Subject: Design and Technology - KS3 Curriculum Mapping

Materials **Manufacturing** **Designing** **Sustainability** **Design for a user**

	Year 7	Year 8	Year 9
Designing Rotation	**Product Design** How to effectively communicate ideas through detailed 3D sketches. How to generate a concept for a product based on research and explain key design decisions such as the materials. Designing products relating to target markets, discussing topics such as age and gender stereotypes. <u>Knowledge</u> ▪ Perspective drawing ▪ Isometric drawing ▪ Creating ▪ Rendering (Timbers & Plastics) ▪ Products life cycles & landfill Design Suitability & Target markets	**Product Design** Understand how different materials impact a designer's decisions. Analyse existing products to identify trends. Redesigning and developing existing products based on materials & environmental influences. <u>Knowledge</u> ▪ Manufacture of polymers (injection moulding & rotational moulding) ▪ Polymers – Thermosetting & Thermoplastics ▪ Redesigning ▪ 3D Drawing methods ▪ Fossil Fuels – Crude Oil ▪ 6R's ▪ Sustainable Designing	**Product Design** Understand how to apply research from Biomimicry and patterns in nature and apply this to create innovative sustainable designs. Understand what user centred design is and how to create inclusive designs. Understand how the iterative design process works and apply this to designs. <u>Knowledge</u> ▪ Redesigning ▪ Inclusive designs ▪ Client Feedback ▪ Research based designing. ▪ Biomimicry ▪ Renewable energy
Making Rotation	**Product Design** Understand how to shape and manipulate timbers. Understand how to use hand tools such as files, chisels, Tenon saw and coping saw with confidence. Understand how working drawings and plans to help with identifying problems during the making process. <u>Knowledge</u> ▪ Properties of Timbers (hardwoods & softwoods) ▪ Finished applied to Timbers. ▪ Manufactured Boards ▪ Joining methods of Timbers (dowels, halving, slot etc. including positive & negatives) ▪ Hand Tools ▪ Environment and Deforestation	**Product Design** Understand how to shape and manipulate polymers and timbers. Understand how to use machinery such as Pillar drills and line bender with confidence. Use how to use working drawings & plans to create products. <u>Knowledge</u> ▪ Properties of Polymers ▪ Finishes applied to Timbers & purpose ▪ Finishes applied to Polymers & purpose ▪ Movement ▪ Joining methods of Polymers ▪ CAM (Laser cutter)- Demo ▪ Line bender/Pillar drill ▪ Marking out & Hand Tools ▪ Environment – Material Origins	**Product Design** Understand how systems and controls are used to create electrical circuits. Understand how to incorporate electrical circuits into products. Understand how to use machinery such as soldering irons with confidence. <u>Knowledge</u> ▪ Systems and controls ▪ Soldering & LED circuits ▪ Linkages ▪ CAM (Laser Cutter) ▪ Production Methods (Continuous & JIT) ▪ CAD – 2D Design

	Year 7	Year 8	Year 9
Designing Rotation	**Textiles** Using research as a key aspect to generate design ideas and being able to explain design decisions such as the materials, fastenings (function) and any other aspects (with good level of justification to back their design ideas) <u>Knowledge:</u> ▪ Natural Fibres ▪ Synthetic Fibres ▪ Bonded Fibres ▪ Properties of Fabrics ▪ Fabric Rendering ▪ 3D Drawing ▪ Environmental Impact- Cotton ▪ Research based designing.	**Textiles** Understand the purpose of different materials and how these can impact a designer's decision. Test out a range of fastenings as to how the different fastenings have different purpose for a range of outcomes. <u>Knowledge:</u> ▪ Textiles fibres & Properties ▪ Types of fastenings and their use on different products ▪ Constructing fabric ▪ Design Textiles outcomes in 3D. ▪ Fair trade – Workers & Cotton ▪ Cultural Influence on design ▪ Research based designing.	**Textiles** Current fashion/trends have been identified relating to a theme. Key designers/companies are identified and their work has been used as inspiration to create own ideas. Design considerations include aesthetics & function. Students are able to identify and analyse key areas for improvement within design work and have used a client to inform development work <u>Knowledge:</u> ▪ Smart/Modern Materials ▪ Production Methods (One off- Batch, mass) ▪ Fashion illustrations in 3D. ▪ Fashion/Trends ▪ Environmental impact ▪ 6 Rs ▪ Culture/Society ▪ Market Research ▪ Work of Others ▪ Research based designing.
Making Rotation	**Textiles** Understand how to apply different surface decoration methods such as- block printing & Stencilling on to fabric. <u>Knowledge:</u> ▪ Surface and Embellishment techniques and their purpose- ▪ Zip Fastenings ▪ Tie dye ▪ Block printing ▪ Stencilling. ▪ Material Joining techniques (Hand and Machine) ▪ CAM – Embroidery Machine - Demo ▪ Environmental Impact- Dyes	**Textiles** Understand assembly methods of fabric including the purpose of seams. Understand how to apply surface decorations with confidence and accuracy. <u>Knowledge:</u> ▪ Construction Methods- Flat Seams ▪ Envelope fastenings ▪ Surface and embellishment techniques and their purpose ▪ Machine Appliqué ▪ Batik –Wax resist ▪ Joining methods – Machine & Hand ▪ CAM – Embroidery Machine ▪ Environmental impact – Synthetic & Natural Pillows	**Textiles** Students will understand construction methods of fabric. Students will understand how to disassemble products. Understand the importance of upcycling and the impact a products manufacture can have. <u>Knowledge:</u> ▪ Construction techniques- Pattern cutting ▪ Disassembly of existing products ▪ Fashion/Trends ▪ Environmental impact- Upcycling ▪ Life Cycle Assessment ▪ 6R's ▪ Charity

Healthy Eating **Nutrients** **Lifestyle** **Sustainability**

	Year 7	Year 8	Year 9
Food Rotation	**Food & Nutrition** Understanding the basics of nutrition and the function of these ingredients initially within the body and within the diet. Understanding of how to act safely and hygienically within a kitchen environment. Practical lessons allow students to explore the different parts of the Eat Well Guide <u>Practical Skills</u>: Weighing, measuring, chopping, dicing and using the oven. <u>Knowledge</u> ▪ Food Groups (Eat Well Guide) ▪ Government guidelines ▪ Nutritional Function of ingredients- Vitamins & Minerals ▪ Combining ingredients ▪ Nutrition and Health ▪ Seasonality of foods	**Food & Nutrition** Understanding the function of ingredients and how they react within certain body types. (intolerances and allergies). Understanding the needs of specific people and how the function of ingredients effects them. Understand properties and function of different ingredients. NEA practice: In-depth investigation into vegetarian and vegan diets. <u>Practical skills:</u> Weighing, measuring, chopping, dicing, rolling, using the oven, rubbing in, kneading, forming a dough. <u>Knowledge</u> ▪ Dietary requirements ▪ Nutritional Function of ingredients ▪ Allergies and intolerances ▪ Special diets ▪ Life stages ▪ Sustainable farming ▪ Adapting recipes to meet the needs	**Food & Nutrition** Understanding the chemical properties and function of ingredients. Understanding of the function of ingredients within a dish and within cuisines. Understanding the science behind specific ingredients and how they work. Understanding the science of cooking food. NEA Practice: Understand key ingredients and their purpose within different cuisines. Use international cuisines as a base to explore function of key ingredients within recipe. Understanding food choice and production. Show independence in planning and preparing food practical relating to investigation. <u>Practical skills:</u> Weighing, measuring, chopping, dicing, sauce making skills, boiling, steaming, grilling (if applicable.) <u>Knowledge</u> ▪ Reduction ▪ Emulsion ▪ Gelatinisation ▪ Coagulation ▪ Dextrinization ▪ Starch based sauce ▪ Cooking methods ▪ Heat transfer ▪ Nutritional Analysis ▪ Macro Nutrients ▪ Micro Nutrients ▪ International Cuisines ▪ Food choice ▪ Food production ▪ Food miles