

Y7 DESIGN & TECHNOLOGY CURRICULUM

Year 7 Design & Technology Curriculum Intent:

To enable all students, the ability to experience a variety of Design and Technology environments, and for all students to learn and demonstrate using tools and equipment, safely and with confidence. To ensure our curriculum is knowledge rich and prepares students for further study at KS4 and post 16.

	Resistant Materials: Wood	FOOD Technology	CAD CAM Polymers	GRAPHICS
Main Topic / Focus	Spinner Project	- Balanced diet - Food safety	Phone holder Project	- Graphic drawing skills - Iterative design - Modelling
Secondary Topics (if applicable)	To use a range of tools and equipment to design and make, an ergonomic spinning top and handle. 1. Health & Safety - How to stay safe in the workshop. 2. Ergonomics - How products are designed to fit humans. 3. Presenting Designs - Rendering and how to present work. 4. Templates and Jigs - Use of JIGs and templates in production. 5. How to correctly/safely use a wide range of hand tools, equipment/machinery. 6. Timbers - Hardwoods and Softwoods. 7. Marking Out - How to mark out accurately. 8. Finishes - Different types of finishes – aesthetic/function. 9. CAD/CAM - 2D Design and Vinyl Cutting.	What does a balanced diet look like and foods safety. Food hygiene, knife skills, sensory analysis, using different methods of cooking; using a variety of sweet and savoury ingredients; how to prepare and cook a range of ingredients; balanced diet; The Eatwell Guide; food provenance; adapting recipes.	To use Computer Aided Design & Manufacture to design, and manufacture a suitable Mobile Phone Holder (with additional accessories if applicable), using Polymers and Workshop Equipment - CAD CAM - 2D Design - Prototyping - Laser Cutting - Line Bending - Health & Safety - Material selection - Nesting and Tessellations - Iteration & design development	For students to develop their skills in iteration and modelling skills. 1. Drawing techniques including - 1 & 2 Point Perspective - Isometric Drawing - CAD Drawing 2. Prototyping using a range of modelling materials 3. Presenting Designs - Rendering and how to present work. 4. Marking Out - How to mark out accurately. 5. Design briefs and specifications of buildings 6. Health and safety using workshop equipment such as craft knives/sanders/scissors
Curriculum links	Geography – Deforestation and the use of timber for products. Art – Presenting work professionally, freehand drawing and rendering. Maths – measuring, using different sizes, calculations – average spin times. Drama- Set design, designing props, making drama cubs.	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 – climate and extraction of oil; to produce acrylic. Maths – calculations of sizes using ‘rel’ measurements on 2D Design English – correct use of tier 2/3 language and vocabulary	Maths – Using isometric drawings and grid spacings, calculations of sizes using ‘rel’ measurements on 2D Design English – Literacy – use of Tier 2/3 language
Interleaving of skills (GCSE)	Core Technical Principles: 3.1.1, 3.1.6 Specialist Technical Principles:	1.4.1 food safety, health and safety 2.1.1 understanding the importance of nutrition and a balanced diet	Core Technical Principles: 3.1.1, 3.1.6, Specialist Technical Principles:	Core Technical Principles: 3.1.1, 3.1.4, 3.1.6, Specialist Technical Principles:

	3.2.1, 3.2.4, 3.2.5, 3.2.8, 3.2.9. Designing and Making Principles: 3.3.4, 3.3.5, 3.3.9, 3.3.10.	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	3.2.1, 3.2.2, 3.2.4, 3.2.5, 3.2.6, 3.2.7, 3.2.8 Designing and Making Principles: 3.3.1, 3.3.4, 3.3.5, 3.3.6, 3.3.7, 3.3.9, 3.3.10, 3.3.11,	3.2, 3.2.4, 3.2.5, 3.2.8, Designing and Making Principles: 3.3.1, 3.3.3, 3.3.4, 3.3.5, 3.3.6, 3.3.7, 3.3.8, 3.3.9, 3.3.10, 3.3.11,
Literacy	Safety, drill bit, flute, vice, ergonomics, finish, computer aided design, computer aided manufacture, softwoods, coniferous, knot, growth rings, hardwoods, deciduous, rendering, template, Jig.	Balanced diet, nutrients, deficiencies, equipment, simmering, boiling, sensory, texture, food poisoning, cross contamination, seasonal, foods provenance, sustainability	CAD/CAM, Laser Cutting, Industry, Scale of Production, Nesting, Accuracy, Line Bending, Thermoplastic, Thermosetting plastics, Molecule, Elasticity, Malleability,	Design brief, Specification, Client, Isometric, Perspective, CAD, 2D Design, Prototyping Modelling, Safety, Craft Knife, Safety Ruler, Cutting Board,
Cultural capital	1. Deforestation and the effects on the rainforests. The use of tropical hardwoods and the effect on the planet and wildlife habitats. 2. Designing and making products in the same way they are produced in the real world. 3. Trying to avoid design fixation and ensure pupils are open minded in their approach to their work.	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.	Sources of materials and their origins. Discussion of waste materials and waste management. Links to industry and commercial viability (use of Laser Cutters, and line benders).	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 – the properties of hardwoods and softwoods and how they grow – structure. Engineering – ergonomics and how products are designed to fit the user. Maths – Measuring distances, timing and working out averages.	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	How physical and working properties are selected related and used in commercial products when designing and making. 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. Scaling of drawings, working to datums. Material quantities required. Extracting information on tolerances and using it to control quality and make a prototype. Use angular measures e.g. tessellation of component parts. Calculating material area e.g. working out the quantity of materials required. SI units e.g. accurate use of appropriate units of measurement to calculate material requirements.	Expression in decimal and standard form e.g. calculation of required materials. Calculate surface area and volume e.g. material requirements. Angular measures e.g. measurement and marking out. SI units e.g. measurement of materials and components using standard units as appropriate. The use of reference datum points and coordinates SI units e.g. accurate use of appropriate tolerances +/- 2mm, resistor tolerance and seam allowance. Scaling drawings. Measurement and marking out of component parts for models. Selection of materials based on ethical factors and social and environmental footprints.
Gatsby Benchmark 4 - Linking Curriculum to Careers	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	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: CAD designer, CAM programmer, Product design engineer, mechanical designer, game designer, web designer, architectural drafter, electronics CAD engineer, automotive design engineer,	Career links: Graphic designer, architect, illustrator, web designer, interior designer, fashion designer, animator, prop design, freelance artist, photography, automotive design, product design, corporate

	design, industrial design, builder, property renovation.		CAD CAM instructor, aerospace design engineer, 3D printing engineer.	identity/brand design, set design, industrial design, art director.
Assessment	Common Knowledge Tests in lesson 1 and lesson 13 (the first and last lessons of the project). Key Marked Piece – Spinning Top Handle and Spinner.	Each term 1 x Key Mark Piece practical assessment 1 x Common Knowledge Test	Common Knowledge Test at end of project. Key Mark Piece is the Mobile Phone Holder, accuracy of 2D Design.	Key Mark Piece is the student booklet and their final outcome/model.