

Y9 DESIGN & TECHNOLOGY CURRICULUM

Year 9 KS3 Design and Technology Curriculum Intent:

The Curriculum intent of the Y9 Design & Technology Curriculum is outlined as below. These are the principles that shape our intent, implementation and intended impact of our subject area on the wider Curriculum experienced by Weaverham learners. We believe that every pupil, regardless of ability or approach to learning, has the right to expect the same consistently high-quality education in every lesson, taught by every teacher across our curriculum team. The Food curriculum in both KS3 and KS4 is aimed at inspiring pupils to enjoy and understand food, in preparing, cooking, and eating a variety of savoury and sweet dishes. Pupils are encouraged to develop their confidence, independence, and capability in the kitchen environment. It is imperative that our pupils can learn crucial life skills and learn about nutrition.

	Resistant Materials: Metalwork	Food Technology	Resistant Materials: Mechanical Systems
Main Topic / Focus	• Weathervane Project	• Energy balance and nutritional analysis	• Mechanical Toy Project
Secondary Topics (if applicable)	1. Marking out materials with correct tools/tolerance/accuracy. 2. How to shape and combine different materials. 3. Joining metals using riveting 4. Brazing steel to steel using flux and brass filler rod. 5. Plastic dip coating and spray painting. 6. The differences between ferrous and non-ferrous metals – steel and aluminium. 7. The origin of metals and how they are obtained from their ores. 8. What is an alloy – useful properties.	Careers in the food industry, production time plans, nutrition and planning a balanced diet, nutritional analysis, energy requirements and understanding food labelling, sensory analysis, how to prepare and cook a range of sweet and savoury ingredients, use of different methods of cooking; bread making and function of ingredients, methods of cake making, types of pastry	Students will use Automata to design and manufacture a working, mechanical toy, based on a theme for a client. The functions of mechanical devices to produce linear, rotary, reciprocating and oscillating movements. - Housing joints - Jigs - Marking and cutting - Drilling & Countersinking] - Tolerances - Accuracy - Top Dead Centre, Bottom Dead Centre - CAD CAM - Motions - Linkages - Levers (1 st , 2 nd , 3 rd) - Input, Control Output
Curriculum links	Science – the melting point of different materials, alloys and smelting. Maths – measuring materials and calculating distances. History – the sinking of the Titanic and the link to the use of rivets.	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	Science - The action of forces and how levers and gears transmit and transform the effects of forces. Maths - Arithmetic and numerical computation e.g. use ratios. Use angular measures in degrees Engineering - visualise and represent 2D and 3D objects including 2D diagrams of mechanisms/ mechanical movement. Science - Knowledge of the function of mechanical devices to produce different sorts of movement, changing the magnitude and direction of forces.
Interleaving of skills (GCSE)	Core Technical Principles: 3.1.1, 3.1.3, 3.1.5, 3.1.6.1, 3.1.6.2 Specialist Technical Principles: 3.2.1, 3.2.2, 3.2.4, 3.2.5, 3.2.6, 3.2.8, 3.2.9. Designing and Making Principles:	1.1.2 working in the H&C 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	Core Technical Principles: 3.1.1, 3.1.3, 3.1.5, 3.1.6.1, 3.1.6.2 Specialist Technical Principles: 3.2.1, 3.2.2, 3.2.4, 3.2.5, 3.2.6, 3.2.8, 3.2.9. Designing and Making Principles:

	3.3.2, 3.3.4, 3.3.5, 3.3.8, 3.3.9, 3.3.10, 3.3.11.	2.1.2 how cooking methods can impact on nutritional value 2.2.2 How to plan production 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	3.3.2, 3.3.4, 3.3.5, 3.3.8, 3.3.9, 3.3.10, 3.3.11.
Literacy	Steel, alloy, aluminium, working drawing, marking out, engineer's tri-square, ferrous, riveting, brazing, brass, flux, dip-coating, solvent, properties, ores, smelting.	Balanced diet, nutrients, deficiencies, nutritional analysis, energy needs, energy balance, sensory analysis, food poisoning, cross contamination, seasonal foods, foods provenance, sustainability	Levers: first order, second order, third order. Linkages: bell cranks, push/pull. Rotary systems: CAMs and followers, simple gear trains, pulleys and belts.
Cultural capital	1. The wider world and where materials come from – the effects their extraction has on the local environment and the planet. 2. How combining materials can help to improve products and people's lives through better properties. 3. Avoiding design fixation when producing new products. Ensuring pupils are open minded in their design approach and guided by quality research.	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	The contemporary and potential future use of: - Automation - computer aided design (CAD) - computer aided manufacture (CAM) - flexible manufacturing systems (FMS) - just in time (JIT) - lean manufacturing
STEM Opportunities	Science – where do materials come from and how can they be obtained from their raw source. Engineering – the properties of materials and how they can be altered and improved by combining them with others. Maths – calculating the size of materials needed, measuring with precision and little tolerance.	Maths – timing of baking and cooking; temperatures, weighing and measuring Science – functions of ingredients; how ingredients mix together and outcomes produced; digestion; food and nutrition; sensory analysis	Selecting appropriate materials. Understanding of how to choose appropriate energy sources. Classification of the types and properties of a range of materials. Physical properties of materials related to use and knowledge applied when designing and making. Classification of the types and properties of a range of materials. Physical properties of materials related to use and knowledge applied when designing and making. The action of forces and how levers and gears transmit and transform the effects of forces. Arithmetic and numerical computation e.g. use ratios. Use angular measures in degrees, visualise and represent 2D and 3D objects including 2D diagrams of mechanisms/ mechanical movement. Knowledge of the function of mechanical devices to produce different sorts of movement, changing Visualise and represent 2D and 3D objects including 2D diagrams of mechanisms/ mechanical movement.
Gatsby Benchmark 4 - Linking Curriculum to Careers	Career links: Engineer, product designer, architect, welder, metal fabricator, metalworker, blacksmith, sheet metal worker, builder, metal sculptor, metal casting technician, metal CNC programmer, metalwork engineer.	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 – Weathervane.	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 – Mechanical (Automata) Toy
------------	--	--	---

