Beamont Collegiate Academy Curriculum Map
Year: 9
Subject: Design & Technology

Intent	Implementation	Carousel 1 (9 weeks)	Carousel 2 (9 weeks)	Carousel 3 (9 weeks)	Carousel 4 (9 weeks)
Clarity around knowledge	Theme / topic	**Let there be Light – Control Systems (Electronics & Mechanisms)**	**Food - Ages and Stages**	**Remotely operated vehicles and autonomous systems**	**Food – Malnutrition**
	Key substantive knowledge	• Understand a range of motions – Rotary, Oscillating, Linear & Reciprocation • Understand a range of mechanisms – Levers, linkages, gears & pulleys • Measuring & marking out materials • Using CAD to produce designs for CAM (Laser Cutting) • Understanding of structures and triangulation • Using soldering equipment and materials to solder components • Single and Series Circuits • Electrical current & voltage and resistance • Programable components - Input, Control & Output processes • Know what a short circuit is and how to correct • Using available resources to develop soldering skills to produce a working product • Know how the Laser Cutter, Rapid Prototyping works and is used • Understanding of applied forces • Understanding of how electricity is controlled within circuits using components	• To understand the role nutrients in the body at different ages and stages of life • To be able to understand changing needs and implications on health • To handle different equipment safely and correctly, including cutting techniques. • To develop a range of different cooking skills including using the oven/hob. • Planning and preparing dishes • Create creative ideas to inspire their product/dishes • Literacy skills in using descriptive words to describe a product/dish/menu, etymology of cooking terminology • Numeracy skills in weighing out ingredients	• To understand the Engineering Design Process and how engineers develop remotely operated vehicles to explore hostile environments. • Understand how to take risks and become resourceful and innovative citizens. • Understand how to develop and communicate design ideas. • Understand the importance of teamwork and project management skills. • Be able to critique and evaluate ideas to be able to respond constructively to feedback. • Understand how to apply computing and electronics and how to use programmable components to develop remotely operated vehicles. • Understand how to program components with python. • Oracy skills in presenting ideas to peers.	• To understand the role of digestion and nutrients in the body and the impact of an inadequate diet • To be able to understand the causes, symptoms and treatment of various diseases related to malnutrition • To understand the role of the guts and microbiome in health and disease. • To handle different equipment safely and correctly, including cutting techniques. • To develop a range of different cooking skills including using the oven/hob. • Planning and preparing dishes • Create creative ideas to inspire their product/dishes • Literacy skills in using descriptive words to describe a product/dish/menu, etymology of cooking terminology • Numeracy skills in weighing out ingredients
	Disciplinary knowledge	• Use a range of hand tools, machines, and manufacturing processes to manufacture a working product • Use mathematical principles to construct and design a fully realised product • Understand the importance of symmetry in design	• To be able to describe a nutrition intervention required at different ages and stages inn life, such as infancy, pregnancy and old age. • To understand the impact of diet on life span and health span. • To understand the conditions that affect different ages and stages- e.g., anaemia in menstruation and osteoporosis post-menopause	• Develop knowledge of programmable components, python and AI. • Use computers and programmable components to make prototype ROVs or AUVs • Work with a range of materials and tools to develop the ROV/AUV. • Learn about the diverse world of engineering, robotics and	• To be able to describe a range of conditions and diseases related to malnutrition • To understand the impact of diet on health- including consumption of processed foods. • To learn about the gut and microbiome and explain how optimum conditions for health can be achieved

		• Develop knowledge of CAD & Techsoft 2D Design • Soft Soldering Practice • Soldering Input, control, and output components • Properties of Materials – Acrylic, Vinyl, Metal & Wood • Using basic components (Resistors) to control the flow of electricity in circuits • Understand the characteristics of materials to assemble and complete products	• To be able to apply the knowledge of nutrition to the planning of meals • To learn how to make healthy nutritious meals and snacks • To learn about food labelling; traffic light code, use by and best before date and what is required by law.	autonomous systems and the responsibilities of engineers.	• To be able to apply the knowledge of nutrition to the planning of meals • To learn how to make healthy nutritious meals and snacks • To learn about food labelling; traffic light code, use by and best before date and what is required by law.
Clarity around sequencing	Main links across the curriculum	Production processes, use of tools, machines and CAD/CAM are all interlinked through focussed practical tasks: Year 7 - Materials Project, Year 8 – Hold It Project.	We will continue to add depth around the healthy eating message, and a focus on nutrition following on from Y8, but with a bigger focus on what ages and stages they are needed. Discussing our changing needs over time and how our diets need to change and adapt. This serves KS4 ready for the designing meals for certain groups of people.	Continue to build on skills developed in Yr 7 and 8 and be more adventurous in their problem solving skills.	Following on from Y7 where students cover healthy lifestyles and sustainability, we will continue to add depth around the healthy eating message, discussing what makes food healthy (nutrients) and how to plan and prepare for healthy living, ensuring we get a variety of nutrients.
	Authentic cross curricular links	Science & Maths	Science, PE, Citizenship/PSHE,	Computer Science, Geography, English, Maths.	Science, PE, Citizenship/PSHE,
Vocabulary	Key words	Mechanisms – Gears, Pulleys, Levers, Linkages Motions – Linier, Reciprocation, Input, Control & Output	Nutrients Malnutrition Ages and stages: infancy, adolescence, adulthood, elderly	Remotely operated vehicles (ROV) Autonomous underwater vehicles (AUV) Python Micro:bit Raspberry Pi Prototype Hostile	Malnutrition Undernutrition Overnutrition Non-communicable disease Microbiome Probiotic Prebiotic
Assessment	Summative assessment	**Focussed Practical Task:** **Formative Assessment Throughout:** Making/Manufacturing Outcome **Summative Assessment:** 1 x end of project test/assessment	**Formative Assessment Throughout:** Practical lessons will be assessed 'on the spot' with detailed and specific feedback being given while students work. This is reactive and instant. **Summative Assessment:** 1 x end of project test/assessment	**Formative assessment throughout.** Peer review and WCF. **Summative assessment** 1 x end of unit assessment and evaluation	**Formative Assessment Throughout:** Practical lessons will be assessed 'on the spot' with detailed and specific feedback being given while students work. This is reactive and instant. **Summative Assessment:** 1 x end of project test/assessment
Links to the real world / careers / PD		Manufacturing industries, specifically electronics and control systems.	Healthy eating and healthy lifestyles: life skill Hospitality industry Food and retail industry Health and healthcare	Engineering, robotics, design, mechatronics	Healthy eating and healthy lifestyles: life skill Hospitality industry Food and retail industry