

Y8 DESIGN & TECHNOLOGY CURRICULUM

Design & Technology Curriculum Intent:

For all students to have an opportunity to design and manufacture products, using a variety of machinery and design skills. Derived & audited against the requirements needed for KS4, the students will develop their skills and knowledge in the following areas below. With regards to the food curriculum; is aimed at inspiring pupils to enjoy and understand food, in preparing, cooking, and eating a variety of savoury and sweet dishes; to learn about nutrition and develop crucial life skills.

	Electronics & Polymers	Food Technology	Resistant Materials: Timber & manufactured board
Main Topic / Focus	Jitterbug Project	Dietary needs and food labelling	Storage Project
Secondary Topics (if applicable)	1. Using research to guide design ideas for a product. 2. Production of a range of suitable design ideas. 3. Use of JIG's in production/manufacturing. 4. Identifying electrical components and the jobs they do. Production of a working circuit and a plan to follow. 5. Where plastics come from. Thermoforming and thermo-setting plastics. 6. Production of a mould and the vacuum forming process. 7. How to shape and combine different materials. 8. Soldering a circuit together. 9. 2D Design and laser cutting.	Factors affecting food choices, nutrition, sensory analysis, food labelling including traffic light labels, dietary choices, food related causes of ill health, preparing and cooking a range of commodities, both savoury and sweet, cross contamination, adapting recipes, sensory analysis, sauce making, methods of cake making	To research, design and manufacture a wooden 'storage solution', for a given purpose. 1. Design briefs and specifications 2. Use of scale / volume 3. 2 Point perspective drawing 4. Isometric Drawing 5. Marking and cutting 6. Timbers – hardwoods, softwoods, and Manufactured Boards 7. Jigs 8. Lids and fixtures including hinges
Curriculum links	Geography – Source of raw materials. Art – Presenting work and rendering. Science – electrical circuits and components. Drama- Sound and lighting Computer science: input, process, output. Kitronic, raspberry pie Pico, breadboarding circuits.	English - Communication – group work, speaking and listening Literacy – reading instructions, following a method, technical language Maths – weighing, measuring, timing, temperatures, ratios Science – functions of ingredients, outcomes of combinations, digestion, nutrition	Geography – sourcing of ethical materials, FSC approved. Maths – Marking and measuring, calculating volume and area. Tessellations and nesting of materials
Interleaving of skills (GCSE)	Core Technical Principles: 3.1.1, 3.1.2, 3.1.4, 3.1.5, 3.1.6.1, 3.1.6.2 Specialist Technical Principles: 3.2.1, 3.2.3, 3.2.4, 3.2.5, 3.2.6, 3.2.8. Designing and Making Principles: 3.3.1, 3.3.2, 3.3.4, 3.3.5, 3.3.7, 3.3.9, 3.3.10, 3.3.11.	1.1.4 contributing factors to the success of H&C provisions 1.4.1 food related causes of ill health 1.4.3 preventative control measures of food induced health 2.1.1 understanding the importance of nutrition 2.2.1 Factors affecting menu planning 2.3.1 How to prepare and make dishes 2.3.2 presentation techniques 2.3.3 food safety practices 2.4.1 review of dishes and performance	Core Technical Principles: 3.1.1, 3.1.2, 3.1.4, 3.1.5, 3.1.6.1, 3.1.6.2 Specialist Technical Principles: 3.2.1, 3.2.3, 3.2.4, 3.2.5, 3.2.6, 3.2.8. Designing and Making Principles: 3.3.1, 3.3.2, 3.3.4, 3.3.5, 3.3.7, 3.3.9, 3.3.10, 3.3.11.

Literacy	Cam, rotary, circuit, component, light emitting diode, motor, battery, thermoforming, thermo-setting, polymer, vacuum forming, mould, taper, Styrofoam, acrylic, high impact polystyrene, soldering.	Balanced diet, nutrients, deficiencies, equipment, simmering, boiling, sensory analysis, texture, food poisoning, cross contamination, seasonal, foods provenance, sustainability, working safely with food and equipment, food sustainability, food miles, seasonal foods, specific dietary needs, The Eatwell Guide, factors, choices, roux, intolerant, allergy	Lap Joint, Jig, Pine, Tenon Saw, Tri-Square, Pairing, Bevel Edge Chisel, Shoulder (joint), Belt Sander, 2D Design, CAD/CAM, Engraving, Datum, Z Axis, Personalisation, MDF, Plywood, Manufactured Boards, Hinges, Bradawl, Screwdriver, Pozi Screws, Pilot Hole, Hasp and Staple, Hook and Eye, Inserts, Rebates
Cultural capital	1. Exploring the wider world, cultures and materials - sustainability and resources and where they come from. 2. Where does plastic come from and how is crude oil produced? 3. Can we make more oil – is plastic a sustainable material? 4. Are there any alternatives to oil-based plastics? Bio-plastics and their potential to help save the planet/stop global warming.	Basic need for all, working safely with food and equipment, food sustainability, food miles, seasonal foods, specific dietary needs, eating a balanced diet (Eatwell Guide), factors affecting our food choices, sensory analysis activities, food cultures across the world, discuss how food can be an exciting part of everyone's life	The environment, social and economic challenges that influence design and making. How the following might present opportunities and constraints that influence the processes of designing and making: - deforestation - possible increase in carbon dioxide levels leading to potential global warming - the need for fair trade.
STEM Opportunities	Science – electrical circuits and the job of different electrical components. What is a vacuum? Engineering – the role of vacuum forming in the wider world. Maths – Measuring sizes for laser cut components, metric system: mm, cm and m, accuracy.	Maths – timing of baking and cooking; temperatures, weighing and measuring, ratio, grams, millilitres. Science – functions of ingredients; how ingredients mix together and outcomes produced; digestion; food and nutrition; sensory analysis	Selection of materials based on ethical factors and social and environmental footprints. Extracting information on tolerances and using it to control quality and make a prototype. Scaling of drawings, working to datums. Material quantities required. Calculation of material quantities and sizes. Calculate surface area and volume eg material requirements for a specific use. Efficient material use, pattern spacing, nesting and minimising waste. How physical and working properties are selected related and used in commercial products when designing and making.
Gatsby Benchmark 4 - Linking Curriculum to Careers	Career links: Electrical engineer, electrician, circuit design engineer, electronic technician, hardware engineer, automotive engineer, telecommunications engineer, polymer researcher, polymer technician, plastics engineer, material scientist, polymer composite engineer, rheologist, biopolymer scientist.	Career links: Chef, line cook, food server/waitstaff, food scientist, food technician, dietitian, food engineer, nutritionist, food safety auditor, barista, bartender, food blogger, food inspector, Sous chef.	Career links: Architect, engineer, product designer, project manager, graphic designer, carpenter, joiner, furniture maker, woodworker, cabinet maker, instrument maker, automotive designer, interior designer, fashion designer, prop design, set design, industrial design, builder, property renovation.
Assessment	Common Knowledge Tests in lesson 1 and lesson 13 (the first and last lessons of the project). Key Marked Piece – Jitter Bug.	1 x end of rotation Common Knowledge Test 1 x Key Marked Piece (assessed practical)	Common Knowledge Tests in lesson 1 and lesson 13 (the first and last lessons of the project). Key Marked Piece – Storage Solution (Box)