

Design Technology: Curriculum Overview (Yr 7-13)

	Year 7	Year 8	Year 9	Year 10	Year 11	KS5
Design Technology	<p>Project 1a</p> <p>Technical knowledge</p> <ul style="list-style-type: none"> ○ properties of common materials 4a ○ develop specifications to inform the design of innovative, functional, appealing products that respond to needs in a variety of situations. 1c, 3c ○ Wider issues of environmental impact of products. 3d ○ The work of others 3a <p>Design & Make</p> <ul style="list-style-type: none"> ○ research and exploration 1a, 2a ○ basic design approaches 1e ○ basic tools, equipment and machinery 2a ○ accuracy, testing and evaluating ideas and products 3c 	<p>Project 1b</p> <p>Technical knowledge</p> <ul style="list-style-type: none"> ○ properties and classifications of materials 4a ○ Sustainability in design 3d ○ different cultures 1a ○ CAD/CAM 2a <p>Design & Make</p> <ul style="list-style-type: none"> ○ user needs 1a,1b ○ design problems 1e ○ specifications 1c ○ complex design approaches/CAD 2a ○ specialist tools, techniques, processes, equipment and machinery 2a,b ○ developed accuracy 3c ○ test, evaluate and refine 4a, 3c 	<p>Project 1c</p> <p>2. Technical knowledge</p> <ul style="list-style-type: none"> ○ the performance of materials. 4a ○ links to new technologies and the developments of manufacturing LED's. linked to wider impact on environmental concerns 1a,b,c ○ varied approaches like User-centred design to generate creative ideas and avoid stereotypical response. 1e, 3a,c, ○ Wider issues in design including people with disabilities and other cultural views 3c,d ○ electronic components and legislation resulting in electrical goods ending up in 	<p>GCSE Design Technology</p> <p>Technical knowledge</p> <p>3.1 Core technical principles</p> <ul style="list-style-type: none"> ● new and emerging technologies ● energy generation and storage ● developments in new materials ● systems approach to designing ● mechanical devices ● materials and their working properties. <p>3.3 Designing and making principles</p> <ul style="list-style-type: none"> ● investigation, primary and secondary data ● environmental, social and economic challenge ● the work of others ● design strategies ● communication of design ideas ● prototype development ● selection of materials and components ● tolerances ● material management ● specialist tools and equipment 	<p>GCSE Design Technology</p> <p>Technical knowledge</p> <p>3.2 Specialist technical principles</p> <ul style="list-style-type: none"> ● selection of materials or components ● forces and stresses ● ecological and social footprint ● sources and origins ● using and working with materials ● stock forms, types and sizes ● scales of production ● specialist techniques and processes ● surface treatments and finishes <p>Design and Make</p> <p>Final NEA</p> <ul style="list-style-type: none"> ● Identifying a client ● Research and investigating the work of others ● Develop specifications to inform the design of innovative, functional, appealing products that respond to needs in a variety of situations 	<p>A-Level</p> <p>Technical knowledge</p> <p>1.1-14 Technical principles</p> <ul style="list-style-type: none"> ● Materials and their applications ● Performance characteristics of materials ● Enhancement of materials ● Forming, redistribution and addition processes ● Forming, redistribution and addition processes ● The use of finishes ● Modern industrial and commercial practice ● Efficient use of materials ● Digital design and manufacture ● The requirements for product design and development ● Health and safety ● Protecting designs and intellectual property ● Design for manufacturing, maintenance, repair and disposal ● Enterprise and

			<p>landfill. 3d, 4a,c Design & Make</p> <ul style="list-style-type: none"> ○ specifications to inform design 1c, ○ creative ideas 1e ○ complex iterative design 1e ○ detailed testing and evaluation 3c ○ social, moral and cultural issues 1a,3d ○ develop and communicate design ideas using annotated sketches, 1e ○ (CAD/CAM dependent on room/ computer access) 	<ul style="list-style-type: none"> ● specialist techniques and processes <p>Design and Make Mini NEA:</p> <ul style="list-style-type: none"> ● Card model project including electronics ● Focused practical tasks developing hand tool skills and problem solving ● Upcycling sustainability the wider issues in design. ● Ergonomic design - re design of a chair small scale. To look how a user interacts with products and how chairs can be modified to ensure that users are comfortable. ● (dependent on cost) Pewter casting developing advanced skills that would be used in industry 	<ul style="list-style-type: none"> ● specifications to inform design ● creative ideas ● complex iterative design ● CAD/CAM ● detailed testing and evaluation ● social, moral and cultural issues ● develop and communicate design ideas using annotated sketches, 	<p>marketing in the development of products including design and communication and feasibility studies.</p> <p>2.1-10 Design and make principles</p> <ul style="list-style-type: none"> ● Design methods and processes ● How technology and cultural changes can impact on the work of designers ● Design processes ● Critical analysis and evaluation ● Selecting appropriate tools, equipment and processes ● Accuracy in design and manufacture ● Responsible design ● Design for manufacture and project management ● National and international standards in product design
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Engineering	<p>Project 2a</p> <ul style="list-style-type: none"> ● key engineering practical and technical skills (measuring, marking out, working to tolerance, testing (card modelling)) ● key engineering sectors (R014) ● planning an engineering project (materials, forces) (R014) ● response to a given brief (R015-R016) ● Working as part of a team. ● use a variety of approaches which include biomimicry to generate creative ideas. ● analyse the work of past and present professionals (Other engineering sectors R014) 	<p>Project 2b</p> <ul style="list-style-type: none"> ● intermediate engineering practical and technical skills (safety in the workshop, modelling, QC, marking out aluminium, using a tap and die) R015-R016 2b, ● planning and implementing an engineering project (Design, prototyping/ testing against specification/ tolerances (R016) 1c, e, ● Card (modelling JIG/Templates R016) 1e, 3c, ● Investigation of materials metals and polymers (R014) ● Interpreting a engineers drawing (R014) 1e, 3c, 	<p>Project 2c</p> <ul style="list-style-type: none"> ● advanced engineering practical and technical skills making a one off bottle opener (CAD/CAM, debur, pillar drill, filing, marking out (steel) R015. 2a, b, 4a ● H&S and QA (R015-R016) ● collaborative manufacturing (R014) 1d, 3c, ● apply computing and use electronics to embed intelligence in products that respond to inputs [for example, sensors] and control outputs [for example, actuators] using programmable components 4c, d, 3c, 2b [for example, microcontrollers] R016 and R014 	<p>Technical knowledge R014 Principles of engineering manufacture Manufacturing requirements</p> <ul style="list-style-type: none"> ● 3.1 Interpreting orthographic third angle projection drawings ● 1.1 Types of manufacturing processes ● 1.2 Details of different manufacturing processes ● 2.1 Mechanical properties of materials ● 2.2 Other properties influencing manufacturing ● 2.3 Types of engineering materials and how they are processed <ul style="list-style-type: none"> ● 2.3.1 Metals ● 2.3.2 Polymers ● 2.3.3 Engineering ceramics ● 2.3.4 Composite materials ● 2.3.5 Smart materials <p>Teacher picks one of the following NEAs R015/R016</p> <p>R015: Manufacturing a one-off product.</p> <p>Task 1: interpret a brief</p> <ul style="list-style-type: none"> ● 1.1 Interpret an engineering to drawing identify information to facilitate manufacture 	<p>Technical knowledge R014 Principles of engineering manufacturing.</p> <ul style="list-style-type: none"> ● 3.2 Influence of the scale of manufacture on the production method ● 3.3 Quality control ● 4.1 Inventory management ● 4.2 Lean manufacturing ● 4.3 Globalisation <p>Teacher picks one of the following NEAs R015/R016</p> <p>R016: Manufacturing in quantity</p> <p>Task 1: Preparing for manufacture</p> <ul style="list-style-type: none"> ● 1.1 production Aids, templates and jigs ● 1.2 Sequence of operations ● 1.3 Operating parameters ● 1.4 SOP <p>Task 2: Develop programmes to operate CNC equipment.</p> <ul style="list-style-type: none"> ● Use CAD ● Programme CNC machine <p>Task 3: Safely use processes and equipment to make products in quantity</p>	
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Food & Nutrition	<p>Project 3a</p> <ul style="list-style-type: none"> Recall and apply the principles of The Eatwell Guide and the 8 tips for healthy eating to their own diet Demonstrate a range of food preparation and cooking techniques Adapt and follow recipes using seasonal ingredients and appropriate equipment to prepare and cook a range of food products. 	<p>Project 3b</p> <ul style="list-style-type: none"> Name the main nutrients, sources and functions and apply the principles of The Eatwell Guide to a range of different diets. Demonstrate and apply their knowledge and understanding of food science to risen products. Adapt and follow recipes using appropriate ingredients, 	<p>Project 3c</p> <ul style="list-style-type: none"> Evaluate the importance of individual nutrients in a healthy balanced diet and their functions. Demonstrate a range of food preparation and cooking techniques and independently apply the principles of food safety and hygiene Apply their knowledge of consumer food and drink choice to 	<p>GCSE Food Preparation and Nutrition</p> <p>3.1 Food preparation skills 3.2 Food nutrition and health 3.3 Food science 3.4 Food safety 3.5 Food choice 3.6 Food provenance 3.7 Food preparation and cooking techniques</p>	<p>GCSE Food Preparation and Nutrition</p> <p>3.1 Food preparation skills 3.2 Food nutrition and health 3.3 Food science 3.4 Food safety 3.5 Food choice 3.6 Food provenance 3.7 Food preparation and cooking techniques</p>	<p>Level 3 Food Science -</p> <p>1.Meeting the nutritional needs of specific groups. 2. Ensuring Food is safe to eat. 3. Experimenting to Solve Food Production Problems 4. Current Issues in Food Science and Nutrition</p>

	<ul style="list-style-type: none">• Plan, prepare, cook and analyse a suitable lunch item that meets the needs of children.	<p>equipment and techniques to prepare and cook a range of more complex dishes</p> <ul style="list-style-type: none">• Explain the factors that affect food and drink choice around the world when planning, preparing, cooking and analysing meals.	<p>make informed choices</p> <ul style="list-style-type: none">• Investigate and discuss new trends and technologies used in food production and processing and use them when planning, preparing, cooking and analysing meals.			
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