrients: Vitamins and Mineral. Increased cooking skills.
10	Design and Technology		Core content building on prior knowledge and assessed including understanding design contexts, usability, constraints, developments in design, new and emerging technologies, energy, motion, systems, accuracy during manufacture, wider implications of design, material properties and materials selection. In-depth content is also assessed in one of the selected topic areas of natural and manufactured timber. This includes standard forms, properties and selection, tools, equipment and methods of accurate manufacture.
	Engineering		Core content including engineering disciplines, health and safety regulations and legislation, Technical drawing computer aided design material properties and SI units. Practical skills and knowledge including tools and equipment, risk assessment and production planning.
	Food and Nutrition		WJEC Hospitality and Catering Level1/level 2 technical award. An introduction to Unit 1: The Hospitality and Catering Industry. Unit 2: Hospitality and Catering in Action, with a focus on designing menus and cooking to a brief.
11	Design and Technology		Coursework project (50%) and the Iterative Design Challenge. Selected from a broad range of real-world contexts and assessing the ability to follow the iterative design process to develop a functioning prototype. End of year theory examination (50%) covering core and in-depth content.
	Engineering		Synoptic project (60%) challenging students knowledge of the core content by researching, designing, planning, manufacturing and testing a solution to a given design problem. End of year theory exam (40%) covering all core content within real life context.
	Food and Nutrition		Unit 2: Controlled Assessment (60%) – Coursework which contains planning for the practical assessment. Unit 1: written exam (40%)

Vocabulary

Having a rich, ambitious, broad vocabulary is vital for learners to succeed, both in school and throughout their lives. Tier 1 vocabulary is the simplest. These are the words we use in everyday conversation, such as “put”, “get”, “walk”, etc. Tier 2 vocabulary are challenging, ambitious words that don't usually crop up in day-to-day conversation. These are the words that allow learners to access academic texts, such as high-level literature, newspaper articles and exam papers.

Tier 3 vocabulary is the subject-specific vocabulary of a particular discipline. These are words that are uncommon outside of the context of a specific subject and enable learners to communicate effectively within the subject. At Winifred Holtby Academy, tier 3 vocabulary is explicitly taught across our school curriculum and is mapped within the schemes of learning.

Curriculum Sequencing

At Key Stage 3, Design and Technology is delivered through a rotation model including Design and Technology projects and Food and Nutrition. In Year 7, students complete half a year in Design and Technology, undertaking two practical design projects, while studying Food and Nutrition for the full year. In Year 8, students complete a full year of Design and Technology alongside half a year of Food and Nutrition. In Year 9, all students study one term of Food and Nutrition and then choose to specialise in Engineering, Construction, or Graphic Design for the remaining two rotations. This structure allows students to develop a broad range of practical and design skills before specialising and preparing for KS4 study in related subjects.

Year 7

	Autumn	Spring	Summer
Design & Technology Knowledge	<p>Graphic Skills</p> <p>Learners are introduced to the foundations of design communication and graphical techniques used in product design.</p> <p>Knowledge</p> <ul style="list-style-type: none"> • Understanding the design process and how designers communicate ideas. • Exploring the importance of design briefs and specifications. • Learning how colour, typography and layout influence product design 	<p>Picture Frame Project</p> <p>Learners develop their first practical manufacturing skills through the design and production of a wooden picture frame.</p> <p>Knowledge</p> <ul style="list-style-type: none"> • Understanding different types of timbers and manufactured boards. • Learning how materials are selected for different products. • Understanding safe working practices in the workshop. 	<p>Deep Keyring Project</p> <p>Learners explore the use of polymers and digital manufacturing processes to create a personalised keyring.</p> <p>Knowledge</p> <ul style="list-style-type: none"> • Understanding properties and uses of polymers. • Introduction to CAD/CAM processes used in manufacturing. • Exploring how products can be personalised for users.
Design & Technology Skills	<p>Skills</p> <ul style="list-style-type: none"> • Developing drawing techniques including sketching, shading and rendering. • Creating annotated design ideas. • Producing basic isometric and perspective drawings. • Presenting ideas clearly using graphical methods. 	<p>Practical skills</p> <ul style="list-style-type: none"> • Measuring and marking out materials accurately. • Cutting and shaping wood using hand tools. • Joining components and assembling a product. • Applying finishing techniques for aesthetic and functional purposes. 	<p>Skills</p> <ul style="list-style-type: none"> • Designing using simple CAD software. • Preparing designs for laser cutting or digital manufacture. • Finishing and assembling acrylic products. • Evaluating the final outcome against the design brief.

Food & Nutrition Theory	<ul style="list-style-type: none"> • Health and safety in a kitchen environment • Food, health and nutrition • The Eatwell guide • Introduction to the five nutrients • Macronutrients • Micronutrients • Nutritional needs for different groups of people 	<ul style="list-style-type: none"> • Commodities – provenance • Cereals, origins and health benefits • Potatoes, vegetables and fruit. Seasonal produce • Dairy, benefits and limitations 	<ul style="list-style-type: none"> • Protein, animal based sources: meat, poultry and fish • Protein, plant based sources: nuts, beans, soya and seeds • Life choices and impact on diet: vegans, vegetarians etc.
Food & Nutrition Skills	Practical outcomes including <ul style="list-style-type: none"> • Fruit salad • Pasta salad • Sausage bites • Flapjack • Breakfast muffin • Frittata • Chilli 	Practical outcomes including <ul style="list-style-type: none"> • Dough balls • Spanish rice • Stir fry • Scones • Calzone • Loaded wedges 	Practical outcomes including <ul style="list-style-type: none"> • Kofta • Chicken curry • Fish cakes • Boston Beans • Coconut macarons • Shortbread swirl

Year 8

	Autumn	Spring	Summer
Design & Technology Knowledge	Graphic Skills Development Learners further develop their design communication skills and explore how graphics are used in product development. Knowledge <ul style="list-style-type: none"> • Understanding branding and visual identity in product design. • Exploring how graphics influence consumer products. • Understanding the role of design briefs and specifications. 	Clock Project Learners design and manufacture a working clock product. Knowledge <ul style="list-style-type: none"> • Understanding mechanisms and how movement is created in products. • Learning about materials and manufacturing processes used in product design. • Understanding the importance of accuracy during manufacture 	Money Box Project Learners apply their design and manufacturing knowledge to produce a money box product. Knowledge <ul style="list-style-type: none"> • Understanding the function and purpose of storage products. • Exploring sustainable design and the use of materials responsibly. • Considering user needs when designing products.

Design & Technology Skills	Skills <ul style="list-style-type: none"> Producing more detailed design drawings. Developing annotation and presentation techniques. Creating design concepts based on user needs. 	Practical skills <ul style="list-style-type: none"> Measuring, marking and cutting materials accurately. Producing components using hand tools and workshop equipment. Assembling a working mechanism. Applying surface finishes and decorative techniques 	Skills <ul style="list-style-type: none"> Producing design ideas based on a given brief. Using workshop tools safely and accurately. Constructing and assembling product components. Evaluating the effectiveness of the final product.
Food & Nutrition Theory ½ year rotation	<ul style="list-style-type: none"> Safety in a practical setting/food safety Food choice – tasting, factors affect food choice Costing – budgeting and how to cost the price of a dish Labelling regulation – what’s the purpose of a label, what the law says Allergies and intolerances – cause and action required. Food science – methods of heat transfer, denaturation and coagulation of proteins and how cooking impacts on the nutritional value of food. 		
Food & Nutrition Practical ½ year rotation	Practical outcomes including <ul style="list-style-type: none"> Gingerbread Lemon Drizzle Meatballs reduction sauce Hobnobs Brownie Potato cakes Burrito Frech toast Fatless sponge Cooking a brief – mince dish. 		

Year 9

	Autumn	Spring	Summer
Design & Technology Knowledge	Engineering – Design and Practical Skills Learners are introduced to engineering concepts and practical problem solving.	Graphics – Rafters Live Brief Learners work on a live design project in collaboration with a company to design a new logo.	Construction – Design and Practical Skills Learners explore construction principles and practical making skills used within the building industry.

	<p>Knowledge</p> <ul style="list-style-type: none"> • Understanding basic engineering principles and structures. • Exploring how materials behave under different forces. • Understanding how engineering drawings communicate technical information. 	<p>Knowledge</p> <ul style="list-style-type: none"> • Understanding branding and logo design. • Exploring how companies communicate their identity through design. • Understanding the importance of responding to a client brief. 	<p>Knowledge</p> <ul style="list-style-type: none"> • Understanding how structures are designed and built. • Learning about construction materials and their uses. • Exploring the importance of accuracy and planning in construction projects.
<p>Design & Technology Skills</p>	<p>Skills</p> <ul style="list-style-type: none"> • Developing accurate technical drawings. • Using tools and equipment safely in practical tasks. • Applying problem-solving skills to engineering challenges. 	<p>Skills</p> <ul style="list-style-type: none"> • Developing and presenting multiple design ideas. • Using digital design tools to refine concepts. • Presenting work to meet a real client's requirements. <p>Practical outcome</p> <ul style="list-style-type: none"> • Learners select their final design and apply it to a product such as a t-shirt or bag using printing techniques. 	<p>Practical skills</p> <ul style="list-style-type: none"> • Measuring and marking out construction materials. • Using tools and equipment safely to manufacture components. • Constructing a practical outcome using construction techniques. • Evaluating the strength and function of constructed products.
<p>Food & Nutrition Theory</p>	<ul style="list-style-type: none"> • How to modify a recipe to reflect customer need • Life stages and nutritional needs • How to plan a meal in response to a given brief by applying previously learned knowledge and skills. 		
<p>Food & Nutrition Practical 1 term rotation</p>	<p>Practical outcomes including</p> <ul style="list-style-type: none"> • Modified bread – 3 ways • Patatas bravas • Bolognaise bake • Sweet potato curry with Bombay potatoes • Roux – mac and cheese • Toad in the hole with roast potatoes • Vanilla Cheesecake with chocolate feathering 		

Key Stage 4 – BTEC Construction and the Built Environment

KS4 **BTEC Construction and the Built Environment** requires learners to apply their knowledge and skills to real-world construction contexts. Learners develop an understanding of the construction industry while applying problem-solving and practical skills to plan, design and complete construction tasks that meet specific client requirements. They explore how buildings and structures are designed, constructed and maintained, considering functionality, sustainability and the needs of users. This

course builds on the practical and technical knowledge gained at KS3 and prepares learners for further study or employment pathways within construction, engineering and the built environment at KS5.

The course supports the key principles of the Design and Technology faculty by helping learners develop a strong understanding of health and safety within construction environments, confidence in using tools, equipment and construction materials, and curiosity about how buildings and structures are designed and produced. Learners develop an awareness of sustainable construction practices, understand the needs of clients and stakeholders, and learn how to communicate and justify design ideas. Through practical work, design tasks and theoretical study, learners build resilience, independence and technical competence, enabling them to become confident problem solvers who can apply their skills to the challenges of the construction industry.

Year 10

Construction	Autumn term	Spring term	Summer term
Knowledge	<p>Construction – Component 2 Practical Preparation</p> <p>Learners are introduced to the practical construction skills required for Component 2. They will develop knowledge of construction materials, tools and equipment used within the industry.</p> <p>Knowledge and theory</p> <ul style="list-style-type: none"> • Understanding health and safety within construction environments including PPE, hazard identification and safe working procedures. • Understanding the properties and uses of common construction materials such as timber, brick, concrete and plaster. 	<p>Construction – Component 2 Practical Assessment</p> <p>Learners complete the practical construction assessment set by the exam board. They will apply the skills developed in the autumn term to complete a construction task within controlled conditions.</p> <p>Skills demonstrated</p> <ul style="list-style-type: none"> • Interpreting construction drawings and instructions. • Selecting appropriate materials, tools and equipment. • Measuring, marking out and constructing components accurately. • Demonstrating safe working practices throughout the construction process. • Managing time effectively during a practical construction activity. <p>Learners will also evaluate their practical work and identify improvements that could be made to the construction process.</p>	<p>Construction – Component 3 Client Design Preparation</p> <p>Learners begin preparation for the externally assessed design component. They explore how buildings and structures are designed to meet client requirements.</p> <p>Knowledge and theory</p> <ul style="list-style-type: none"> • Understanding the stages of the design process within construction projects. • Understanding client requirements and design briefs. • Exploring how construction professionals communicate ideas using drawings and plans. • Understanding sustainability considerations in modern construction.

	<ul style="list-style-type: none"> • Understanding how construction drawings and specifications communicate information within building projects. 		<p>Skills development</p> <ul style="list-style-type: none"> • Producing basic construction drawings and sketches. • Interpreting site information and design constraints. • Developing design ideas to meet a given client brief. <p>Learners begin practising the skills required to respond to a design brief ready for the assessment in Year 11.</p>
Practical	<p>Practical skills</p> <ul style="list-style-type: none"> • Measuring and marking out accurately using construction tools. • Developing skills in cutting, shaping and assembling construction materials. • Understanding correct tool selection and maintenance. • Applying safe working practices within workshop environments. 	Learners will practise a range of practical construction tasks in preparation for the assessed practical assignment.	

Year 11

Construction	Autumn	Spring	Summer
Knowledge	Construction – Component 3 Client Design Assessment	Construction – Component 1 Exam Preparation	Construction – Component 1 Exam Preparation

	<p>Learners complete the externally set design task where they respond to a construction client brief.</p> <p>Assessment focus</p> <ul style="list-style-type: none"> • Analysing a client brief and identifying key requirements. • Producing design ideas and construction drawings. • Selecting appropriate construction materials and methods. • Justifying design decisions based on functionality, sustainability and client needs. • Communicating design ideas clearly through annotated drawings and written explanations. 	<p>Learners consolidate their theoretical knowledge of the construction industry in preparation for the external examination.</p> <p>Key knowledge areas</p> <ul style="list-style-type: none"> • Structure of the construction industry and job roles within it. • Construction technologies used in building different types of structures. • Building materials and their properties and uses. • Environmental sustainability in construction. • Health and safety legislation and risk management in construction environments. • The impact of construction on the built environment and wider society. <p>Learners practise exam style questions and develop revision strategies.</p>	<p>Learners continue revising key theoretical content and strengthening exam technique before sitting the external examination.</p> <p>Revision focus</p> <ul style="list-style-type: none"> • Construction materials and technologies. • Building design and structural principles. • Construction processes and project planning. • Health, safety and sustainability in construction. • Interpreting construction information and applying knowledge to real-world scenarios. <p>Learners complete past papers, timed exam questions and structured revision activities to prepare for the final examination.</p>
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Key Stage 4 – OCR Engineering Design Level 1/Level 2

KS4 Engineering Design enables learners to apply creativity, technical knowledge and practical skills to real-world engineering problems. Learners explore how engineers design, communicate and manufacture products while considering the needs of users, the function of products and the impact of design decisions. The course develops learners’ ability to analyse existing products, communicate ideas through engineering drawings and digital design tools, and produce design solutions that meet specific requirements.

This course builds on knowledge gained during KS3 and prepares learners for further study in engineering, design, manufacturing and related technical disciplines at KS5. Learners develop confidence in using engineering drawing techniques, computer aided design (CAD) and practical manufacturing skills. They also develop an understanding of how engineers analyse products, evaluate design decisions and apply iterative design processes to improve outcomes.

Year 10

Engineering	Autumn	Spring	Summer
Theory	Engineering – Designing, Sketching and Drawing	Engineering – CAD Drawing and NEA Assessment	Engineering – Product Design and Practical Work

	<p>Learners are introduced to the principles of engineering design and how engineers communicate ideas.</p> <p>Knowledge and theory</p> <ul style="list-style-type: none"> • Understanding the engineering design process and how products are developed. • Understanding the purpose of engineering drawings and design communication. • Exploring different types of drawings including isometric, orthographic and exploded diagrams. • Understanding how annotations and dimensions are used to communicate technical information 	<p>Learners develop skills using computer aided design software to produce accurate digital drawings and begin preparation for the NEA.</p> <p>Knowledge and theory</p> <ul style="list-style-type: none"> • Understanding the role of CAD within modern engineering and manufacturing. • Understanding how digital models support product development and manufacturing processes. 	<p>Learners continue developing design ideas and begin producing practical outcomes.</p> <p>Knowledge and theory</p> <ul style="list-style-type: none"> • Understanding materials and manufacturing processes used within engineering. • Exploring how design decisions affect product function, usability and manufacture.
Skills	<p>Skills development</p> <ul style="list-style-type: none"> • Producing freehand sketches and technical drawings. • Applying dimensioning and annotation correctly. • Developing visual communication skills used in engineering design. • Interpreting engineering drawings and design information. 	<p>Skills development</p> <ul style="list-style-type: none"> • Creating engineering drawings using CAD software. • Developing accurate digital models and technical drawings. • Applying measurements and tolerances within digital designs. <p>Learners begin the NEA design task, analysing a design brief and developing initial design ideas using both hand drawing and CAD</p>	<p>Practical skills</p> <ul style="list-style-type: none"> • Selecting appropriate materials and tools for manufacturing tasks. • Producing prototype components or product outcomes. • Applying safe working practices when using tools and equipment. <p>Learners continue refining their NEA design ideas through modelling and prototype development.</p>

Year 11

Engineering	Autumn	Spring	Summer
Theory	<p>Engineering – Product Analysis and Product Outcomes</p> <p>Learners explore how engineering products are analysed and evaluated.</p> <p>Knowledge and theory</p>	<p>Engineering – Completion of NEA</p> <p>Learners complete the Non-Exam Assessment by developing a final engineering design solution.</p> <p>Assessment focus</p>	<p>Engineering – Examination Preparation</p> <p>Learners consolidate their knowledge in preparation for the final written examination.</p> <p>Revision focus</p>

	<ul style="list-style-type: none"> • Understanding how existing products are analysed to inform design improvements. • Investigating how materials, components and manufacturing methods influence product performance. • Understanding how ergonomics, sustainability and functionality influence engineering design. 	<ul style="list-style-type: none"> • Responding to a design brief and identifying user needs. • Producing design ideas and engineering drawings. • Developing and refining design concepts. • Producing and evaluating final design outcomes. • Justifying design decisions using technical knowledge and analysis. 	<ul style="list-style-type: none"> • Engineering design processes and product development. • Engineering drawing techniques and design communication. • Materials, components and manufacturing methods. • Product analysis and evaluation. • Applying engineering knowledge to real-world design scenarios. <p>Learners practise exam-style questions and past papers to develop confidence and exam technique.</p>
Skills	Skills development <ul style="list-style-type: none"> • Analysing engineering products and identifying strengths and weaknesses. • Evaluating design decisions and suggesting improvements. • Applying findings from product analysis to inform NEA design work. 		

Key Stage 4 – WJEC Hospitality and Catering Level 1/Level 2 Technical Award

Throughout Key Stage 4 learners will be taught to:

- Develop knowledge and understanding of the structure of the hospitality and catering industry, including different types of establishments, services, and job roles.
- Understand how hospitality and catering businesses operate successfully, including the importance of customer needs, service standards and effective organisation.
- Demonstrate knowledge of health and safety requirements within hospitality and catering environments, including safe working practices and risk management.
- Understand the importance of food safety, food hygiene and current legislation when storing, preparing, cooking and serving food.
- Develop knowledge of nutrition and the principles of a balanced diet in order to plan meals and menus that meet the needs of specific groups.
- Plan, prepare, cook and present a range of nutritious dishes using appropriate preparation methods, cooking techniques and equipment.
- Apply time management, organisation and problem-solving skills when completing practical catering tasks.
- Demonstrate effective food presentation and service skills suitable for hospitality and catering contexts.
- Evaluate completed dishes and working practices, identifying strengths and areas for improvement.
- Develop transferable skills valued by the hospitality and catering industry, including teamwork, communication, independence and professionalism.

Year 10

Food & Nutrition	Autumn	Spring	Summer
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Theory	<p>Introduction to the following:</p> <ul style="list-style-type: none"> • Learners will know and understand the two different types of hospitality and catering provision: commercial and non-commercial • Learners will know and understand the following types of employment roles and responsibilities within the industry • Learners will understand working conditions in the hospitality and catering industry • Learners will understand contributing factors to the success of hospitality and catering provision • Learners will understand operational requirements • Learners will develop an understanding of how customer requirements influence hospitality and catering operations and how services can be adapted to meet specific needs. • Learners will understand and apply health and safety and food safety practices within hospitality and catering environments to ensure safe preparation, handling, storage and service of food. • Learners will understand the causes of food-induced ill health and the preventative control measures used to reduce risks, including the role of the Environmental Health Officer (EHO) in monitoring and enforcing food safety standards. 	<ul style="list-style-type: none"> • Learners will know and understand the function nutrients and have an awareness of the need for a balanced/varied diet • Learners will know and understand how cooking methods impact on nutritional value • Learners will be aware of the following factors when planning menus: • cost • portion control • balanced diets/current nutritional advice • time of day • clients/customers. • Learners will be able to plan dishes for a menu and know and understand the following: • commodity list with quantities • contingencies • equipment list • health, safety and hygiene • quality points • sequencing/dove-tailing • timing • mise en place • cooking • cooling • hot holding • serving • storage. 	<ul style="list-style-type: none"> • Learners will be able to provide a brief review of their planning, preparation and cooking, highlighting areas of success and of potential further development • Learners will be able to identify personal strengths and weaknesses • Learners will be introduced to the Unit 2 assessment and will develop an understanding of how to interpret and respond to a brief when planning and preparing dishes. • Learners will be given the opportunity to complete a full practice of the Unit 2 assessment to help prepare them for the formal assessment in Year 11.
Practical	<p>Practical outcomes including</p> <ul style="list-style-type: none"> • Pizza (bread) • Potato 3 ways • Cottage pie • Dutchess potatoes • Sliders and slaw 	<p>Practical outcomes including</p> <ul style="list-style-type: none"> • Picnic eggs • Breakfast muffins (Maccies) • Frittata (pan fried) • Ramen noodles • Chicken burger 	<p>Practical outcomes including</p> <ul style="list-style-type: none"> • Scotch eggs • Keema flatbread • Topped flatbread • Cowboy stew and savoury biscuits • Layered salad with homemade mayo

	<ul style="list-style-type: none"> American pancakes Petticoat tail shortbread 	<ul style="list-style-type: none"> Mini tacos Jam turnover 	<ul style="list-style-type: none"> Tear n share garlic bread Cooking to a brief
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Year 11

Food & Nutrition	Autumn	Spring	Summer
Theory	<ul style="list-style-type: none"> Understanding micronutrients, their functions and their importance for maintaining good health. Understanding the importance of water and its role in maintaining health and supporting body functions. Understanding the factors that affect energy requirements and how energy needs can be calculated. Exploring how nutritional and dietary needs vary between different groups of people. Understanding how food allergies and intolerances affect dietary choices and meal planning. Developing knowledge of how recipes can be modified to meet different dietary needs and requirements. Understanding what a scientific investigation is and how to plan and carry one out. 	Completion of unit 2 Controlled Assessment	<ul style="list-style-type: none"> Revisit unit 1 content Preparation for Unit 1 exam Unit 1 Examination in the summer series
Practical	<ul style="list-style-type: none"> Knife skills audit Coated fritters Beef and onion pasty Brownie bites, homemade custard Curry, braised rice and flatbread Layered dessert Ravioli Jambalaya Swiss roll – piping 	Controlled assessment: 3.5 hour cook	NA

	<ul style="list-style-type: none">• Sticky chicken with crispy chickpeas and coconut rice• Pork schnitzel bites- assorted side• Summer sponge• Toad in the hole, sauté country potatoes, minted carrots		
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