

Design and Technology Curriculum Overview

	Year 7	Year 8	Year 9	Year 10	Year 11
Autumn 1	<u>Introduction to Design and Technology</u> <u>HT1. SoW: Creativity and Design Principles: Graphics Module</u> Knowledge: Learners to have knowledge of the core Design Principles and processes. Learners will be able to identify types of design and what makes good design. Understanding: Learners to understand the value of Design and Technology. The importance of Creativity within the Design Industry and the world we live in. Learners to understand what is and the use of ACCESS FM through product analysis. Learners will understand Branding, use of colour and Logo design . Graphic presentation skills through design a range of different concepts to represent and brand a festival Analyse: Learners will analyse and evaluate the fundamental areas of what makes a good design - Form, function, materials, the environment and aesthetics Using ACCESS FM Skills: Learners will develop Creativity and Innovation. Appropriate techniques used to communicate design ideas Freehand sketching Isometric and perspective drawing 2D/3D drawing, Annotated drawings	<u>HT1. SoW: Creativity and Design Principles 2: Isometric Drawing/ Sketching and Product Analysis</u> Knowledge: Learners will know how to draw in a range of different techniques. Learners will understand how and why designers use Isometric and perspective drawings. Learners will develop further knowledge of the core Design Principles and the use of ACCESS FM through product analysis. Understanding: Learners will understand how to use a range of drawing techniques and their uses. Analyse: Learners to analyse Common products that we use every day and discuss the specific types of materials and properties. Skills: Freehand sketching Isometric 2D/3D annotated drawings, Oblique Drawing Orthographic Projection Perspective drawing. Rendering using Tone and shade and use of a light source. Analysis, Testing and Evaluating.	<u>Materials/Techniques/skills and processes</u> <u>HT1. SOW: Health Lifestyle Project. Part 1 Brand identity and Pop up Restaurant Design</u> Knowledge: Learners will investigate, research and analyse similar products/ pop-up restaurants and franchises/businesses. Learners will research visual branding and marketing looking at colour typography and logo design to create a product identity Find inspiration in products that have considered the six Rs. Understanding: Learners will understand why and how to write their own design brief and specification Linked to a Healthy Eating branded pop up restaurant. To use the design process, creativity to solve an existing problem. Discuss: Materials and properties. Skills: Research, analysis and investigation. Understand the use of perspective drawing and the impact of colour. Building on prior skills, students work collaboratively to produce a range of design ideas, development and analysis on previous concepts and designs. Develop existing 2D/3D drawing skills and design strategies.	<u>Half-Term 1. AOA Design and Technology</u> <u>HT1. NEA style project:</u> Functionality Aesthetics Environmental factors Availability Cost Social factors Ethical factors Designing: Sketching Modelling Testing Evaluation of work <u>Half -Term 1</u> <u>WJEC Hospitality and Catering.</u> <u>Unit 1. H&S in Industry: Health, Safety and Hygiene.</u> <u>Working Practices. - "Know how food can cause ill health"</u> Be able to describe food related causes of ill health – allergies and intolerances. Have knowledge of Food safety legislation. Understand common types of food poisoning. Be aware of symptoms of food induced illness and role and responsibilities of EHO. Will understand personal safety responsibilities and be able to identify risks to personal safety. Be able to describe the operation	<u>AOA D&T NEA: Year 11 Term 1 will be spent on the NEA.</u> It's intended to be an iterative process so the learning activities will be directed by the student and will depend on their project <u>WJEC Hospitality and Catering:</u> Unit 2 LO2 – Understand menu planning (factors to consider when proposing dishes for menus (AC2.1) (Commodities) (How dishes on a menu address environmental issues AC2.2) (Plan production of dishes for a menu AC2.4)



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	Analysis and Evaluation strategies.			of a kitchen.	
Autumn 2	<u>HT2. SoW: Structures/Engineering</u> Knowledge: Learners will know who Sir Thomas Edward Watkin was. The basic principles of bridge design. The different types of bridges and structures. Learners will gain knowledge of industrial methods and processes. Learners will build on prior knowledge of their design principles. Learners will be able to identify types of design and what makes good design. Using their prior knowledge. Range of materials used in bridge structure. Understanding: Learners will understand what makes a bridge strong, and the Success and failures of structure. Learners will understand the different ways of increasing structural integrity. Learners will understand the uses of symmetry, strength and quality of construction. Skills: Freehand sketching Isometric/2D/3D drawing, and Point perspective drawing techniques. Able to use 2D Design Tech Soft to design and laser cut a product Able to use Google SketchUp to computer generate 3D models and designs. Develop modelling skills using	<u>HT2. SOW: CAD/CAM: Biomimicry Architecture Project</u> Knowledge: Learners will build on prior knowledge of design principles and CAD/CAM to create a range of prototypes in different media Focusing on architecture and structure. Understanding: Learners will be able to use Computer Aided Design and manufacture to create a range of products/prototypes including the architecture of a building Learners will understand the properties of different modelling materials and techniques used to create a range of prototypes Skills: Communication of design ideas/freehand sketching. Isometric/2D/3D drawing, 3D drawings/designs using a 3D modelling software. 2D plan/architecture drawings using 2D computer software. Model making techniques -Shaping Styrofoam, building Card and board models. Numeracy skills.	<u>HT2. SoW: Part 2. CAD/CAM Modelling and Product Development Materials and Processes</u> Knowledge: Learners will have knowledge of Materials processes, finishes and equipment categories including CAD/CAM Understanding: Learners to understand the selection and use of appropriate hand tools and machinery safely. Learners will have a developed knowledge of visual branding looking at colour style typography, modelling techniques and the use of manufacturing and industry processes. Learners will consider accuracy when Shaping, fabricating and constructing a high- quality prototype. Skills: Using the correct tools and equipment for a range of materials - MDF timber and high impact polystyrene. Selecting and using specialist techniques and processes. Processes: Vacuum former, Sanding Disc and Pillar drill, Laser cutter, filing, use of a range of cutting tools. Using Surface treatments and finishes such as Varnishing and paint.	<u>HT2. NEA style project:</u> Considering: The six Rs Ecological issues in design and manufacture. Manufacturing specification/working drawings Tools, equipment and processes Quality control. How modelling materials are cut, shaped and formed to a tolerance Quality control. <u>Half -Term 2</u> <u>WJEC Hospitality and Catering</u> Learners will have knowledge of Health, Safety and Hygiene. Working Practices. - <i>"Know how food can cause ill health"</i> Learners will understand nutrition: fats, proteins, carbohydrates, vitamins and minerals. Nutritional needs of groups and sub groups And focused industry based cooking methods.	<u>AOA D&T NEA: Year 11 Term 2</u> Testing and Evaluation Modelling development and refinement <u>WJEC</u> <u>Hospitality and Catering</u> Unit 2 LO2 – Understand menu planning (factors to consider when proposing dishes for menus (AC2.1) (Commodities) (How dishes on a menu address environmental issues AC2.2) (Plan production of dishes for a menu AC2.4) Unit 2 LO3 – Be able to cook dishes



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	paper, card and board to build. Develop basic hand tool skills.				
Spring 3	<u>HT3. SoW: Product Design Module</u> <u>Materials and Processes</u> <u>Woods and Plastics</u> <u>Health and Safety:</u> Knowledge: Learners will understand how to use the design process to research, design, make and evaluate a hand- held product/game Learners will know and be able to put into practice the Health and safety rules within a workshop. Understanding: Learners will understand how to be safe when using tools and machines within the workshop. How to follow the design process to produce an outcome: research, analyse, design, develop, test and evaluate. Learners will understand the use of both isometric and orthographic drawing in industry Skills: Learners will be able to select and use specialist techniques and processes. Produce and Orthographic and Isometric presentation drawing And show accuracy with freehand sketching. Develop Measuring/numeracy skills Rendering and use of colour to portray materials.	<u>HT3. SoW: Biomimicry/ Architectural Project</u> <u>Materials and Processes</u> <u>Health and Safety: Recap</u> Knowledge: Learners will understand how to use the design process to research, design, make and evaluate to create an electronic product. Understand what Biomimicry design is and how it can help solve environmental issues/problems. Understand the context of extreme environments and sustainable power sources. Understanding: Select and use specialist techniques and processes for modelling, designing and CAD product development. Learners will learn how to create effective models to investigate a project brief through shape and structure to form various materials. Learners will gain knowledge of paper, card, board and Styrofoam to understand properties and processes of product development. Skills: Select and use specialist techniques and processes. Consider accuracy. Isometric presentation drawing. Freehand sketching Use of a try-square and ruler to mark out a lap joint. Measuring/numeracy skills Rendering and use of colour to portray materials. Be able to use hand tools and various shaping tools such as	<u>HT3. Passive Amp Product Design Module</u> Knowledge: Learners to know how designers work through sketching and modeling a range of products. How to shape and form different materials using hand tools, centre lathe and the hot wire cutter. Understanding: Learners will understand the range of different drawing, modelling, shaping and machine processes safely to create ergonomic bottle designs with a graphic label. Learners will understand the history and evolution of design looking at design movements and Iconic designers work. Analyse: Learners will analyse products focusing on form and function- including shape, ergonomics and anthropometric data Skills: Students to produce design solutions in point perspective. Students will extend their prior knowledge of sketching, isometric and oblique drawing techniques. Annotation used to justify all design decisions – theory of materials. Learners will be able to shape and finish a range of modelling materials such as Styrofoam, card and board to develop shape, function and finish of a product.	<u>HT3 Exam Preparation and Design Principles</u> <u>(New and emerging technologies 3.1.1)</u> Consider: Robotics, automation and production in industry. Production techniques and systems – automation. Enterprise Market pull and technology push. People, society and culture. Planned obsolescence. Design for maintenance. Ethics. The environment. <u>Half -Term 3</u> <u>WJEC Hospitality and Catering</u> Unit 1 LO1 – Learners will understand the environment in which hospitality and catering providers operate. Understand how to meet customer needs and the factors to consider. Learners will be able to create time plans and have knowledge of quality control and Health and Safety/Hygiene	<u>AQA Design and Technology</u> HT3: Week 13 Mock exams Week 13–18 NEA Week 19–24 Revision <u>WJEC</u> <u>Hospitality and Catering</u> Unit 1 LO1, LO2, LO3, LO4, LO5 – Revision



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		jigsaws and heat/wire cutters, as well as CAD/CAM using software and hardware such as the laser cutting machine.			
Spring 4	<u>HT4. SoW: Product Design Module</u> <u>Materials and Processes</u> <u>Woods and Plastics</u> Knowledge: Learners will have knowledge of Materials processes, finishes and equipment categories. Understanding: Learners to understand the selection and use appropriate hand tools and machinery safely. Learners will consider accuracy when Shaping, fabricating and constructing a high- quality prototype. Skills: Commercial processes (use of Sanding Disc and Pillar drill) Use of tools and equipment Tenon saw, file and glass paper to create lap joints Hammer and panel pins Screwdriver and counter sink Tolerance Quality Control (QC) Finishing and adhesive techniques	<u>HT4. SoW: Lighting/Designer Influences</u> <u>Product Design Module</u> <u>Materials and Processes</u> <u>Woods and Plastics</u> Knowledge: Learners will have knowledge of a wide range of Materials processes, finishes and equipment categories. Understanding: Learners to understand the selection and use of appropriate workshop and electronic tools and machinery safely. Understand how to create a working circuit. Understand manufacturing processes with the use of a vac former. Understand the design process of creating a working product. Understand the names and uses of key electronic components. Consider accuracy when Shaping, fabricating and constructing a high-quality prototype. Skills: Commercial processes (use of sanding disc and pillar drill) Use of tools and equipment Tenon saw, coping saw, file and glass paper to create finger joints Hammer and Panel pins Vac forming Screwdriver and counter sink Soldering/Tolerance/Quality Control (QC) Finishing and adhesive techniques	<u>HT4 SoW. Part 3</u> <u>Product Design</u> <u>Passive Amp Module- Materials and Processes</u> Knowledge: Learners to build on prior knowledge of design principles and strategies for information and revision purposes. Analyze: Common products that we use every day and discussing the specific type of material names, types and properties. Understanding: Learners to understand what Sustainability – finite/non-finite means, the 6 R's and environmental effects on design. The different types of Scales of production in the design industry. How to investigate the work of a designer or company. Evolution of design. What Critical emerging technologies there are and smart materials. Skills: Literacy/Grammar/Spelling. Use of key vocabulary and command words. Written structure/3 point structure. Analyse and Evaluate. Revision/organisation	<u>HT4 Exam Preparation and Theory and Design Principles:</u> Consider: Systems and control Textiles Scales of Production Surfaces and treatments Enterprise <u>Half -Term 4</u> <u>WJEC Hospitality and Catering</u> Unit 1 LO1 Learners will Understand the Environment in which hospitality and catering providers operate. Understand how to Meet customer needs and the Factors to consider Learners will be able to create Time plans and have knowledge of quality control and Health and Safety/Hygiene	<u>Year 11 Term 3</u> AQA Design and Technology Revision <u>WJEC Hospitality and Catering</u> Unit 2 LO1, LO2 – Revision



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Summer 5	<u>HT5. Food and Nutrition Introduction to Food</u> Knowledge: Learners will understand basic food preparation, hygiene and food nutrition. They will know the anatomy of an egg and become familiar with denaturation. Understanding: understand and apply the principles of nutrition and health. Understand a range of cooking techniques. Skills: Cleaning equipment/utensils and maintaining hygiene and safety. Using heat (Oven/cooker). Preparing ingredients Weighing/measuring ingredients/numeracy skills. Cook a repertoire of basic dishes	<u>HT5. Food and Nutrition International Cuisine</u> Knowledge: Learners will recap and build on prior knowledge of kitchen safety and hygiene rules when preparing food. Learners will learn a range of recipes from different countries and cultures. They will understand the maillard reaction and its importance in food preparation. Understanding: Understand and apply the principles of nutrition and health and become competent in a range of cooking techniques. Learners will build an awareness of taste, texture and smell. Learners will analyse and evaluate existing products, recipes and cooking methods. Skills: Cleaning equipment/utensils and maintaining hygiene and safety. Knife skills, using heat (oven/cooker) Preparing ingredients Weighing/measuring ingredients/numeracy skills. Cook a repertoire of dishes.	<u>HT5. Food and Nutrition Healthy Eating Part 4</u> Knowledge: Learners will know how to butcher a chicken and use the different parts to produce a range of dishes. Understand and apply the principles of nutrition and health. Understand a range of cooking techniques. Understanding: Understand and apply the principles of nutrition and health in a range of cooking techniques. Learners will design products and recipes from analysis and evaluation of existing products, recipes and cooking methods. Learners will understand the uses and properties of paper/card and board. Skills: Appropriate techniques used to communicate design ideas. Presentation and Creativity. Branding/marketing.	<u>HT5- Short independent Product Design Project</u> Knowledge: Understand what Biomimicry Design is and how it can help solve environmental issues/problems. Understand the context of extreme Environments and sustainable power sources Understanding: Select and use specialist techniques and processes for modelling, designing and CAD product Development Skills: Consider accuracy Shape, fabricate and construct a high-quality prototype. Consider materials and their properties. Consider the environment and sustainability. <u>Half -Term 5</u> <u>WJEC Hospitality and Catering</u> Unit 1 LO1 – Learners will Understand the Environment in which hospitality and catering providers operate. Understand the Meeting of customer requirements and the structure of the H&C Industry.	Exams
Summer 6	<u>HT6. Food and Nutrition Introduction to Food</u> Knowledge: Learners will know how to use a range of kitchen equipment and utensils for preparing food safely. Learners will know 2 different cake making methods and the 'roux' method. They will learn how to analyse and evaluate their work.	<u>HT6. Food and Nutrition International Cuisine</u> Knowledge: Learners will know how to Cook a repertoire of dishes so that they are able to feed themselves and others a healthy and varied diet. Learners will know how to cost a recipe and how biological raising agents work.	<u>HT6. Food and Nutrition Healthy Eating Part 4.</u> Knowledge: Learners will know how to analyse recipes and pre-existing products including packaging Learners will know how to Cook a repertoire of dishes so that they are able to feed themselves and others a healthy and varied diet.	<u>HT6. Short -Independent Design Brief Product Design Project</u> Knowledge: Learners will have an understanding of: Analytical Drawing -looking at visual elements such as line, tone, texture, colour shape and form. Orthographic Drawing Perspective Drawing Emotive Drawing	Exams



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	Understanding: understand and apply the principles of nutrition and health Understand a range of cooking techniques and methods. Skills: Cleaning equipment/utensils and maintaining hygiene and safety. Using heat (Oven/cooker) Preparing ingredients Weighing/measuring ingredients/numeracy skills. Cook/bake a repertoire of dishes. Selecting and preparing ingredients; using utensils and electrical equipment.	Understanding: Understand the source, seasonality and characteristics of a broad range of ingredients. How to apply the principles of nutrition and health. Learners will understand how to develop their own recipes by adapting ingredient content. Skills: Cleaning equipment/utensils and maintaining hygiene and safety. Knife skills, using heat (oven/cooker) Preparing ingredients Weighing/measuring ingredients/numeracy skills.	Understanding: Understand the source, seasonality and characteristics of a broad range of ingredients. Learners will understand how to use the properties of card/paper and board to assemble functional packaging. Build on their CAD skills using various 2D and 3D software packages Skills: Use utensils and electrical equipment; apply 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. Folding/cutting/scoring Card/paper and board. Weighing/measuring ingredients/numeracy skills. CAD software.	Understanding: Learners to have a clear understanding of how designers work, with a clear focus on the design process and analytical drawing. Learners will have an understanding of a wide range of modelling methods, including Card, paper, board, styrofoam, polymers and timbers. Skills: Selection of the correct hand tools and machinery. Product modelling Safe use of tools Selection and use of specialist techniques (used to shape, fabricate, construct) Preparing a material for a surface finish Applying a surface finish <u>Half -Term 6</u> <u>WJEC Hospitality and Catering</u> Unit 1 LO1 - Learners will Understand the Environment in which hospitality and catering providers operate. Learners will also know and understand the key Job requirements in industry	
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