

Long Term Plan

In year 9 students specialise in Workshop based Design and technology and Engineering. It builds upon the grounding of wood metal, plastics and graphics which they have acquired in Years 7 & 8 and enables them to apply and develop them in a series of increasingly complex and challenging practical assignments. This will also build confidence and enthusiasm for the subject before giving them some dedicated Computer Aided design skill in preparation for the more to either D&T or Engineering at Key Stage 4.

Learning Cycle		Key Concepts and Themes	Vocabulary
HT1	Electronic Systems and Polymer Materials	<ul style="list-style-type: none"> A systems approach to design Circuit Diagrams Digital and Analogue Circuits PCB Population and soldering Testing and fault finding Polymer Processes: Vacuum Forming Testing and Evaluation 	System, input, process output, Current, Voltage, Resistance, Printed Circuit Board, Track, Pad, Solder, Soldering Iron, Tinning, Plastic memory, High Impact Polystyrene Sheet, Vacuum Forming
HT2	Mechanical Systems and Timber Materials	<ul style="list-style-type: none"> Types of Motion Rotary Systems: Gears and Pulleys Levers and Linkages Modelling & Testing Quality Assurance: Templates, jigs and depth stops Quality Control – Testing and fault finding mechanical systems Wood cutting, wasting and finishing processes. 	Linear, Rotary, Reciprocating, Oscillating, Cam, Follower, Lever, Linkage, Effort, Load, Fulcrum, pivot, Linkage, Gear, Pulley, Mechanical Advantage, Template, Jig, QC
HT3	Aesthetic Design and Metal Materials	<ul style="list-style-type: none"> Creativity in design ideas Families of Metals Properties of specific named Metals Safe working practice for cutting, wasting and machining metals Finishing Processes for wood and metal. 	Ferrous, Non-Ferrous, Iron, Oxidise, corrosion, Alloy, Malleable, Ductile, Conductive, Shear, Burr, Polish
HT4	Graphical Communication	<ul style="list-style-type: none"> Freehand sketching, Linetypes, Lineweights & tones. 3D Crating Oblique Projection and Isometric Projection Perspective Drawing and Orthographic Drawing Rendering Use of scale 	Lineweight, Tone, Crate, Geometric, construction lines, Oblique, Isometric, Perspective, Horizontal, Vertical, Orthographic, Hidden detail, centreline, exploded, Rendering, Scale
HT5	CAD, CAM and Polymer Materials	<ul style="list-style-type: none"> Design Movements and Use of colour 2D Computer Aided Design Laser Cutting Families of Polymers and Properties of specific named polymers Edge finishing Problem solving and independent thinking. 	Movements, Computer Aided Design (CAD), Computer Aided Manufacture (CAM), Computer Numerical Control (CNC), Laser Cutter, Polymer, Thermoplastic, Thermoset, Plastic Memory
HT6	3D Computer Aided Design	<ul style="list-style-type: none"> 3D Modelling 3D CAD assemblies Computer Rendering Exporting Rendered concept images Exporting 2D Orthographic working drawings Dimensioning and Use of Scale 	Model, Part, Drawing, Rending, Workplane, Extrude, Fillet, Chamfer, Cut, Assembly, mate, Export, Orthographic, Dimensions

Skill Development

- Practical Skills: Hand Tools & Workshop Machines
- Graphical Skills: Freehand Sketching, 3D Drawing, Working Drawings: Orthographic and Schematic
- Computer Aided Design and Manufacture: 2D CAD, 3D CAD & CAM

Year 9: Design and Technology

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To build on the general nutritional knowledge learnt and developed in Years 7 and 8. Students will begin to make connections between nutrition and health including the results of a malnourished diet. They will find out where our food comes from and develop a greater understanding of some of the ethical issues surrounding food choice. Finally, they will be building on skills learnt in Years 7 and 8 to start to develop more complex practical skills.

Year 9: Food Technology

Learning Cycle	Key Concepts and Themes	Vocabulary
HT1 Food, Nutrition and Health	<ul style="list-style-type: none"> Why we eat food Eatwell Guide Macronutrients Micronutrients Nutritional needs 	Macronutrient, Micronutrient, Saturated, Unsaturated, Soluble
HT2 Food Commodities	<ul style="list-style-type: none"> Cereals Potatoes and vegetables Dairy Meat and poultry Alternative proteins 	Fortified, Gluten, Pasteurised, Sterilised, Lactose
HT3 Food Safety	<ul style="list-style-type: none"> Temperature control Where do bacteria come from? Pathogenic bacteria Food Law 	Danger Zone, Pathogenic, Diarrhoea, Nausea, Dormant
HT4 Food Choice	<ul style="list-style-type: none"> Sensory evaluation Costing food Food labelling Factors affecting food choice British/International cuisines 	Hedonic ranking, Reference Intake (RI), Cuisine, Mandatory, Budget
HT5 Food Provenance	<ul style="list-style-type: none"> Where does our food come from? Food waste Using seasonal food Food miles 	Farm to fork, Provenance, Sustainable, Fertiliser, Pesticide
HT6 Food Science	<ul style="list-style-type: none"> Cooking of food and heat transfer Sensory and Nutritional properties Shortening and Aeration Denaturation and coagulation Caramelisation 	Conduction, Convection, Radiation, Aeration, Denature

Skill Development	<ul style="list-style-type: none"> To become more proficient at independently weighing and measuring. To develop the ability to test for flavour, seasoning and readiness of their practical work. To learn about food from other cultures and to be able to discuss issues that other cultures may face when making food choices. To begin to make connections between the ingredients that we use and the science behind the ingredients which causes them to act and react in a certain way.
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