

DESIGN TECHNOLOGY Year 9 Curriculum End Points and Key Vocabulary

	Rotation 1	Rotation 2	Rotation 3	Rotation 4
Subject	Food and Nutrition	Graphics/Electronics	Textiles	Product Design
	In Year 9, students select two areas of study within Design and Technology. They are encouraged to consider their future KS4 options, as each subject supports progression into specific pathways. Students will complete a 20-week unit in each of their chosen subject areas.			
Project	Food Choices	Shadow Light	Printed Scarf & 3D Donut	Pinball Machine
Ethos Links	Milton Keynes - Students are encouraged to shop local and make use of local farmers markets. - Diverse range of eateries where some students get to experience dishes from different countries and are taught how different cultures make up the hospitality industry in Mk and the different job opportunities available locally STEM - Students are introduced to the working characteristics of some food ingredients and scientific keywords linked to their characteristics e.g. browning of pastry products. - Different cooking methods and how they affect different ingredients.	Milton Keynes - Local Enterprise: Designing a shadow light for a local boutique or tech gift shop, linking creative engineering to retail. - Community Engagement: Developing silhouette layers inspired by Milton Keynes landmarks (e.g., concrete cows, city grid, Willen Lake) and local identity. - Careers Link: Introducing digital manufacturing, optoelectronic engineering, and CAD/CAM roles. - Real-World Context: Understanding how a decorative electronic product is designed, tolerance, and manufactured for a client and end user. - Retail Awareness: Considering packaging, assembly, marketing, safety testing, and sale of electronic products.	Milton Keynes - Local Enterprise: designing textiles products linking artists/designers to the local natural environment. - Careers link: Introducing textile design techniques used in industry. - Real-world context: Understanding how textiles products can be designed and produced for art, fashion and interior purposes. - Learning about designers/artists past and present and their impact and influence on textiles. STEM - Understanding the properties of fibres and fabrics, surface decoration, print and dye techniques.	Milton Keynes - Local enterprise: Designing a product for a souvenir shop, linking to tourism and local economy - Community engagement: Exploring themes that reflect Milton Keynes landmarks, culture, or identity - Careers link: Introduction to local manufacturing, product design, and engineering roles - Real-world context: Understanding how products are designed for a client and end user - Retail awareness: Considering how products are marketed and sold in local environments STEM - Material properties: Understanding the characteristics of softwoods and MDF in construction

	• Use of digital hobs, ovens, scales and timers to aid cooking <u>Sustainability</u> • Students will develop meals for individuals at different life stages taking the eat well guide and government guidelines into consideration. • They will also learn the importance of eating a variety of different foods and that all food contains different nutrients and the role nutrients play in our body. • They will be plan and analyse meals and consider how they can be made healthier. • Students are encouraged to bring in exact quantities of ingredients to prevent food waste and to plan carefully during assessments to prevent food waste and if any leftovers how to repurpose this at home. Students are also taught about dishes that can be developed by using leftover foods. • Students are also encouraged to create cultural dishes as the school is very diverse so most of the dishes created can be enjoyed by themselves and their families. • Students are also introduced to more plant based foods and are taught how to incorporate this into meals.	<u>STEM</u> • Material Properties: Understanding the working characteristics of polymers. • Engineering Principles: Constructing products using 3D printers, laser cutters, and line bending machines. • Electronics & Circuitry: Exploring circuits, inputs, outputs, processing, LEDs, and components. • Manufacturing Processes: Using CNC tools and soldering equipment to produce precise components. • CAD: Creating vector profiles, managing cut vs. engrave paths, and nesting parts efficiently. • Problem-Solving: Testing continuity, fixing solder faults, and refining designs for fit. <u>Sustainability</u> • Use of Materials: Minimising waste through efficient CAD nesting and reuse of offcuts. • Efficient Design: Optimising laser paths to reduce energy use and runtime. • Product Lifespan: Creating reliable soldered connections with insulation. • Environmental Impact: Comparing low-energy LEDs with incandescent lighting. • Design for Purpose: Producing durable, high-value products to avoid waste. • ACCESS FM: Evaluating recyclability and power efficiency.	• Researching textiles designers and artists to inspire their own product design. • Manufacturing items using sewing machines, lino blocks and hand embroidery techniques using specialist equipment. <u>Sustainability</u> • Students recall their knowledge and understanding about reducing carbon waste and materials. • Products can be made using some recycled/deadstock fabric which helps reduce waste. • Efficient pattern cutting minimising waste through precise cutting of fabrics and trims. <u>Character</u> • Resilience: Overcoming practical challenges when using machinery and other specialist textiles equipment. • Creativity: Designing innovative products that are inspired by researched artists/designers and own ideas. • Developing art skills during design work and through surface technique applications. • Precision: Developing accuracy in seam allowances, stitches, measurements, and component placement • Independence: Managing two multi-stage projects from design to manufacture	• Engineering principles: Building a stable frame using half lap joints for strength and durability • Mechanisms: Exploring how levers and forces work in flippers and pinball movement • Manufacturing processes: Using tools such as mortisers to create accurate holes and components • CAD: Designing a themed layout digitally to communicate ideas and precision • Problem-solving: Testing and refining the machine to ensure functionality and playability <u>Sustainability</u> • Use of materials: Repurposing scrap MDF for components to reduce waste • Efficient design: Minimising material waste through careful planning and cutting • Product lifespan: Designing a durable product suitable for repeated use • Environmental impact: Considering responsible sourcing of timber materials • Design for purpose: Creating a product that has value and relevance in a retail setting • ACCESS FM: Evaluating sustainability through materials, cost, and environment <u>Character</u> • Resilience: Overcoming practical challenges in
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	As a department we avoid single used plastics and use more environmentally friendly packaging. In summary KS3 Food and Nutrition, sustainability is a core theme that helps students make informed choices. They learn about reducing food waste, choosing locally sourced and seasonal foods, using energy-efficient cooking methods, and understanding the broader impacts of food production on the environment. Through these lessons, students develop a mindset that balances nutrition with sustainability, preparing them to be conscious consumers in the future. Character • Developing cultural appreciation through food. • Being able to understand that all culture are unique and some the reasons why they eat what they eat. • To respect each other and be able to communicate in a n effective manner when discussing ideas etc. • Develop great organisational skills through planning for practical assessments and being able to execute this within the given time. • Evaluate own work and the work of others giving constructive feedback. • Developing independence	<u>Character</u> • Resilience: Solving CAD, laser, and soldering issues through testing. • Creativity: Designing layered silhouettes that use light and shadow effectively. • Precision: Achieving accuracy in CAD design, measurement, and soldering. • Independence: Managing a multi-stage project from design to assembly. • Responsibility: Following workshop safety rules, including equipment handling. • Collaboration: Sharing resources, reviewing peer work, and supporting others. • Reflection: Evaluating final performance and identifying improvements.	• Responsibility: Safe use of tools, machinery, and textiles equipment • Collaboration: Sharing ideas and feedback	construction and improving designs through testing • Creativity: Designing an engaging and thematic pinball machine • Precision: Developing accuracy in joints, measurements, and component placement • Independence: Managing a complex, multi-stage project from design to manufacture • Responsibility: Safe use of tools, machinery, and workshop equipment • Collaboration: Sharing ideas and feedback when developing themes and gameplay • Reflection: Evaluating performance of the final product and identifying improvements
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	and great team working skills.			
Learning End Points	By the end of this topic the students will know and understand: • How to use the eat well guide and the government guidelines for healthy eating to plan healthy and balanced meals • The effects of having a healthy or unhealthy diet on one's health • The five main nutrients their sources and functions. • Use arrange of kitchen equipment safely and confidently. • How diets/nutritional needs change through different life stages • The different factors affecting food choices and how to create and adapt meals taking these factors in consideration • How to process different ingredients using different skills • To evaluate own work and the work of others giving constructive feedback. • A greater awareness of time planning and using this to execute the making of a dish independently. • How to make informed choices when selecting different foods. • The safety issues surrounding the handling preparation and cooking of meat and poultry	By the end of this topic the students will know and understand: • Interpret and respond to a design brief, identifying and justifying a specific target user or client • Research and apply a design style, theme, or designer influence to inform the aesthetic and function of a shadow box light • Generate, develop, and communicate ideas using sketching and CAD tools such as TechSoft 2D Design, Fusion 360, and SketchUp • Develop and refine designs through an iterative process, using feedback, modelling, and testing to improve outcomes • Understand and apply the principles of input, process, and output systems, particularly in relation to electronic products • Understand and assemble a basic LED lighting circuit, including safe soldering techniques and correct component use • Integrate electronic components into a product, ensuring the output (light) meets user needs and enhances the design • Design for manufacture using CAD/CAM processes, preparing files suitable for laser cutting and 3D printing • Understand the properties, stock forms, origins, and uses of	By the end of this topic the students will know and understand: • Interpret and respond to a design brief, identifying and justifying a specific target user or client • Research and apply a design style, theme, or designer influence to inform the aesthetic and function of a printed infinity scarf product and a 3D donut product. • Understand surface techniques including fabric dyeing, lino block printing, machining, hand embroidery, embellishment. • Produce design work that collaborates Art and DT skills. • Evaluate their own work and that of their peers – understanding iterative design process. • Manufacture products safely following health and safety. • Feel more confidence with sketchbook layout and art skills in preparation for GCSE Art Textiles. • Feel more confident in communicating their own opinions on existing artists and designers and justifying their own design ideas. • Produce a final prototype product that could be developed to retail standard.	By the end of this topic the students will know and understand: • Demonstrate understanding of a design brief and identify a target client or end user • Research and apply a design style or designer influence to a themed pinball machine • Develop and refine designs through an iterative process based on feedback and testing • Accurately measure, mark, and cut materials to construct a wooden frame • Create strong and accurate half lap joints for structural stability • Safely use workshop tools and machinery, including a mortiser, to produce components • Construct a working pinball machine that demonstrates understanding of mechanisms and movement • Assemble components with precision to ensure the product is functional and durable • Test and evaluate the performance of the pinball machine, identifying areas for improvement

		polymers, including synthetic and natural sources • Explain the environmental impact of polymers, including issues related to extraction, production, use, and disposal • Apply knowledge of polymer manufacturing processes, including vacuum forming, line bending, and heat forming • Select and use appropriate tools, equipment, and processes, including laser cutting, 3D printing, vacuum forming, and line bending • Construct a functional layered shadow box structure, demonstrating accuracy in measuring, cutting, and assembly • Apply knowledge of sustainability, including material choice, waste reduction, and designing for longevity or reuse • Work safely and independently in a workshop environment, demonstrating awareness of tools, machinery, and risks • Test and evaluate their product against the design brief and user needs, identifying strengths and areas for improvement • Use ACCESS FM (Aesthetics, Cost, Customer, Environment, Size, Safety, Function, Materials) to critically analyse their design • Demonstrate resilience, creativity, and problem-solving skills throughout the design and make process • Produce a high-quality, functional product suitable for a		• Use ACCESS FM to assess aesthetics, function, materials, and cost • Demonstrate safe working practices and awareness of workshop risks • Show resilience and problem-solving skills when overcoming design and manufacturing challenges • Produce a final product suitable for sale in a retail or souvenir context
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		specific user or context (e.g. personalised gift, decorative product, or retail item)		
Key Vocabulary	Marinade Decorate Nutrients Carbohydrate Protein Fat Minerals Vitamins Nutritional Garnish Quality Balanced Healthy Guidelines Grilling Threading Temperature Probe Function Source	Design brief target user CAD CAM Polymer LED Circuit Input Process Output Soldering laser cutting 3D printing Sustainability ACCESS FM Prototype Evaluation Tolerance Silhouette manufacturing	Fabric Calico Dye Lino block Ink Carving Print Pattern Seam allowance Sewing Embroidery Embellishment Design Textiles Artist Designer Evaluation Theme Manufacturing Sustainability	Softwood MDF (Medium Density Fibreboard) Half lap joint Mortiser Mechanism Lever Force Movement Component Frame Accuracy CAD (Computer-Aided Design) Prototype Iterative design Theme Aesthetic Function