



DESIGN TECHNOLOGY

Why is the study of Design and Technology important?

Design and Technology is a practical and valuable subject. It enables students to actively contribute to the creativity, culture, wealth and well-being of themselves, their community and their nation. It teaches how to take risks and so become more resourceful, innovative, enterprising and capable. 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.

What students will know and understand from their study

Across the five year curriculum the aims of the Design and Technology curriculum is to include the development of capability within the subject, along with broad general skills. Below details the skills and knowledge that will be gained across the five years and this list whilst not exhaustive also includes skills and knowledge gained in Year 7, 8 and 9

What skills will the study of Design and Technology teach you?

Design and Technology use knowledge, skills and understanding from within the subject itself and also a wide range of other sources, especially but not exclusively science and mathematics. Design and Technology will teach you to:

- Develop resilience by not being afraid of challenges when solving problems, but to break them down and keep trying.
- Be creative in developing solutions to real world problems.
- Use modelling and annotated sketches to develop and communicate ideas.
- How to act responsibly within a practical environment thinking of the safety of yourself and others..

- Identify how to competently use a range of practical techniques across a range of disciplines.
- Apply and use CAD/CAM equipment to design and manufacture a range of products and components considering scale of production and precision.
- Work independently and part of a team to solve complex problems.
- Construct reasoned arguments to ethical, social and moral problems that have arisen due to technology and communicate these in an effective way.
- Identify links between different materials and contextual references.
- Test, evaluate and refine their ideas and products against a specification, taking into account the views of intended users and other interested groups.
- 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 recipes).
- Understand the source, seasonality and characteristics of a broad range of ingredients.

What will you know and understand from your study of Design and Technology?

- How to classify materials including smart materials and discuss their physical properties.
- How to use simple electronic circuits incorporating inputs and outputs.
- How to manufacture products with reference to their materials physical properties.

- Students will learn to use and adjust equipment and machinery dependent on tasks.
- Use learning from science and mathematics to help design and manufacture components and products.
- Students will learn to consider the influence of a range of lifestyle factors and consumer choices when designing and analysing products.
- Students will know and understand additional factors to consider such as ergonomics, anthropometrics or dietary needs.
- How to use a variety of approaches, for example biomimicry and user-centred design to generate creative ideas and avoid stereotypical responses.
- Students will be able to evaluate their work against an increasing range of designers, engineers, chefs, technologists and manufacturers and be able to relate their product to their own designing and making.
- Students will be able to evaluate products through disassembly to determine how they are constructed and function and consider the life cycle analysis.
- How to competently use a range of cooking techniques for example, selecting and preparing ingredients; using utensils and electrical equipment.

Curriculum Planning

It is recognised schools are teaching a wide range of KS4 specifications, the themes and subject content have been identified from the following sources :

- The Design and Technology programmes of study for KS3
- GCSE subject content for Food Preparation and Nutrition
- GCSE subject content for Design and Technology
- WJEC Level 1/2 in Hospitality and Catering.
- BTEC Technical award Engineering
- WJEC Engineering
- BTEC Tech award Construction and the built environment
- AQA design Art & Textiles

Curriculum content only covers core knowledge common to all KS4 specifications. It is expected schools will include additional content from their chosen specification into their planning.

Assessment Objectives Design and Technology

	Design	Make	Evaluate	Technical Knowledge
Y10 & Y11	<p>Understand that all design and technological practice takes place within contexts which inform outcomes</p> <p>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</p> <p>Use different design strategies, such as collaboration, user-centred design and systems thinking, to generate initial ideas and avoid design fixation.</p> <p>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</p>	<p>Develop and apply in-depth knowledge by selecting and working with appropriate materials and components in order to produce a prototype</p> <p>Apply in depth knowledge 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.</p> <p>Follow procedures for safety and write risk assessments.</p> <p>Use 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</p> <p>Use appropriate surface treatments and finishes for functional and aesthetic purposes</p>	<p>Test, evaluate and refine their ideas and products against the specification taking into account the views of intended users and other interested groups.</p> <p>Critically evaluate new and emerging technologies to inform design decisions; considering contemporary and potential future scenarios from different perspectives, such as ethics and the environment.</p> <p>Evaluate an increasing range of designers, engineers, technologists and manufacturers and be able to relate their products to their own designing and making.</p> <p>Understand the effects of forces and temperature changes on materials used.</p>	<p>Understand the impact of new and emerging technologies on industry, enterprise, sustainability, people, culture, society and the environment, production techniques and systems.</p> <p>Know how energy is generated and stored in order to choose and use appropriate sources to make products and to power systems.</p> <p>Understand developments in modern and smart materials, composite materials and technical textiles.</p> <p>Understand how electronic systems provide functionality to products and processes, including sensors and control devices to respond to a variety of inputs, and devices to produce a range of output</p>

	<p>Consider additional factors such as ergonomics and anthropometrics.</p> <p>developing generic skills for work through management of self, working in a team, the use of a variety of relevant communication and presentation skills, and the development of critical thinking skills relevant to vocational contexts.</p> <p>understand a client's needs to develop a design brief</p>	<p>Giving the opportunity to apply the learning through practical activities that they will encounter in the future in the workplace, for example by practising working skills through teamwork activities</p>	<p>Use mathematical techniques to solve problems.</p>	<p>Understand how the use of programmable components are used to embed functionality into products in order to enhance and customise their operation</p> <p>Understand the functions of mechanical devices, to produce different sorts of movement, changing the magnitude and direction of forces:</p> <p>Know how to make adjustments to the settings of equipment and machinery such as sewing machines and drilling machines.</p> <p>Use learning from science and maths to help design and make products that work.</p> <p>English and mathematical skills are embedded in the assessment criteria</p>
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<p>Y9</p>	<p>Work confidently within a range of relevant domestic, local and industrial contexts, such as the home, health, leisure, culture, engineering, manufacture etc.</p> <p>Consider the influence of a range of lifestyle and consumer choices when designing products.</p> <p>Take creative risks when making design decisions.</p> <p>Analyse where human values may conflict and compromise has to be achieved.</p> <p>Decide which design criteria clash and determine which should take priority.</p> <p>Consider additional factors such as ergonomics and anthropometrics.</p>	<p>Produce costings spreadsheets for products they design and make.</p> <p>Match and select suitable materials and their fitness for purpose.</p> <p>Adapt their method of manufacture to changing circumstances.</p> <p>Recognise when it is necessary to develop a new skill or technique.</p> <p>Follow procedures for safety and understand the process of risk assessments.</p> <p>Make independent choices when selecting and using a broad range of manufacturing techniques including hand craft skills and machinery to manufacture products precisely.</p> <p>Apply a range of finishing techniques to a broad range of materials.</p>	<p>Evaluate the concept of circular economy approaches in relation to product development and consumption.</p> <p>Test, evaluate and refine their ideas and products against the specification taking into account the views of intended users and other interested groups.</p> <p>Evaluate new and emerging technologies.</p> <p>Evaluate an increasing range of designers, engineers, technologists and manufacturers and be able to relate their products to their own designing and making.</p>	<p>How to construct and use simple and compound gear trains to drive mechanical systems from a high revving motor.</p> <p>How to make adjustments to the settings of equipment and machinery such as sewing machines and drilling machines.</p> <p>Use learning from science and maths to help design and make products that work.</p> <p>Understand the properties of materials, including smart materials, and how they can be used to advantage.</p>
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<p>Y8</p>	<p>Use research and begin the exploration, such as the study of different cultures, to identify and begin to understand user needs.</p> <p>To identify and solve issues within a design development task.</p> <p>Develop specifications to inform the design of innovative, functional, appealing products that respond to needs in a variety of uses.</p> <p>Use a variety of influences, to generate creative ideas and avoid stereotypical responses.</p> <p>Use 2D and 3D to model and develop their ideas.</p> <p>Use CAD software to validate their designs in advance of manufacture.</p> <p>Develop and communicate design ideas using annotated sketches, detailed plans, 3-D and mathematical modelling, Oral and digital presentations and computer-based tools.</p> <p>Consider additional factors such as ergonomics and anthropometrics.</p>	<p>Select from a wider, more complex range of materials and components, taking into account their properties.</p> <p>Make simple use of planning tools for instance Gantt charts, communicate their plans clearly so that others can implement them.</p> <p>Use a broad range of material joining techniques including stitching, mechanical fastenings, heat processes and adhesives.</p> <p>Make independent choices when selecting and using CAD/CAM to manufacture products/components and apply surface finishing techniques to increase the standard of quality.</p> <p>Follow procedures for safety and understand the process of risk assessments.</p> <p>Make independent choices when selecting and using a broad range of manufacturing techniques including hand craft skills and machinery to manufacture products precisely.</p> <p>Apply a range of finishing techniques to a broad range of materials.</p>	<p>Select appropriate methods to evaluate their products in use and modify them to improve performance.</p> <p>Produce short reports making suggestions for improvements.</p> <p>Evaluate products that they are less familiar with using themselves</p> <p>Evaluate products considering life cycle analysis.</p> <p>Evaluate how products can be developed considering the concept of cradle to grave.</p> <p>Test, evaluate and refine their ideas and products against the specification taking into account the views of intended users and other interested groups.</p> <p>Evaluate new and emerging technologies.</p> <p>Evaluate an increasing range of designers, engineers, technologists and manufacturers and be able to relate their products to their own designing and making.</p>	<p>How to apply computing and use electronics to embed intelligence in products that respond to inputs.</p> <p>How to control outputs such as actuators and motors.</p> <p>How to use software and hardware to develop programmes and transfer these programmable components for example, microcontrollers.</p> <p>How to make use of microcontrollers in products they design and manufacture themselves.</p> <p>How to make adjustments to the settings of equipment and machinery such as sewing machines and drilling machines.</p> <p>Use learning from science and maths to help design and make products that work.</p> <p>Understand the properties of materials, including smart materials, and how they can be used to advantage.</p>
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<p>Y7</p>	<p>Use research, such as the study of different cultures, to identify user needs.</p> <p>Be able to outline a simple specification to inform design ideas and guide their thinking.</p> <p>Use 2D packages to model their ideas.</p> <p>Produce models of their ideas using CAM to test ideas.</p> <p>Be able to independently generate creative ideas informed by stimulus using annotations to explain key features relating to brief/specification.</p> <p>Consider additional factors such as ergonomics and anthropometrics.</p>	<p>Produce ordered sequences and schedules for manufacturing products they design detailing resources required.</p> <p>Make use of specialist equipment to mark out materials.</p> <p>Use a broad range of material joining techniques including stitching, mechanical fastenings, heat processes and adhesives.</p> <p>Select and use CAD/CAM to manufacture products/components and apply surface finishing techniques to increase the standard of quality.</p> <p>5. Investigate and develop skills in modifying the appearance of materials including textiles and other manufactured materials.</p> <p>Follow procedures for safety and understand the process of risk assessments.</p> <p>Select and use a broad range of manufacturing techniques including hand craft skills and machinery to manufacture products precisely</p> <p>Apply a range of finishing techniques to a broad range of materials.</p>	<p>Evaluate their products against their original specification and identify ways to improve them.</p> <p>Actively involve others in the testing of their products.</p> <p>Evaluate products through disassembly to determine how they are constructed and function.</p> <p>Evaluate the positive and negative impact that products can have in the wider world.</p> <p>Test, evaluate and refine their ideas and products against the specification taking into account the views of intended users and other interested groups.</p> <p>Evaluate new and emerging technologies.</p> <p>Evaluate an increasing range of designers, engineers, technologists and manufacturers and be able to relate their</p>	<p>How to classify materials by structure e.g. hard wood, soft wood, ferrous and non-ferrous, thermoplastics and thermosetting plastics.</p> <p>Consider the physical properties of materials. e.g. brittleness and malleability.</p> <p>How to use simple electronic circuits incorporating inputs and outputs.</p> <p>Consider textile fibre sources e.g. natural and synthetic.</p> <p>How materials can be cast in moulds.</p> <p>Make use of sensors to detect heat, light etc. such as thermistors and light dependent resistors.</p> <p>How to make adjustments to the settings of equipment and machinery such as sewing machines and drilling machines.</p> <p>Use learning from science and maths to help design and make products that work.</p>
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			products to their own designing and making.	Understand the properties of materials, including smart materials, and how they can be used to advantage.
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Assessment Grids – Age Related Assessment Descriptors

Design and Technology

Scheme of Work	Design	Make	Evaluate	Technical Knowledge
<p><i>Working well above ARE</i></p> <p>(Trajectory for Grade 8 – 9)</p>	<p>I can explain how Engineers/ designers from different sectors contribute /generate a product.</p> <p>I can create imaginative, creative and innovative ideas, fully avoiding design fixation and with full consideration of design functionality, aesthetics and innovation.</p> <p>I can produce detailed annotation that clearly justifies how I have considered the user/client needs and links directly to the context selected.</p> <p>I can produce a complex investigation into the work of others and use this to inform my designs.</p>	<p>I can develop an improved final solution using CAD and modelling in relation to the brief.</p> <p>I have correctly used tools, equipment and materials (including CAM where appropriate) have been consistently used or operated safely with a high level of skill.</p> <p>I can produce a high quality prototype that has the potential to be commercially viable and has been made to meet the needs of the end user.</p> <p>I have evidenced a constant use of quality control to ensure a high quality, accurate prototype. I have clearly shown where I have adapted my work</p>	<p>I can fully justify the development of an improved final solution and evaluate use of the design process, with reference to the brief and peer review.</p> <p>I have a comprehensive understanding of testing, analysing and evaluating existing products and ongoing work.</p> <p>I used judgements for independent and external feedback to inform and record modifications that I make.</p>	<p>I have knowledge and understanding of the impact of new and emerging technologies from a user, designer and manufacturers point of view.</p> <p>I can discuss and explain the impact of resource consumption on the planet and measures taken to improve this.</p> <p>I can implement a sensitive approach with design and evaluation, and avoid negative impact on individuals and groups. E.g inclusive design/religious beliefs.</p> <p>I can identify and explain when/why and how various production techniques and systems are used in</p>

		to include feedback from QC checks and/or users.		manufacture. For example, automation, JIT.
<p><i>Working beyond ARE</i></p> <p>(Trajectory for Grade 6 – 7)</p>	<p>I research and explore relevant information based on the user's needs.</p> <p>I know how to use social, moral and cultural information to understand the user more clearly.</p> <p>I can independently solve design problems and understand how to develop problems that are given to me.</p> <p>I have developed a specification that allows me to be innovative, functional, and create an appealing design that responds to the users needs.</p> <p>I have used a variety of approaches, for example, biomimicry and user centred design which has generated creative ideas that avoid stereotypical response to the brief.</p>	<p>I can select specialist tools in my practical and my choices are justified.</p> <p>I justify the reasons for my choice of materials, taking into consideration their properties.</p> <p>I justify the process that I choose to make my product.</p> <p>I can use CAM in my work.</p> <p>I am accurate and precise when I work.</p> <p>I can work very safely and can coach others to do it.</p>	<p>I can compare and contrast existing products, analysing them and explaining how this will influence my design.</p> <p>I understand and can explain developments in DT, for example use of robotics in manufacturing.</p> <p>I test, evaluate and refine my ideas and products against a specification. I always take into account the views of users/groups.</p> <p>I understand the responsibilities of designers and engineers and clearly show this in my work.</p> <p>This could include inclusive design, sustainability etc.</p> <p>I can evaluate the impact of my product on individuals, society and the environment.</p>	<p>I understand and use the properties of materials and the performance of structural elements to achieve functioning solutions.</p> <p>I understand how more advanced mechanical systems are used in my products and enable changes in movement and force.</p> <p>I understand how more advanced electrical and electronic systems can be powered and used in my product.</p> <p>I apply computing and use electronics to embed intelligence in my product that responds to inputs, and control output, using programmable components.</p>

<p><i>Working at ARE</i></p> <p>(Trajectory for Grade 4 – 5)</p>	<p>I use research to state and describe the user's needs.</p> <p>I can generate at least three different ideas, listing the constraints and develop them so they're improved following user/specification analysis.</p> <p>I analyse research to write a full specification which includes users views/needs.</p> <p>I can select different methods to develop and improve ideas e.g. CAD/Modelling in response to the specification.</p> <p>I annotate ideas in response to the specification and clearly show how/why the design has been improved.</p>	<p>I can describe the tools and equipment I use.</p> <p>I can describe a range of materials that I use.</p> <p>I can describe the processes that I use.</p> <p>My work is generally accurate and pays attention to quality of finish.</p> <p>I always work safely adhering to workshop safety rules.</p>	<p>I analyse existing products on the market that are relevant and use these to inform my ideas.</p> <p>I can test and evaluate my product against the specification and improve my product as a result.</p> <p>I understand what my responsibilities are as a designer including reference to positive and negative impacts that products may have on the wider world.</p> <p>I can describe new technologies and smart materials and describe how they can help the environment and end product.</p>	<p>I can understand the properties of materials and select them to improve functioning solutions.</p> <p>I understand how electrical and electronic systems can be powered and used in their products.</p> <p>I apply computing and use electronics in my product that respond to input and control outputs.</p> <p>I understand how mechanical systems are used in my product to enable changes in movement and force.</p> <p>I can independently select and use CAD/CAM in design and manufacture of my product (identify between 2D and 3D).</p>
<p><i>Working towards ARE</i></p> <p>(Trajectory for Grade 2 – 3)</p>	<p>I use research to identify the user's needs.</p> <p>I can generate at least three different ideas and develop them so they're improved.</p> <p>I use research to write a basic specification.</p>	<p>I can name the tools and equipment I use.</p> <p>I can name a range of materials that I use.</p> <p>I can list the processes that I use.</p> <p>My work is mostly accurate.</p> <p>I work safely adhering to workshop safety rules.</p>	<p>I look at existing products on the market that are relevant and use these to inform my ideas.</p> <p>I can test and evaluate my product against the specification.</p> <p>I understand what my responsibilities are as a designer and show this in my work.</p>	<p>I can recall the properties of materials.</p> <p>I understand systems and control and know what an input and output is.</p> <p>I understand mechanical systems. I can select how CAD/CAM can be used in manufacture (identify between 2D and 3D).</p>

	<p>I use different methods to develop and improve ideas e.g. CAD/Modelling.</p> <p>I annotate ideas so they're clear to others.</p>		<p>I know about new technologies and smart materials and know how they can help the user.</p>	
<p><i>Working below ARE</i></p> <p>(Trajectory for Grade U – 1)</p>	<p>I can outline how the product meets my own needs.</p> <p>I know what a specification is and can work from one.</p> <p>My ideas are sketched and labelled with basic notes.</p>	<p>I can prepare myself for practicals.</p> <p>I can name some of the tools I use.</p> <p>I can use equipment safely.</p> <p>Practical work is reasonably accurate.</p>	<p>I look at products to help me with my ideas.</p> <p>I can outline what I designed and what I made and state improvements needed.</p> <p>I know what some of my responsibilities are as a designer.</p> <p>I know a bit about new technologies and smart materials and how they can help the user.</p>	<p>I can identify the properties of some materials.</p> <p>I understand a little about systems and control and know what an input and output is.</p> <p>I understand basic mechanical systems.</p> <p>I know how CAD/CAM can be used in manufacture.</p>

Wider Subject Curriculum – *enrichment, homework programs, quizzing, awards, trips, visits, reading / vocabulary lists, competition etc.*

Resources

Glossary of key terms, rules and formula - *to be spelt / used correctly*

Key Terms

Vocabulary	Description
Sustainability	Working in a way that will ensure a continued supply of resources and energy for future generations (renewable/non-renewable/finite).
Environmental	Concerned with the impact or change in the environment.
Aesthetic	Our perception of beauty including sight, sound, smell, touch (mainly visual for Product Design).
Texture	The feel, appearance or consistency of a surface, substance or fabric.
Durability	The ability of a material to be hard-wearing.
Hardwoods	Come from deciduous or broadleaf trees. They are generally slow growing, hard, sold by cubic metre then rough sawn to size or mould (dowel).

Softwoods	Come from coniferous trees with needles instead of leaves. They are generally faster growing, softer, easier to work with. Supplied in standard sizes that are either rough sawn or planed smooth (PSE).
One-off	Only one product is made at a particular time (usually high quality/unique).
Batch	A series of identical products are made together, in small or large numbers (usually for a specific event).
Mass production	Products made on a production line with each worker responsible for a particular stage. Products are made in larger numbers to reduce the cost of each item.
Prototype	An accurate or working representation of what the product will do.
Quality control	Guarantees the accuracy of a product (size, material quality/ visual features).
Quality Assurance	Checks the machines, systems and staff within an organisation that make the products.
Risk assessment	The likelihood of safety problems arising from an activity (in designing and making a product).
CAD	Computer aided design is a drawn product or part of a product on a software package that can then be exported to an CAM machine (Increases accuracy and ease of repeat cuts).

CAM	Computer aided manufacture, a machine that turns a digital drawing into numerical code that plots a path for an item to be cut/drilled/milled out of a section of material.
Thermoplastics	These soften when heated and can be reshaped.
Thermosetting plastics	Heated and moulded into shape these plastics cannot be reshaped with heat because the polymer chains have been interlinked.

5 Year Subject Curriculum Progression Overview

Subject	Y7 Mechanical Toy	Y8 Chair design- Are you sitting comfortably?	Y9 Graphic Branding
Product Design	<ul style="list-style-type: none"> ● Analysing a design brief ● Task analysis ● Generate design ideas. ● Modelling/iterations/prototyping ● Understand CAD/CAM ● CAFEQUE. Annotation, evaluation. ● Health and safety lesson. ● Evaluation of ideas, against the spec/design brief ● Peer assessment. ● Motion/movements and mechanisms. Examine cams ● Sustainability and recycling. ● Design development through final design using feedback from others. ● Using maths to work to scale. 	<ul style="list-style-type: none"> • Product Analysis, mood board, identifying the user through questionnaire. • Generate design ideas using mood boards. Stereotype/gender neutral lesson. • Annotation of ideas and praising stars exam. • Ergonomics & anthropometrics. • Design movements and history of design. • CAFEQUE. Annotation, evaluation. • Laser ply, acetate and card to create a jigsaw and packaging. • Feedback from others through gathering and sharing and record and analyse results. • Evaluation of ideas, against the spec. • Peer assessment. • Using maths to work to scale Test and Evaluate the finished product against specification and brief requirements. 	<ul style="list-style-type: none"> ● Research of existing products. ● Design brief analysis, ● Generation of specification. Generating ideas using a range of presentation techniques including CAD. ● Develop skills in professional graphic packages. ● The importance of CAM and the impact on manufacturing techniques. ● Paper and board ● Sustainability. ● Technical drawing ● Graphic communication ● Test and Evaluate the finished product against specification and brief requirements. ● Peer assessment.

Subject	Y7 Maze	Y8 Nightlight	Y9 Stick Figure
Engineering	<ul style="list-style-type: none"> • Follow health and safety procedures. • Understand how to classify hardwoods, softwoods and manufactured boards. • Consider the physical properties of woods. • Use specialist equipment to mark out materials and cut using Lap joint joining method. Glue with PVA. • Perform research tasks to create a mood board and study the target market to identify and understand user needs. • Independently generate design ideas from a given brief, annotate and explain key features which relate to the brief. • Consider ergonomics and Function when designing (CAFEQUE). • Use 2D packages to model ideas. • Use CAM to produce/create the lid of the maze. • Apply a finishing technique using belt sander. • Sustainability and recycling of materials. • Test and Evaluate the finished product against specification and brief requirements. • Peer assessment. • Praising stars test. 	<ul style="list-style-type: none"> • Product analysis of existing products. • Perform research tasks to create a mood board and study the target market to identify and understand user needs. • Independently generate design ideas from a given brief, annotate and explain key features which relate to the brief. • Consider ergonomics and Function when designing (CAFEQUE). • Use 2D packages to model ideas. • Use CAM to produce/create the lit graphic of nightlight. • Follow health and safety procedures in the workshop and outline key risks. • Material joining methods such as soldering and glueing plastics. • Understanding and carrying out the Vacuum forming manufacturing process. • Understanding material properties of thermos and thermosetting plastics. • Sustainability and recycling of materials. • Test and Evaluate the finished product against specification and brief requirements. • Peer assessment. • Praising stars test. 	<ul style="list-style-type: none"> • Follow health and safety procedures in the workshop. • Marking out, accuracy and precision using specialist equipment. • Use specialist equipment to create a brazing joint. • 3 dimensional modelling. • Product Analysis • Material classification • Environmental impacts of using timber and metals • Material finishes • Sustainability. • Test and Evaluate the finished product against specification and brief requirements. • Peer assessment.

Subject	Y7 Pencil Case	Y8 Monster	Y9 T Shirt
Textiles Technology	<ul style="list-style-type: none"> • Health and Safety • Textiles products in society • Design work using Tangrams • Textile Fibres • Transfer crayoning using a heat press • Properties of fibres • Hand sewing skills and machining skills • Quilting, insulation and protection • Fabric construction including weaving and knitting • Anthropometric and ergonomic considerations • Manufacture and finishing of product • Evaluation of final product, tools and equipment • Consumer awareness of environmental issues • Praising stars test. Technical Knowledge, health and safety and Design. 	<ul style="list-style-type: none"> • Health and safety • Cultural textiles • Tie Dye • Block printing • Designing to a specification • Investigate user groups • Modifying designs after feedback • Designing for user groups • Pattern making / seam allowances • Functions of clothing • Hand and machine sewing skills • Smart and e fabrics • Embroidery and texturing techniques • Textiles and the law • Bagging out and finishing techniques • Care labels • Evaluation against the specification • Sustainability • Praising stars test. Technical Knowledge, health and safety and Design. 	<ul style="list-style-type: none"> • Health and safety • Popular culture and textile trends • Hip/ Hop/ Graffiti • Punk • Pop art • Faux leather • Technical fabrics • E textiles • Designing to a specification • Investigate user groups • Modifying designs after feedback • Designing for user groups • Pattern making / seam allowances • Functions of clothing • Hand and machine sewing skills • Evaluation against the specification • Sustainability • Praising stars test. Technical Knowledge, health and safety and Design.

Subject	Y7	Y8	Y9
Food Technology	<p><u>Theory:</u></p> <ul style="list-style-type: none"> • Why learn food and nutrition? • Food hygiene: how to set up for a practical lesson. Safety in the kitchen • How to store food safely including use by and best before dates. • Food choices, religion, vegetarianism • Weighing and measuring. Demonstration of buns and functions of ingredients. • Healthy eating: <ul style="list-style-type: none"> • Eatwell guide • 5 a day and fibre • Eat less sugar, fat & salt • Healthy Eating - the 8 tips, current issues and government advice. • Functions of ingredients and adapting recipes. 	<p><u>Theory:</u></p> <p>Where food comes from – sources of food and processing. Animal welfare and factory farming.</p> <ul style="list-style-type: none"> • Food safety and the prevention of cross contamination and food poisoning. • Seasonal food and organic foods • Love food hate waste – reducing food waste and menu planning. • fair trade and reducing food miles • Energy balance - making healthy choices • Micro and macro nutrients • Modifying recipes • Food shopping and food labelling • Sensory evaluation 	<p><u>Theory:</u></p> <ul style="list-style-type: none"> • Cooking methods - Cooking with water, dry heat and fat. How cooking affects the nutritional properties of food. • Preparing, shaping and combining foods. • Functional properties of food - aeration and Raising agents - chemical raising agents • Functional properties of food Shortening • Coagulation of proteins and setting of mixtures. • Raising agents Biological raising agents • To review the opportunities for future courses and career options and consider how their study of food can help them live healthier lives.
	<p><u>Practical:</u></p> <ul style="list-style-type: none"> • Fruit salad - Knife skills (bridge and claw), fruit preparation (peeling and segmenting), washing and clearing up organisation • Toasties. Toasted sandwich (Use of small electrical equipment) How to write a production plan. • Buns - creaming / all in one and test for readiness. Use of an oven. • Speedy Pizza (Melting). Use of the grill • Pasta Pot Use of the hob boiling and simmering. • Chicken goujons (safety handling raw meat) Halloumi Goujons as an alternative. Baking. Testing for readiness of meat. • Bolognese / chilli (How to dry fry) Peeling of 	<p><u>Practical:</u></p> <ul style="list-style-type: none"> • Potato wedges. Knife skills (bridge and claw) Par-boiling of potatoes and oven baking. • Chicken and Parma ham – How to cook meat safely, check for readiness. Frying • Meatballs with ragu sauce – forming, shaping and presentation. Making Tomato sauce. Option of blending sauce. Oven baking of meatballs. Seasoning • All in one sauce, sauce making. Cauliflower cheese. • Bread Plait – Making and shaping dough. • Oat and raisin Cookies – creaming and baking. • Pizza – making and shaping dough • Bread and butter pudding – sustainability / reducing waste. 	<p><u>Practical:</u></p> <ul style="list-style-type: none"> • Pasta Fiorentina <p>To secure and demonstrate knife skills, grating, using the hob (frying, boiling and simmering), draining and using the grill.</p> <ul style="list-style-type: none"> • Cottage Pie <p>To secure and demonstrate the principles of food hygiene and safety focusing on knife skills, handling and cooking raw meat (if using), the kettle (hot water), the hob, draining and the grill.</p> <ul style="list-style-type: none"> • Dutch Apple Cake <p>Consolidation of cake making skills, bridge and claw method</p> <ul style="list-style-type: none"> • Savoury quiche.

	onion. Knife skills. • Crumble / Scones Rubbing in skills. Baking	• Swiss roll – whisking and folding, baking. Higher level skill	Pastry development using the rubbing in method. • Pizza pinwheels Making and shaping dough, healthy eating, topping selection. Preparation and presentation. • Cheesecake. Review and evaluate practical performance.
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WJEC Level 1/2 Vocational Award in Engineering (Technical Award)		
	Y10	Y11
Autumn Term 1	Introduction to the course Unit 1: Manufacturing Engineering Products 1.1 Understanding engineering drawings	Unit 2 Designing Engineered Products 2.3 Communicating an engineered design solution
Autumn Term 2	Unit 1: Manufacturing Engineering Products 1.2 Planning manufacturing	Unit 2 Designing Engineered Products 2.4 Solving applied engineering problems Mock exam
Spring 1	Unit 1: Manufacturing Engineering Products 1.3 Using engineering tools and equipment	Exam prep Unit 3 Solving Engineering Problems 3.1 Understanding the effects of engineering achievements
Spring 2	Unit 1: Manufacturing Engineering Products 1.4 Implementing Engineering Processes Assignment - Unit 1: Manufacturing Engineering Products	Exam prep Unit 3 Solving Engineering Problems 3.2 Understanding properties of engineering materials Mock exam
Summer 1	Unit 2 Designing Engineered Products 2.1 Understanding function and meeting requirements	Exam prep Unit 3 Solving Engineering Problems 3.3 Understanding methods of preparation, forming, joining and finishing of engineering materials

		3.4 Solving engineering problems
Summer 2	Unit 2 Designing Engineered Products 2.2 Proposing design solutions	Course ended

Pearson BTEC Level 1/Level 2 Tech Award in Construction and the Built Environment Course Overview		
Term	Year 1	Year 2
Autumn 1	Component 1: Construction Technology : Develop an understanding of construction. Performance requirements of structures Develop carpentry skills	Component 3: Construction and Design: Develop skill in preparation for assignment. Design a low rise construction structure Client Brief
Autumn 2	Component 1: Construction Technology : Develop an understanding of construction.	Component 1: Construction Technology : Exam preparation.
Spring 1	Component 2- Skills building in preparation for set task	Component 3: Construction and Design: Set assignment
Spring 2	Component 2- Set assignment practical	Component 1: Construction Technology : Exam preparation.
Summer 1	Component 3: Construction and Design: Develop skill to complete a set task.	Component 1: Construction Technology : Exam preparation.
Summer 2	Component 3: Construction and Design: Develop skill to complete a set task.	Component 1: Construction Technology : Exam preparation.

Level 1/2 Vocational Award in Hospitality and Catering (Technical Award)		
Term	Year 10	Year 11
Autumn 1	Unit 1- The hospitality and catering industry	Unit 1- Preventative control measures of food-induced ill health
Autumn 2	Unit 2- Hospitality and catering in action Building skills and confidence in cooking a range of dishes	Unit 1- Hospitality and catering provision to meet customer requirements
Spring 1	Unit 2- Hospitality and catering in action Building skills and confidence in cooking a range of dishes.	Unit 1- exam Preparation
Spring 2	Unit 1 & Unit 2- Understanding the importance of nutrition	Unit 1- exam Preparation
Summer 1	Unit 2- Presentation techniques	Unit 1- exam Preparation
Summer 2	Unit 2- Food safety practices	Unit 1- exam Preparation

AQA GCSE ART and Design -Textile design Course Overview		
Term	Year 1	Year 2
Autumn 1	Component 1- Introduction, study of form and shape	Preparation for component 2 & NEA completion
Autumn 2	Component 1- A sustained project developed in response to a subject, theme, task	Preparation for component 2
Spring 1	Component 1 Develop understanding of visual and tactile elements.	Undertake component 2- External set assignment
Spring 2	Sustained Project	Undertake component 2- External set assignment
Summer 1	Component 1- Sustained Project continued. Developing skill and specific interests in textile design	Component 1- Amendments

Summer 2	Develop techniques and processes	Component I.
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