Design Technology Curriculum

Aspect	Year 1	Year 2
Aspects and foci	Sliders and Levers (Mechanisms) Free Standing Structures (Structures) Preparing fruit and vegetables (Food)	Templates and Joining (Textiles) Preparing fruit and vegetables (Food) Wheels and Axles (Mechanisms)
General designing, making and evaluating skills	**C: Design products that have a clear purpose and an intended user** C: Use computing to communicate design information. C: Begin to evaluate their ideas and products against design criteria.	**C: Design products that have a clear purpose and an intended user.** **C: Make products, refining the design as work progresses.** C: Use computing to communicate design information. C: Begin to evaluate their ideas and products against design criteria.
Specific Skills, Knowledge and Concepts - Mechanisms	**1. Explore and use sliders and levers.** 2. Understand that different mechanisms produce different types of movement. 3. Select and use tools, explaining their choices, to cut, shape and join paper and card.	1. Explore and evaluate a range of products with wheels and axles. 2. **Explore and use wheels, axles and axle holders.** 3. **Distinguish between fixed and freely moving axles.** 4. Select from and use a range of tools and equipment to perform practical tasks such as cutting and joining to allow movement and finishing.
Specific Skills, Knowledge and Concepts – Structures	**1. Know how to make freestanding structures stronger, stiffer and more stable**. 2. Select new and reclaimed materials and construction kits to build their structures. 3. Use simple finishing techniques suitable for the structure they are creating.	
Specific Skills, Knowledge and Concepts – Food	Know: **1. All food comes from plants or animals** **2. Everyone should eat at least five portions of fruit and vegetables every day** **3.** With support, how to use techniques such as cutting, peeling and grating **4. How to prepare simple dishes safely and hygienically, without using a heat source**	Know: **1. That food has to be farmed, grown elsewhere (e.g. home) or caught** **2. How to name and sort foods into the five groups in The Eatwell plate** **3. How to use techniques such as cutting, peeling and grating**
Specific Skills, Knowledge and Concepts – Textiles		1. Explore a range of different textiles and their uses based on their characteristics. 2. Select from and use textiles according to their characteristics. **3. Understand how to join fabrics using different techniques e.g. running stitch, glue, over stitch, stapling.** **4. Explore different finishing techniques e.g. using painting, fabric crayons, stitching, sequins, buttons and ribbons.**

Aspect	Year 3	Year 4
Aspects and foci	Healthy and varied diets (Food) Levers and linkages (Mechanical systems) 2D Shape to 3D product (textiles) *Pneumatics (Mechanical Systems) [optional unit]*	Healthy and varied diets (Food) Shell structure using computer aided design (Structure) with Computer aided design Simple circuits and switches (Electrical systems)
General designing, making and evaluating skills	Know how to: C: Disassemble products to understand how they work. **C: Design with purpose.** **C: Make products by working efficiently (such as by carefully selecting materials).** C: Refine work and techniques as work progresses.	Know how to: C: Disassemble products to understand how they work. C: Design with purpose by identifying opportunities to design. C: Make products by working efficiently (such as by carefully selecting materials). **C: Refine work and techniques, continually evaluating the product design.** **C: Improve upon existing designs, giving reasons for choices.** **C: Use software to design and represent product designs.**
Specific Skills, Knowledge and Concepts – Mechanisms	Know: **1. How to use scientific knowledge of the transference of forces to choose appropriate mechanisms for a product (such as levers, winding mechanisms, pulleys and gears).** 2. Apply appropriate cutting and shaping techniques that include cuts within the perimeter of the material (such as slots or cut outs). *Pneumatics [optional unit]* *1. Recognise ways in which pneumatic systems can be used to operate levers.* 2. *Know how to assemble the pneumatic systems using syringes, tubing, balloons and plastic bottles.*	
Specific Skills, Knowledge and Concepts – Structures		Know: **1. How to measure and mark out to the nearest millimetre.** **2.** How to strengthen materials using suitable techniques. **3. How to choose suitable techniques to construct products or to repair items.**
Specific Skills, Knowledge and Concepts – Food	Know: 1. That a healthy diet is made up from a variety and balance of different food and drink, as depicted in The Eatwell plate. 2. That food is grown (such as tomatoes, wheat and potatoes) in the UK. 3. How to use a range of techniques such as peeling, **chopping, slicing,** grating and **mixing**. **4. How to prepare salad ingredients of predominantly savoury foods safely and hygienically – washing hands, tying hair back**	Know: **1. That to be active and healthy, food and drink are needed to provide energy for the body.** 2. That food is reared (such as pigs, chickens and cattle) and caught (such as fish) in the UK. 3. How to use a range of techniques such as peeling, chopping, slicing, grating, mixing, **cooking in an oven and spreading.** 4. How to prepare and cook dishes safely and hygienically including the **use of a heat source.**

Specific Skills, Knowledge and Concepts – Textiles	Know how to: **1. Measure and mark out to the nearest cm.** **2. Cut materials accurately and safely by selecting appropriate tools.** **3. Understand the need for a seam allowance.** 4. Join textiles with appropriate stitching. 5. Select the most appropriate techniques to decorate textiles.	
Specific Skills, Knowledge and Concepts – Electrical Systems		Know: **1. How to create series and parallel circuits.**
Specific skills, knowledge and concepts – Computer aided design		Know how to: **1. Accurately recreate your design through a computer design software.** 2. Refine your design, continuously evaluating throughout the process.

Aspect	Year 5	Year 6
Aspects and foci	Celebrating culture and seasonality (Food) Combining different fabric shapes, with computer aided design (Textiles) Complex switches, with monitoring and control (electrical systems) *Cams (Mechanisms) [optional unit]*	Celebrating culture and seasonality (Food) Frame structures (Frame Structures) Cams or pulleys and gears, with programing and control (Mechanisms)
General designing, making and evaluating skills	**C: Use prototypes, cross sectional diagrams and computer-aided designs to represent designs.** C: Make products through stages of prototypes, making continual refinements. C: Cut materials with precision and refine the finish with appropriate tools (such as sanding wood after cutting or a more precise scissor cut after roughly cutting out a shape)	**C: Design with the user in mind, motivated by the service a product will offer (rather than simply for profit)** C: Use prototypes, cross sectional diagrams and computer-aided designs to represent designs. **C: Ensure products have a high quality finish, using art skills where appropriate.**
Specific Skills, Knowledge and Concepts - Mechanisms	*Cams [optional unit]* *1. Know different types of movement: rotary, oscillating and reciprocating.* *2. Develop measuring, marking, cutting, shaping and joining skills using junior hacksaws, G-clamps, bench hooks, square section wood, card triangles and hand drills to make cam mechanisms.* *3. Convert rotary motion to linear using cams*	1. Explore combinations of two different size gears meshed together. Investigate the direction and speed of rotation focusing on how the size of the driver gear affects the speed of the follower gear. **2. Calculate the number of teeth on each gear to decide upon the gear ratios e.g. 10 tooth driver gear meshed with a 20 tooth follower gear produces a ratio of 2:1.**
Specific Skills, Knowledge and Concepts – Structures		1. Investigate and make annotated drawings of a range of portable and permanent frame structures, e.g. tents, bus shelters, umbrellas. 2. Compare the strength of square frameworks with triangular frameworks. 3. **Develop a range of practical skills to create products (such as cutting, drilling and screwing, nailing, gluing, filling and sanding).**
Specific Skills, Knowledge and Concepts – Food	Know: **1. That food is grown (fruits, vegetables and cereals), in Europe and the wider world.** **2. That seasons may affect the food available.** **3. That recipes can be adapted to change the appearance, taste, texture and aroma.** 4. How to use a range of techniques such as mixing, spreading, **measuring, kneading and baking.** 5. How to prepare and cook savoury dishes, selecting suitable ingredients hygienically including, the use of a heat source.	Know: **1. That food is reared (such as pigs, chickens and cattle) and caught (such as fish) in Europe and the wider world.** **2. How food is processed into ingredients that can be eaten or used in cooking.** 3. **That different food and drink contain different substances – nutrients, water and fibre – that are needed for health.** 4. How to use a range of techniques such as peeling, chopping, slicing, grating, mixing, spreading, kneading and baking. 5. How to prepare and cook a variety of **meals and desserts** safely and hygienically including the use of a heat source.

Specific Skills, Knowledge and Concepts – Textiles	1. The varieties of stuffing and stitch types that could be used. **2. How to join textiles with a combination of stitching techniques (such as back stitch for seams and running stitch to attach decoration).** 3. **Use the qualities of materials to create suitable visual and tactile effects in the decoration of textiles (such as a soft decoration for comfort on a cushion).** 4. Create objects (such as a cushion) that employ a seam allowance.	
Specific Skills, Knowledge and Concepts – Electrical Systems	**1.** Investigate electrical sensors such as light dependent resistors (LDRs) and a range of switches such as push-to-make switches, push-to-break switches, toggle switches, micro switches and reed switches. **2.** Use each component to control a bulb in a simple circuit. **3. Create circuits using electronics kits that employ a number of components (such as LEDs, resistors, transistors and chips.)**	
Specific Skills, Knowledge and Concepts – Computing and Design / Monitoring and control	**1.** Discuss a range of relevant products (such as nightlights, garden lights, alarm systems, security lighting, electronic moneyboxes) that respond to changes in the environment using a computer control program. **2. Test out the programs using electrical components connected to microcontrollers, interface boxes or standalone boxes.**	1. **Write and modify computer control programs that include inputs, outputs and decision making.**