Year B DESIGN and TECHNOLOGY

EYFS	Y1/2	Y3/4	Y5/6
Procedural knowledge (from NC)			
AREA OF DEVELOPMENT Expressive Art & Design **STRAND** Creating with materials * Safely use and explore a variety of materials, tools and techniques, experimenting with colour, design, texture, form and function. * Share their creations, explaining the process they have used. *Make use of props and materials when role playing characters in narratives and stories. **AREA OF DEVELOPMENT** Physical Development **STRAND** Fine Motor Skills * Use a range of small tools, including scissors, paint brushes and cutlery. * Begin to show accuracy and care when drawing.	**To master practical skills – Food** • Cut, peel or grate ingredients safely and hygienically. • Measure or weigh using measuring cups or electronic scales. • Assemble or cook ingredients. **To master practical skills- Materials** • Cut materials safely using tools provided. • Measure and mark out to the nearest centimetre. • Demonstrate a range of cutting and shaping techniques (such as tearing, cutting, folding and curling). • Demonstrate a range of joining techniques (such as gluing, hinges or combining materials to strengthen). **To master practical skills- Textiles** • Shape textiles using templates. • Join textiles using running stitch. • Colour and decorate textiles using a number of techniques (such as dyeing, adding sequins or printing). **To master practical skills- Electricals and electronics** • Diagnose faults in battery operated devices (such as low battery, water damage or battery terminal damage). **To master practical skills- Computing** • Model designs using software. **To master practical skills- Construction** • Use materials to practise drilling, screwing, gluing and nailing materials to make and strengthen products. **To master practical skills- Mechanics** • Create products using levers, wheels and winding mechanisms. **To design, make, evaluate and improve** • Design products that have a clear purpose and an intended user. • Make products, refining the design as work progresses. • Use software to design.	**To master practical skills – Food** • Prepare ingredients hygienically using appropriate utensils. • Measure ingredients to the nearest gram accurately. • Follow a recipe. • Assemble or cook ingredients (controlling the temperature of the oven or hob, if cooking). **To master practical skills- Materials** • Cut materials accurately and safely by selecting appropriate tools. • Measure and mark out to the nearest millimetre. • Apply appropriate cutting and shaping techniques that include cuts within the perimeter of the material (such as slots or cut outs). • Select appropriate joining techniques. **To master practical skills- Textiles** • Understand the need for a seam allowance. • Join textiles with appropriate stitching. • Select the most appropriate techniques to decorate textiles. **To master practical skills- Electricals and electronics** • Create series and parallel circuits **To master practical skills- Computing** *Control and monitor models using software designed for this purpose. **To master practical skills- Construction** • Choose suitable techniques to construct products or to repair items. • Strengthen materials using suitable techniques. **To master practical skills- Mechanics** *Use scientific knowledge of the transference of forces to choose appropriate mechanisms for a product (such as levers, winding mechanisms, pulleys and gears). **To design, make, evaluate and improve** • Design with purpose by identifying opportunities to design. • Make products by working efficiently (such as by carefully selecting materials). • Refine work and techniques as work progresses, continually evaluating the product design. • Use software to design and represent product designs.	**To master practical skills – Food** • Understand the importance of correct storage and handling of ingredients (using knowledge of micro-organisms). • Measure accurately and calculate ratios of ingredients to scale up or down from a recipe. • Demonstrate a range of baking and cooking techniques. • Create and refine recipes, including ingredients, methods, cooking times and temperatures. **To master practical skills- Materials** • 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). • Show an understanding of the qualities of materials to choose appropriate tools to cut and shape (such as the nature of fabric may require sharper scissors than would be used to cut paper). **To master practical skills- Textiles** • Create objects (such as a cushion) that employ a seam allowance. • Join textiles with a combination of stitching techniques (such as back stitch for seams and running stitch to attach decoration). • 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). **To master practical skills- Electricals and electronics** *Create circuits using electronics kits that employ a number of components (such as LEDs, resistors, transistors and chips). **To master practical skills- Computing** *Write code to control and monitor models or products. **To master practical skills- Construction** *Develop a range of practical skills to create products (such as cutting, drilling and screwing, nailing, gluing, filling and sanding). **To master practical skills- Mechanics** *Convert rotary motion to linear using cams. • Use innovative combinations of electronics (or computing) and mechanics in product designs. **To design, make, evaluate and improve** • Design with the user in mind, motivated by the service a product will offer (rather than simply for profit). • Make products through stages of prototypes, making continual refinements. • Ensure products have a high quality finish, using art skills where appropriate. • Use prototypes, cross-sectional diagrams and computer aided designs to represent designs.
Unit and declarative knowledge (specific information we want children to know and remember)			
AUTUMN 1 ALL ABOUT ME * Join different materials WONDERFUL WOODLANDS * Discuss different materials and their properties	**Yr 1- Autumn 1- Moon Zoom** • Different materials can be used for different purposes, depending on their properties. For example, cardboard is a stronger building material than paper. Plastic is light and can float. Clay is heavy and will sink	**Spring 2- Blue Abyss** • Significant designers and inventors can shape the world • Design features are the aspects of a product's design that the designer would like to emphasise,	

AUTUMN 2 NIGHT & DAY * Developing techniques to join materials * Tool safety * Explore one handed tools CHRISTMAS IS COMING * Explore a variety of tools * Tool safety **SPRING 1** WINTER WONDERLAND *Explore a variety of materials, tools and techniques *Experiment with design AMAZING ANIMALS * Find alternative solutions when joining materials **SPRING 2** FOOD GLORIOUS FOOD Begin to create design sheets TRANSPORT Use a range of tools to create a model **SUMMER 1** BUILD IT UP Explore the function of different materials **TO INFINITY & BEYOND** * Develop strategies to adapt own work **SUMMER 2** UNDER THE SEA MARVELLOUS MACHINES MOVING ON Begin to explain the process they have used to create a model	• Everyday products are objects that are used routinely at home and school, such as a toothbrush, cup or pencil. All products are designed for a specific purpose. • An axle is a rod or spindle that passes through the centre of a wheel to connect two wheels • A strength is a good quality of a piece of work. A weakness is an area that could be improved. **Yr1- Spring 2- Paws, Claws and Whiskers** • Design criteria are the explicit goals that a project must achieve. **Yr2- Summer 2- Towers, tunnels and turrets** • Properties of components and materials determine how they can and cannot be used. For example, plastic is shiny and strong but it can be difficult to paint • Structures can be made stronger, stiffer and more stable by using cardboard rather than paper and triangular shapes rather than squares. A broader base will also make a structure more stable. • Properties of components and materials determine how they can and cannot be used. For example, plastic is shiny and strong but it can be difficult to paint • Finished products can be compared with design criteria to see how closely they match. Improvements can then be planned.	such as the use of a particular material or feature that makes the product easier to use or more durable.		
Non-subject specific unit				
Due to the nature of EYFS additional statements from the Development Matters curriculum are taught within topics and themes that are developed from the children's interests as and when they arise.	**Yr1- Autumn 1- Enchanted Forest** • Fruit and vegetables are an important part of a healthy diet. It is recommended that people eat at least five portions of fruit and vegetables every day • Different materials can be used for different purposes, depending on their properties. For example, cardboard is a stronger building material than paper. Plastic is light and can float. Clay is heavy and will sink. • Different materials are suitable for different purposes, depending on their specific properties. For example, glass is transparent, so it is suitable to be used for windows **Yr1- Spring 1- Superheroes!** • Fruit and vegetables are an important part of a healthy diet. It is recommended that people eat at least five portions of fruit and vegetables every day • Design criteria are the explicit goals that a project must achieve **Yr1- Summer 1- Rio de Vida** • Different materials are suitable for different purposes, depending on their specific properties. For example, glass is transparent, so it is suitable to be used for windows	Autumn 1- Tremors • Materials for a specific task must be selected on the basis of their properties. These include physical properties as well as availability and cost • Shell structures are hollow, 3-D structures with a thin outer covering, such as a box. Frame structures are made from thin, rigid components, such as a tent frame. The rigid frame gives the structure shape and support. Diagonal struts can strengthen the structure. • Design criteria are the exact goals a project must achieve to be successful. These criteria might include the product's use, appearance, cost and target user Autumn 2- I am Warrior! • Different materials and components have a range of properties, making them suitable for different tasks. It is important to select the correct material or component for the specific purpose, depending on the design criteria. Recipe ingredients have different tastes and appearances. They look and taste better and are cheaper when in season • Cooking techniques include baking, boiling, frying, grilling and roasting	**Autumn 2- Peasants, Prices and Pestilence** • Materials should be cut and combined with precision. For example, pieces of fabric could be cut with sharp scissors and sewn together using a variety of stitching techniques. • Sweet dishes are usually desserts, such as cakes, fruit pies and trifles. Savoury dishes usually have a salty or spicy flavour rather than a sweet one • Materials should be cut and combined with precision. For example, pieces of fabric could be cut with sharp scissors and sewn together using a variety of stitching techniques	Autumn 1 – A child's War • Ingredients can usually be bought at supermarkets, but specialist shops may stock different items. Greengrocers sell fruit and vegetables, butchers sell meat, fishmongers sell fresh fish and delicatessens usually sell some unusual prepared foods, as well as cold meats and cheeses • Strength can be added to a framework by using multiple layers. For example, corrugated cardboard can be placed with corrugations running alternately vertically and horizontally. Triangular shapes can be used instead of square shapes

	• Using non-standard measures is a way of measuring that does not involve reading scales. For example, weight may be measured using a balance scale and lumps of plasticine. Length may be measured in the number of handspans or pencils laid end to end. • Different materials can be used for different purposes, depending on their properties. For example, cardboard is a stronger building material than paper. Plastic is light and can float. Clay is heavy and will sink • Specific tools are used for particular purposes. For example, scissors are used for cutting and glue is used for sticking. • A strength is a good quality of a piece of work. A weakness is an area that could be improved. **Yr1- Summer 2-Bright Lights Big City** • Using non-standard measures is a way of measuring that does not involve reading scales. For example, weight may be measured using a balance scale and lumps of plasticine. Length may be measured in the number of hand spans or pencils laid end to end • Different materials can be used for different purposes, depending on their properties. For example, cardboard is a stronger building material than paper. Plastic is light and can float. Clay is heavy and will sink • Different materials can be used for different purposes, depending on their properties. For example, cardboard is a stronger building material than paper. Plastic is light and can float. Clay is heavy and will sink **Yr2- Autumn 1- Wiggle and Crawl** • Some ingredients need to be prepared before they can be cooked or eaten. There are many ways to prepare ingredients: peeling skins using a vegetable peeler, such as potato skins; grating hard ingredients, such as cheese or chocolate; chopping vegetables, such as onions and peppers and slicing foods, such as bread and apples. • Properties of components and materials determine how they can and cannot be used. For example, plastic is shiny and strong but it can be difficult to paint **Yr2- Spring 1- Bounce** • A mechanism is a device that takes one type of motion or force and produces a different one. A mechanism makes a job easier to do. Mechanisms include sliders, levers, linkages, gears, pulleys and cams • Hygiene rules include washing hands before handling food, cleaning surfaces, tying long hair back, storing food appropriately and wiping up spills. **Yr2- Spring 2- Street Detectives** • Properties of components and materials determine how they can and cannot be used. For example, plastic is shiny and strong but it can be difficult to paint. • Ideas can be communicated in a variety of ways, including written work, drawings and diagrams, modelling, speaking and using information and communication technology.	• Design features are the aspects of a product's design that the designer would like to emphasise, such as the use of a particular material or feature that makes the product easier to use or more durable Spring 1- Traders and Raiders • Different materials and components have a range of properties, making them suitable for different tasks. It is important to select the correct material or component for the specific purpose, depending on the design criteria. Recipe ingredients have different tastes and appearances. They look and taste better and are cheaper when in season. • A prototype is a mock-up of a design that will look like the finished product but may not be full size or made of the same materials. Shell and frame structures can be strengthened by gluing several layers of card together, using triangular shapes rather than squares, adding diagonal support struts and using 'Jinks' corners (small, thin pieces of card cut into a right-angled triangle and glued over each joint to straighten and strengthen them) Summer 1-Mighty Metals • Levers consist of a rigid bar that rotates around a fixed point, called a fulcrum. They reduce the amount of work needed to lift a heavy object. Sliders move from side to side or up and down, and are often used to make moving parts in books. Axles are shafts on which wheels can rotate to make a moving vehicle. Cams are devices that can convert circular motion into up-and-down motion • Design criteria are the exact goals a project must achieve to be successful. These criteria might include the product's use, appearance, cost and target user • Materials for a specific task must be selected on the basis of their properties. These include physical properties as well as availability and cost. • Design criteria are the exact goals a project must achieve to be successful. These criteria might include the product's use, appearance, cost and target user. • Asking questions can help others to evaluate their products, such as asking them whether the selected materials achieved the purpose of the model. **Summer 2- Road trip USA** • Cooking techniques include baking, boiling, frying, grilling and roasting • Different materials and components have a range of properties, making them suitable for different tasks. It is important to select the correct material or component for the specific purpose, depending on the design criteria. Recipe ingredients have different tastes and appearances. They look and taste better and are cheaper when in season	**Spring 1- Galley rebels** • It is important to understand the characteristics of different materials to select the most appropriate material for a purpose. This might include flexibility, waterproofing, texture, colour, cost and availability • It is important to understand the characteristics of different materials to select the most appropriate material for a purpose. This might include flexibility, waterproofing, texture, colour, cost and availability • Mechanical systems can include sliders, levers, linkages, gears, pulleys and cams. Other mechanisms include pneumatics and hydraulics. **Spring 2- Sow, grow and farm** •Seasonality is the time of year when the harvest or flavour of a type of food is at its best. Buying seasonal food is beneficial for many reasons: the food tastes better; it is fresher because it hasn't been transported thousands of miles; the nutritional value is higher; the carbon footprint is lower, due to reduced transport; it supports local growers and is usually cheaper **Summer 1- Playlist!** • Design features are the aspects of a product's design that the designer would like to emphasise, such as the use of a particular material or feature that makes the product easier to use or more durable • Different materials and components have a range of properties, making	because they are more rigid. Frameworks can be further strengthened by adding an outer cover. • It is important to understand the characteristics of different materials to select the most appropriate material for a purpose. This might include flexibility, waterproofing, texture, colour, cost and availability Autumn 2- Blood Heart • Design criteria should cover the intended use of the product, age range targeted and final appearance. Ideas can be communicated in a range of ways, including through discussion, annotated sketches, cross-sectional and exploded diagrams, prototypes, pattern pieces and computer-aided design. • Ingredients can usually be bought at supermarkets, but specialist shops may stock different items. Greengrocers sell fruit and vegetables, butchers sell meat, fishmongers sell fresh fish and delicatessens usually sell some unusual prepared foods, as well as cold meats and cheeses • It is important to understand the characteristics of different materials to select the most appropriate material for a purpose. This might include flexibility, waterproofing, texture, colour, cost and availability Spring 1- Hola Mexico! • Ingredients can usually be bought at supermarkets, but specialist shops may stock different items.

	• Some ingredients need to be prepared before they can be cooked or eaten. There are many ways to prepare ingredients: peeling skins using a vegetable peeler, such as potato skins; grating hard ingredients, such as cheese or chocolate; chopping vegetables, such as onions and peppers and slicing foods, such as bread and apples. **Yr2 Summer 1- Scented Garden** • Different tools have characteristics that make them suitable for specific purposes. For example, scissors are used for cutting paper because they have sharp, metal blades that can cut through thin materials • Properties of components and materials determine how they can and cannot be used. For example, plastic is shiny and strong but it can be difficult to paint • Different tools have characteristics that make them suitable for specific purposes. For example, scissors are used for cutting paper because they have sharp, metal blades that can cut through thin materials. **Yr2- Summer 2- Land Ahoy!** • A mechanism is a device that takes one type of motion or force and produces a different one. A mechanism makes a job easier to do. Mechanisms include sliders, levers, linkages, gears, pulleys and cams • A series circuit is made up of an energy source, such as a battery or cell, wires and a bulb. The circuit must be complete for the electricity to flow • Finished products can be compared with design criteria to see how closely they match. Improvements can then be planned	• Design features are the aspects of a product's design that the designer would like to emphasise, such as the use of a particular material or feature that makes the product easier to use or more durable	them suitable for different tasks. It is important to select the correct material or component for the specific purpose, depending on the design criteria. Recipe ingredients have different tastes and appearances. They look and taste better and are cheaper when in season • Evaluation can be done by considering whether the product does what it was designed to do, whether it has an attractive appearance, what changes were made during the making process and why the changes were made. Evaluation also includes suggesting improvements and explaining why they should be made	Greengrocers sell fruit and vegetables, butchers sell meat, fishmongers sell fresh fish and delicatessens usually sell some unusual prepared foods, as well as cold meats and cheeses • Eating a balanced diet is a positive lifestyle choice that should be sustained over time. Food that is high in fat, salt or sugar can still be eaten occasionally as part of a balanced diet • It is important to understand the characteristics of different materials to select the most appropriate material for a purpose. This might include flexibility, waterproofing, texture, colour, cost and availability Spring 2- Allotment • Sweet dishes are usually desserts, such as cakes, fruit pies and trifles. Savoury dishes usually have a salty or spicy flavour rather than a sweet one • Materials should be cut and combined with precision. For example, pieces of fabric could be cut with sharp scissors and sewn together using a variety of stitching techniques. • Materials should be cut and combined with precision. For example, pieces of fabric could be cut with sharp scissors and sewn together using a variety of stitching techniques • Sweet dishes are usually desserts, such as cakes, fruit pies and trifles. Savoury dishes usually have a salty or spicy flavour rather than a sweet one • Seasonality is the time of year when the harvest or flavour of a type of food

				is at its best. Buying seasonal food is beneficial for many reasons: the food tastes better; it is fresher because it hasn't been transported thousands of miles; the nutritional value is higher; the carbon footprint is lower, due to reduced transport; it supports local growers and is usually cheaper Summer 1- Alchemy Island • Electrical circuits can be controlled by a simple on/off switch, or by a variable resistor that can adjust the size of the current in the circuit. Real-life examples are a dimmer switch for lights or volume control on a stereo • A pattern piece is a drawing or shape used to guide how to make something. There are many different computer-aided design packages for designing products. Summer 2-Stargazers • Materials should be cut and combined with precision. For example, pieces of fabric could be cut with sharp scissors and sewn together using a variety of stitching techniques • Testing a product against the design criteria will highlight anything that needs improvement or redesign. Changes are often made to a design during manufacture