Curriculum plan- Design and Technology

EYFS	The table below outlines the most relevant statements taken from the Early Learning Goals in the EYFS statutory framework and the Development Matters age ranges for Three and Four-Year-Olds and Reception to match the programme of study for Design and Technology		
	Three and four year olds **Personal, Social and Emotional Development** • Select and use activities and resources, with help when needed. This helps them to achieve a goal they have chosen or one which is suggested to them. **Understanding the World** • Explore how things work **Physical Development** Use large-muscle movements to wave flags and streamers, paint and make marks. • Choose the right resources to carry out their own plan. • Use one-handed tools and equipment, for example, making snips in paper with scissors. **Expressive Arts and Design** Make imaginative and complex 'small worlds' with blocks and construction kits, such as a city with different buildings and a park. • Explore different materials freely, in order to develop their ideas about how to use them and what to make. • Develop their own ideas and then decide which materials to use to express them. • Create closed shapes with continuous lines, and begin to use these shapes to represent objects.	**Reception** **Physical Development** • Progress towards a more fluent style of moving, with developing control and grace. • Develop their small motor skills so that they can use a range of tools competently, safely and confidently. • Use their core muscle strength to achieve a good posture when sitting at a table or sitting on the floor. **Expressive Arts and Design** Explore, use and refine a variety of artistic effects to express their ideas and feelings. • Return to and build on their previous learning, refining ideas and developing their ability to represent them. • Create collaboratively, sharing ideas, resources and skills.	**ELG** **Physical Development** **Fine Motor Skills** Use a range of small tools, including scissors, paintbrushes and cutlery. **Expressive Arts and Design** 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.

	Autumn	Spring	Summer
Year 1 and 2 Cycle A	**Mechanisms (movement of simple levers, sliders, wheels and axels)** Can you make a moving picture? **Can I explore and evaluate an existing product?** **How does a slider mechanism work?** **How does a lever mechanism work?** **How does a wheel mechanism work?** **Can I design a working product and think about who it is for?** **Can you make and evaluate a moving picture?** Progression of Skills: -State the purpose of the design and the intended user -Explore materials, make templates and mock ups e.g. moving picture / lighthouse -Understand about the simple working characteristics of materials and components -Understand about the movement of simple mechanisms including levers, sliders (Year 1) wheels and axles (Year 2) -Measure, mark out, cut out and shape materials and components -Assemble, join and combine materials and components -Use simple fixing materials e.g. temporary – paper clips tape and permanent – glue, staples Skills from the NC: <u>Design</u> -design purposeful, functional, appealing products for themselves and other users based on design criteria -generate, develop, model and communicate their ideas through talking, drawing, templates, mock-ups and, where appropriate, information and communication technology <u>Make</u> -select from and use a range of tools and equipment to perform practical tasks [for example, cutting, shaping, joining and finishing]	**Cooking and nutrition** Can you design and make a healthy recipe? **Where do different fruits and vegetables come from?** **Why do I need to eat fruits and vegetables?** **Can I prepare a healthy salad made from root vegetables?** **Why is it important to eat fish?** **Can I design a healthy fish salad?** **Can I prepare and evaluate a healthy fish salad?** Progression of skills: - Understand that food ingredients should be combined according to their sensory characteristics - Know where food comes from - Use appropriate equipment to weigh and measure ingredients -Prepare simple dishes safely and hygienically, without using a heat sources -Use techniques such as cutting Name and sort foods into the five groups of the ‘eat well’ plate -Know that everyone should eat at least five portions of fruit and vegetables every day Skills from the NC: -use the basic principles of a healthy and varied diet to prepare dishes -understand where food comes from	**Structures** Can you make a free-standing packed lunch box that is strong and stable? **How effective is this basket to store food?** **Can I evaluate existing products?** **Can I test different materials and decide which will be useful for making my product?** **Can I design a pirates packed lunch box that can safely travel down a zipline?** **Can I make a template for my free standing packed lunch box and evaluate this to make improvements?** **Can I make and evaluate a pirates packed lunch box that can safely travel down a zipline?** Progression of skills: - State the purpose of the design and the intended user - Select from a range of materials and components according to their characteristics - Follow procedures for safety - Measure, mark out, cut out and shape materials and components - Assemble, join and combine materials and components - Understand how freestanding structures can be made stronger, stiffer and more stable Skills from the NC: <u>Design</u> -design purposeful, functional, appealing products for themselves and other users based on design criteria -generate, develop, model and communicate their ideas through talking, drawing, templates, mock-ups and, where appropriate, information and communication technology <u>Make</u>

	-select from and use a wide range of materials and components, including construction materials, textiles and ingredients, according to their characteristics Evaluate -explore and evaluate a range of existing products -evaluate their ideas and products against design criteria		-select from and use a range of tools and equipment to perform practical tasks [for example, cutting, shaping, joining and finishing] -select from and use a wide range of materials and components, including construction materials, textiles and ingredients, according to their characteristics Evaluate -explore and evaluate a range of existing products -evaluate their ideas and products against design criteria
Year 1 and 2 Cycle B	**Mechanisms** Can you make a moving toy vehicle? **Can I investigate a variety of vehicles and their uses?** **What type of wheels, axles and chassis will I need?** **Can I investigate ways to decorate the body of a vehicle?** **Can I design a moving vehicle?** **Can I make a moving vehicle to match my design?** **Can I evaluate my moving vehicle?** Progression of skills: -State the purpose of the design and the intended user -Explore materials, make templates and mock ups e.g. moving picture / lighthouse -Understand about the simple working characteristics of materials and components -Understand about the movement of simple mechanisms including levers, sliders (Year 1) wheels and axles (Year 2) -Measure, mark out, cut out and shape materials and components -Assemble, join and combine materials and components -Use simple fixing materials e.g. temporary – paper clips tape and permanent – glue, staples Skills from NC: Design	**Textiles** Can you make a 3D product using fabric shapes? **Can I investigate a variety of fabrics?** **How is hair created using different materials?** **Can I join fabrics together and attach different materials?** **Can I design my own fabric face purse?** **Can I cut on a line and use a template to create my fabric face shape?** **Can I make and evaluate a fabric face purse?** Progression of skills: -State the purpose of the design and the intended user -Explore materials, make templates and mock ups -Follow procedures for safety -Use and make own templates -Measure, mark out, cut out and shape materials and components -Use finishing techniques, including those from art and design -investigate - what products are, who they are for, how they are made and what materials are used Skills from NC: Design -design purposeful, functional, appealing products for themselves and other users based on design criteria	**Cooking and nutrition** Can you make some tasty snacks? **Can I evaluate a range of dips?** **Can I describe different dips?** **Why do I need to eat a balance and variety of food groups to stay healthy?** **Can I help to make dips and dippers?** **Can I plan my own appealing dip and dipper?** **Can I make and evaluate my own dip and dipper?** Progression of skills: -- Understand that food ingredients should be combined according to their sensory characteristics - Know where food comes from - Use appropriate equipment to weigh and measure ingredients -Prepare simple dishes safely and hygienically, without using a heat sources -Use techniques such as cutting Name and sort foods into the five groups of the 'eat well' plate -Know that everyone should eat at least five portions of fruit and vegetables every day Skills from NC: -use the basic principles of a healthy and varied diet to prepare dishes -understand where food comes from

	-design purposeful, functional, appealing products for themselves and other users based on design criteria -generate, develop, model and communicate their ideas through talking, drawing, templates, mock-ups and, where appropriate, information and communication technology Make -select from and use a range of tools and equipment to perform practical tasks [for example, cutting, shaping, joining and finishing] -select from and use a wide range of materials and components, including construction materials, textiles and ingredients, according to their characteristics Evaluate -explore and evaluate a range of existing products -evaluate their ideas and products against design criteria	-generate, develop, model and communicate their ideas through talking, drawing, templates, mock-ups and, where appropriate, information and communication technology Make -select from and use a range of tools and equipment to perform practical tasks [for example, cutting, shaping, joining and finishing] -select from and use a wide range of materials and components, including construction materials, textiles and ingredients, according to their characteristics Evaluate -explore and evaluate a range of existing products -evaluate their ideas and products against design criteria	
Year 3 and 4 Cycle A	**Cooking and nutrition** How do you make the perfect loaf of bread? **Who are the important people and what are the important events that have shaped the way bread is made and sold today?** **What are the characteristics of existing bread products?** **How do I develop a design criteria? How do I shape dough?** **How can I use original ideas to create a product?** **How can I improve my design criteria?** **What equipment and ingredients do I need to make my product?** **How do I knead and bake my product?** Progression of skills: - Understand how food is processed into ingredients that can be eaten or used in cooking - How to prepare and cook a variety of predominantly savoury dishes safely and hygienically including, where appropriate, the use of a heat source - How to use a range of techniques such as peeling, chopping, slicing, grating, mixing, spreading, kneading and baking	**Structures- shell structures** How do you make a package for a fragile product? **What are the different types of packaging used?** **How can I construct a 3D net to make a packaging?** **What graphics are used on packaging?** **How can I design a packaging for a particular purpose?** **How can I use my design to make a packaging product?** **What were the strengths and area for development of my product?** Progression of skills: - Model their ideas using prototypes and pattern pieces -Explain their choice of materials and components according to functional properties and aesthetic qualities -Assemble, join and combine materials and components with some accuracy apply a range of finishing techniques, include those from art and design, with some accuracy	**Mechanisms (levers and linkages)** How do mechanical systems create movement? **How do mechanical systems such as levers and linkages or pneumatic systems create movement?** **How can I make different mechanisms?** **How can I design a product to meet the needs of the user?** **How can I follow my design criteria to make a product?** **What were the strengths and area for development of my product?** Progression of skills: -Understand how levers and linkages or pneumatic systems create movement -Understand how to use learning from science and maths to help design and make products that work -Know that mechanical and electrical systems have an input, process and output

	- Measure using grams - Follow a recipe -Produce detailed lists of tools, equipment and materials that they need Skills from NC: -understand and apply the principles of a healthy and varied diet -prepare and cook a variety of predominantly savoury dishes using a range of cooking techniques -understand seasonality, and know where and how a variety of ingredients are grown, reared, caught and processed.	-Investigate - how well products have been designed, how well products have been made, why materials have been chosen, what methods of construction have been used, how well products work, how well products achieve their purposes and how well products meet user needs and wants -Know how to make strong, stiff shell structures Skills from NC: <u>Design</u> -use research and develop design criteria to inform the design of innovative, functional, appealing products that are fit for purpose, aimed at particular individuals or groups -generate, develop, model and communicate their ideas through discussion, annotated sketches, cross-sectional and exploded diagrams, prototypes, pattern pieces and computer-aided design <u>Make</u> -select from and use a wider range of tools and equipment to perform practical tasks [for example, cutting, shaping, joining and finishing], accurately -select from and use a wider range of materials and components, including construction materials, textiles and ingredients, according to their functional properties and aesthetic qualities <u>Evaluate</u> -investigate and analyse a range of existing products -evaluate their ideas and products against their own design criteria and consider the views of others to improve their work -understand how key events and individuals in design and technology have helped shape the world <u>Technical knowledge</u> -apply their understanding of how to strengthen, stiffen and reinforce more complex structures	Skills from NC: <u>Design</u> -use research and develop design criteria to inform the design of innovative, functional, appealing products that are fit for purpose, aimed at particular individuals or groups -generate, develop, model and communicate their ideas through discussion, annotated sketches, cross-sectional and exploded diagrams, prototypes, pattern pieces and computer-aided design <u>Make</u> -select from and use a wider range of tools and equipment to perform practical tasks [for example, cutting, shaping, joining and finishing], accurately -select from and use a wider range of materials and components, including construction materials, textiles and ingredients, according to their functional properties and aesthetic qualities <u>Evaluate</u> -investigate and analyse a range of existing products -evaluate their ideas and products against their own design criteria and consider the views of others to improve their work -understand how key events and individuals in design and technology have helped shape the world <u>Technical knowledge</u> -understand and use mechanical systems in their products [for example, gears, pulleys, cams, levers and linkages]

	Autumn	Spring	Summer
Year 3 and 4 Cycle B	**Textiles** How do we make a 3D product using 2D fabric shapes? **What are the features of money containers?** **What are the different stitches that can be used?** **How can I design a product fit for purpose?** **How can I use my design to create a product?** **How can I make my product look more interesting and appealing?** **What were the strengths and area for development of my product?** Progression of skills: -Order the main stages of making -Use a wider range of materials and components, including construction materials and kits, textiles, food ingredients, mechanical components and electrical components -Follow procedures for safety -Assemble, join and combine materials and components with some accuracy apply a range of finishing techniques, include those from art and design, with some accuracy -Know that a single fabric shape can be used to make a 3D textiles product Skills from NC: Design -use research and develop design criteria to inform the design of innovative, functional, appealing products that are fit for purpose, aimed at particular individuals or groups -generate, develop, model and communicate their ideas through discussion, annotated sketches, cross-	**Cooking and nutrition** What makes a healthy and balanced diet? **What's in a packed lunch?** **How can I use research to develop a design criteria?** **How can I design a product for a target market?** **What tools and equipment do I need to make a product?** **How can I use ingredients and follow procedures to make a product?** **What were the strengths and area for development of my product?** Progression of skills: -Know that food ingredients can be fresh, pre-cooked and processed -Know that food is grown (such as tomatoes, wheat and potatoes), reared (such as pigs, chickens and cattle) and caught (such as fish) in the UK, Europe and the wider world -Know that seasons may affect the food available -How to use a range of techniques such as peeling, chopping, slicing, grating, mixing, spreading, kneading and baking -Know that a healthy diet is made up from a variety and balance of different foods and drinks, as depicted in the 'eat well' plate -Know that to be active and healthy, food is needed to provide energy for the body Skills from NC: -understand and apply the principles of a healthy and varied diet -prepare and cook a variety of predominantly savoury dishes using a range of cooking techniques -understand seasonality, and know where and how a variety of ingredients are grown, reared, caught and processed.	**Electrical systems** How does a battery powered night-light work? **How have key events and individuals in design and technology help shape the world?** **What is needed to make and represent different types of circuits?** **What is needed to make and use switches?** **How can I develop a design criteria?** **What materials and components are needed to make a light?** **What were the strengths and area for development of my product?** Progression of skills: -Understand how simple electrical circuits and components can be used to create functional products -Know that mechanical and electrical systems have an input, process and output -Understand how to use learning from science and maths to help design and make products that work -Use a wider range of materials and components, including construction materials and kits, textiles, food ingredients, mechanical components and electrical components Skills from NC: Design -use research and develop design criteria to inform the design of innovative, functional, appealing products that are fit for purpose, aimed at particular individuals or groups -generate, develop, model and communicate their ideas through discussion, annotated sketches,

	sectional and exploded diagrams, prototypes, pattern pieces and computer-aided design Make -select from and use a wider range of tools and equipment to perform practical tasks [for example, cutting, shaping, joining and finishing], accurately -select from and use a wider range of materials and components, including construction materials, textiles and ingredients, according to their functional properties and aesthetic qualities Evaluate -investigate and analyse a range of existing products -evaluate their ideas and products against their own design criteria and consider the views of others to improve their work -understand how key events and individuals in design and technology have helped shape the world		cross-sectional and exploded diagrams, prototypes, pattern pieces and computer-aided design Make -select from and use a wider range of tools and equipment to perform practical tasks [for example, cutting, shaping, joining and finishing], accurately -select from and use a wider range of materials and components, including construction materials, textiles and ingredients, according to their functional properties and aesthetic qualities Evaluate -investigate and analyse a range of existing products -evaluate their ideas and products against their own design criteria and consider the views of others to improve their work -understand how key events and individuals in design and technology have helped shape the world Technical knowledge - understand and use electrical systems in their products [for example, series circuits incorporating switches, bulbs, buzzers and motors]
Year 5 and 6 Cycle A	**Textiles** Can you make a 3D product from a combination of fabric 2D shapes? **What are textiles?** **What is weaving?** **What are sewing and embroidery?** **What is applique?** **How can I embellish my textiles?** **Can I produce a product?** Progression of skills: -Accurately apply a range of finishing techniques, including those from art and design -Know that a 3D textiles product can be made from a combination of fabric shapes	**Mechanisms** How do gears and pulleys create movements? **What is a gear and how does it work?** **What is a pulley and how does it work?** **Can I design a moving model?** **Can I create a prototype?** **Can I evaluate my prototype?** **Can I produce a finished product?** Progression of skills: -Understand how cams, pulleys and gears create movement -Know that mechanical and electrical systems have an input, process and output -Accurately assemble, join and combine materials/ components	**Cooking and nutrition** Can you adapt and change a recipe to suit you? **How does seasonality impact our food supply?** **Where does our food come from?** **Why is the food industry important?** **Can I design a dish to reflect a culture or celebration?** **Can I create a dish to reflect a culture or celebration?** **Can I evaluate my dish?** Progression of skills: -Know that a recipe can be adapted a by adding or substituting one or more ingredients

	Skills from NC: Design -use research and develop design criteria to inform the design of innovative, functional, appealing products that are fit for purpose, aimed at particular individuals or groups -generate, develop, model and communicate their ideas through discussion, annotated sketches, cross-sectional and exploded diagrams, prototypes, pattern pieces and computer-aided design Make -select from and use a wider range of tools and equipment to perform practical tasks [for example, cutting, shaping, joining and finishing], accurately -select from and use a wider range of materials and components, including construction materials, textiles and ingredients, according to their functional properties and aesthetic qualities Evaluate -investigate and analyse a range of existing products -evaluate their ideas and products against their own design criteria and consider the views of others to improve their work -understand how key events and individuals in design and technology have helped shape the world	Skills from NC: Design -use research and develop design criteria to inform the design of innovative, functional, appealing products that are fit for purpose, aimed at particular individuals or groups -generate, develop, model and communicate their ideas through discussion, annotated sketches, cross-sectional and exploded diagrams, prototypes, pattern pieces and computer-aided design Make -select from and use a wider range of tools and equipment to perform practical tasks [for example, cutting, shaping, joining and finishing], accurately -select from and use a wider range of materials and components, including construction materials, textiles and ingredients, according to their functional properties and aesthetic qualities Evaluate -investigate and analyse a range of existing products -evaluate their ideas and products against their own design criteria and consider the views of others to improve their work -understand how key events and individuals in design and technology have helped shape the world Technical knowledge -understand and use mechanical systems in their products [for example, gears, pulleys, cams, levers and linkages]	-Know that recipes can be adapted to change the appearance, taste, texture and aroma -Know that different foods contain different substances - nutrients, water and fibre - that are needed for health -Measure accurately -Work out ratios in recipes Skills from NC: -understand and apply the principles of a healthy and varied diet -prepare and cook a variety of predominantly savoury dishes using a range of cooking techniques -understand seasonality, and know where and how a variety of ingredients are grown, reared, caught and processed.
Year 5 and 6 Cycle B	**3D structures** Can you design and make a safe den or habitat for an animal? **Can I research animal habitats?** **Can I design a habitat?** **Can I create a prototype of my design?** **Can I evaluate my prototype?** **Can I build my habitat?**	**Computer control** How are sensors used when making a burglar alarm? **What is a sensor?** **How do alarms use sensors?** **Can I design a prototype?** **Can I create my prototype?** **Can I evaluate my design?** **Can I produce a working alarm?**	**Electrical systems** How are switches used in more complex circuits? **What is a switch?** **How are switches used in complex circuits?** **Can I design complex circuit?** **Can I design a prototype?** **Can I build a prototype?** **Can I evaluate my design?**

	What were the strengths and area for development of my product? Progression of skills: -Know how to reinforce/strengthen a 3D framework -Accurately measure to nearest mm, mark out, cut and shape materials and components -Accurately assemble, join and combine materials/ components -Select materials and components suitable for the task Skills from NC: <u>Design</u> -use research and develop design criteria to inform the design of innovative, functional, appealing products that are fit for purpose, aimed at particular individuals or groups -generate, develop, model and communicate their ideas through discussion, annotated sketches, cross-sectional and exploded diagrams, prototypes, pattern pieces and computer-aided design <u>Make</u> -select from and use a wider range of tools and equipment to perform practical tasks [for example, cutting, shaping, joining and finishing], accurately -select from and use a wider range of materials and components, including construction materials, textiles and ingredients, according to their functional properties and aesthetic qualities <u>Evaluate</u> -investigate and analyse a range of existing products -evaluate their ideas and products against their own design criteria and consider the views of others to improve their work -understand how key events and individuals in design and technology have helped shape the world <u>Technical knowledge</u> -apply their understanding of how to strengthen, stiffen and reinforce more complex structures	Progression of skills: -Understand how to program a computer to monitor changes in the environment / control their products -Use the correct technical vocabulary for the projects they are undertaking Skills from NC: <u>Design</u> -use research and develop design criteria to inform the design of innovative, functional, appealing products that are fit for purpose, aimed at particular individuals or groups -generate, develop, model and communicate their ideas through discussion, annotated sketches, cross-sectional and exploded diagrams, prototypes, pattern pieces and computer-aided design <u>Make</u> -select from and use a wider range of tools and equipment to perform practical tasks [for example, cutting, shaping, joining and finishing], accurately -select from and use a wider range of materials and components, including construction materials, textiles and ingredients, according to their functional properties and aesthetic qualities <u>Evaluate</u> -investigate and analyse a range of existing products -evaluate their ideas and products against their own design criteria and consider the views of others to improve their work -understand how key events and individuals in design and technology have helped shape the world <u>Technical knowledge</u> - apply their understanding of computing to program, monitor and control their products.	Progression of skills: -Understand how to use learning from science and maths to help design and make products that work -Know that mechanical and electrical systems have an input, process and output -Use the correct technical vocabulary for the projects they are undertaking -Understand how more complex electrical circuits and components can be used to create functional products Skills from NC: <u>Design</u> -use research and develop design criteria to inform the design of innovative, functional, appealing products that are fit for purpose, aimed at particular individuals or groups -generate, develop, model and communicate their ideas through discussion, annotated sketches, cross-sectional and exploded diagrams, prototypes, pattern pieces and computer-aided design <u>Make</u> -select from and use a wider range of tools and equipment to perform practical tasks [for example, cutting, shaping, joining and finishing], accurately -select from and use a wider range of materials and components, including construction materials, textiles and ingredients, according to their functional properties and aesthetic qualities <u>Evaluate</u> -investigate and analyse a range of existing products -evaluate their ideas and products against their own design criteria and consider the views of others to improve their work -understand how key events and individuals in design and technology have helped shape the world <u>Technical knowledge</u>

			- understand and use electrical systems in their products [for example, series circuits incorporating switches, bulbs, buzzers and motors]