

Year 7 Design & Technology 2021-2022

Term	Project details	Knowledge and understanding	N C links
1	<p><u>Introduction to technology</u></p> <ul style="list-style-type: none"> • Health and safety • Using basic tools 	<p>Students will:</p> <ul style="list-style-type: none"> • Made aware of the health and safety rules in the workshop. • Be shown how to use a coping saw, tenon saw, hand file, pillar drill safely. • Informed about what the tools do and what materials they can be used with. • Have a go at using the tools. 	<ul style="list-style-type: none"> • Select from and use specialist tools, techniques, processes, equipment and machinery precisely, including computer-aided manufacture
1	<p><u>Crazy car project</u></p> <ul style="list-style-type: none"> • Using the tools that have been introduced to make a toy car. • Introduction to plastics. <p>(Base line project)</p>	<p>Students will:</p> <ul style="list-style-type: none"> • Use the tools that have been introduced to produce a toy car. • Informed about thermo and thermosetting plastics. • Informed about different processes that are used to form plastic mainly focusing on vacuum forming which will be used. • Encouraged to think about quality control throughout. • Show existing drawing/rendering skills to draw the final car. • Peer and self assessment evaluation about the final piece (Potentially their first time using tools) 	<ul style="list-style-type: none"> • develop and communicate design ideas using annotated sketches, detailed plans, 3-D and mathematical modelling, oral and digital presentations • understand and use the properties of materials and the performance of structural elements to achieve functioning solutions • select from and use specialist tools, techniques, processes, equipment and machinery precisely, including computer-aided manufacture • To analyse and evaluate their own work, and that of others, in order to strengthen the visual impact or applications of their work
2	<p><u>Upcycling project</u></p> <ul style="list-style-type: none"> • Using recycled products to solve a design problem. • Working in groups designing resulting in a presentation. 	<p>Students will:</p> <ul style="list-style-type: none"> • Use recycled products (Upcycling) to solve a design problem. (Wider community) • Think about the environmental issues connected to plastics and other relevant materials – 6Rs of sustainability. • Use the design process – Follow a brief, produce design ideas (iterate design) 	<ul style="list-style-type: none"> • Identify and solve their own design problems and understand how to reformulate given to them. • Develop and communicate design ideas using annotated sketches, detailed plans, 3-D and mathematical modelling, oral and digital presentations

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2		<ul style="list-style-type: none"> • Produce ideas and present to the class • Evaluate and develop/refine ideas based on comments 	<ul style="list-style-type: none"> • understand developments in design and technology, its impact on individuals, society and the environment, and the responsibilities of designers, engineers and technologists • Test, evaluate and refine their ideas and products against a specification, taking into account the views of intended users and other interested groups • Understand and use the properties of materials and the performance of structural elements to achieve functioning solutions
End of term 2 beginning of term 3.	<p><u>Food technology</u></p> <ul style="list-style-type: none"> • Healthy eating • Kitchen/personal hygiene and safety • Basic cooking skills/techniques 	<p>Students will:</p> <ul style="list-style-type: none"> • Learn the different kitchen and personal kitchen hygiene rules that need to be followed. • Learn the importance of healthy eating and having a balanced diet using the eat well guide. • Introduction to basic kitchen equipment/different sections of the cooker and what they are used for • Using the grill/grater- Making pizza toast (Following rules) • Make fruit crumble – Using bridge and claw technique, rubbing in method, using the oven, weighing ingredients. (Looking at seasonality and food origin/miles) • Make simple biscuits – Rubbing in, kneading (Following a recipe) • Sensory analysis – using sensory words • Design and make cup cakes for an event/user following a specification. (Relevant event at the time of project) 	<ul style="list-style-type: none"> • understand and apply the principles of nutrition and health • become competent in a range of cooking techniques [for example, selecting and preparing ingredients; using utensils and electrical equipment; applying heat in different ways; using awareness of taste, texture and smell to decide how to season dishes and combine ingredients; adapting and using their own recipes] • understand the source, seasonality and characteristics of a broad range of ingredients • cook a repertoire of predominantly savoury dishes so that they are able to feed themselves and others a healthy and varied diet

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3/4	<p><u>Design CAD/CAM based project</u></p> <ul style="list-style-type: none"> • Using different media to form designs. • Base ideas on a theme/design style • Draw and make designs using CAD/CAM 	<p>Students will:</p> <ul style="list-style-type: none"> • Be introduced to different ways of presenting work using different media/drawing techniques. • Research a theme/design style that ideas will be based on – Taking elements of the research to use in the designing. • (Memphis? Simple shapes) • Be introduced to CAD/CAM how it is used in production advantages/disadvantages. • Be introduced to use CAD software (2d design) • Produce an outcome from designing using CAM – Laser cutter 	<ul style="list-style-type: none"> • develop and communicate design ideas using annotated sketches, detailed plans, 3-D and mathematical modelling, oral and digital presentations. • select from and use specialist tools, techniques, processes, equipment and machinery precisely, including computer-aided manufacture. • investigate new and emerging technologies • understand developments in design and technology, its impact on individuals, society and the environment, and the responsibilities of designers, engineers and technologists • to use a range of techniques to record their observations in sketchbooks, journals and other media as a basis for exploring their ideas • to use a range of techniques and media, including painting • to increase their proficiency in the handling of different materials • to analyse and evaluate their own work, and that of others, in order to strengthen the visual impact or applications of their work
5	<p><u>Textiles</u></p> <p>Basic hand sewing/decoration techniques</p>	<p>Students will:</p> <ul style="list-style-type: none"> • Learn basic stitching including running stitch and cross stitch. • Introduced to decoration techniques including applique and sewing a button. 	<ul style="list-style-type: none"> • develop and communicate design ideas using annotated sketches, detailed plans, 3-D and mathematical modelling, oral and digital presentations

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		<ul style="list-style-type: none"> • Be introduced to different materials (Including smart materials) • Using a basic pattern to cut and produce an outcome 	<ul style="list-style-type: none"> • Select from and use specialist tools, techniques, processes, equipment and machinery precisely, including computer-aided manufacture • Understand and use the properties of materials and the performance of structural elements to achieve functioning solutions
6	<p>STEAM Rocket car challenge</p> <p>Year group competition designing/racing a rocket powered car.</p>	<p>Students will:</p> <ul style="list-style-type: none"> • Design a car in groups considering aerodynamics etc. • Make the car from foam making sure that the specific guidelines/tolerances are met. • Design and make the wheels using CAD/CAM. • Work with Computer science to find out about programing in relation to the cars. • Race the cars that are fitted with a micro bit to record the times 	<ul style="list-style-type: none"> • Identify and solve their own design problems and understand how to reformulate problems given to them • Develop and communicate design ideas using annotated sketches, detailed plans, 3-D and mathematical modelling, oral and digital presentations • Select from and use a wider, more complex range of materials, components and ingredients, taking into account their properties • Understand how more advanced mechanical systems used in their products enable changes in movement and force • 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 [for example, microcontrollers]

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1&2	<p>Mechanical toy</p> <p>Design and make a mechanical toy using the design process.</p> <p>Wood focus</p>	<p>Students will</p> <ul style="list-style-type: none"> • Be introduced to different drawing techniques that can be used to present ideas (Isometric, 3d) • Be introduced to using different media. • Modelling ideas • Use a brief and specification • Consider ergonomics (Handle) • Be introduced to Cams/Linkages • Think about how 3d printing could be used to produce cams • Be introduced to natural woods and manmade boards properties and processes, environmental impact etc. • Use a combination of hand tools, machines and CAD/CAM to produce an outcome. 	<p>Use research and exploration, such as the study of different cultures, to identify and understand user needs</p> <p>identify and solve their own design problems and understand how to reformulate problems given to them</p> <p>Develop and communicate design ideas using annotated sketches, detailed plans, 3-D and mathematical modelling, oral and digital presentations</p> <p>Select from and use specialist tools, techniques, processes, equipment and machinery precisely, including computer-aided manufacture</p> <p>Investigate new and emerging technologies</p> <p>Test, evaluate and refine their ideas and products against a specification, taking into account the views of intended users and other interested groups</p> <p>Understand developments in design and technology, its impact on individuals, society and the environment, and the responsibilities of designers, engineers and technologists</p> <p>Understand how more advanced mechanical systems used in their products enable changes in movement and force</p>
3/4	<p>Textiles</p> <p>Biomimicry & Batik based project</p>	<p>Students will (Students missed textiles year 7)</p> <ul style="list-style-type: none"> • Learn basic stitching including running stitch and cross stitch. 	

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		<p>Introduced to decoration techniques including applique and sewing a button.</p> <p>Be introduced to different textile materials and there properties</p> <p>Investigate and produce ideas based on biomimicry</p> <p>Produce an outcome combining biomimicry and batik</p>	<ul style="list-style-type: none"> • Develop and communicate design ideas using annotated sketches, detailed plans, 3-D and mathematical modelling, oral and digital presentations • Use research and exploration, such as the study of different cultures, to identify and understand user needs • Select from and use specialist tools, techniques, processes, equipment and machinery precisely, including computer-aided manufacture • Understand and use the properties of materials and the performance of structural elements to achieve functioning solutions
4/5	<p>Food technology</p> <p>Nutrition Food safety Developing cooking skills/techniques</p> <p>Melting method Stir frying/using the hob Rubbing in Kneading Rolling out Bridge and claw</p>	<p>Students will:</p> <p>Gain an understanding of the nutrients needed to stay healthy and the effects of not having enough nutrients.</p> <p>What foods different nutrients</p> <p>Be able to read the labels on packaging and where to store food.</p> <p>Become aware of cross contamination and how to prevent it</p> <p>Make stir fry/fajitas looking at using leftovers as well as developing cooking skills</p> <p>Design and make creative pizza design following a specification and producing packaging.</p>	<ul style="list-style-type: none"> • Understand and apply the principles of nutrition and health • Become competent in a range of cooking techniques [for example, selecting and preparing ingredients; using utensils and electrical equipment; applying heat in different ways; using awareness of taste, texture and smell to decide how to season dishes and combine ingredients; adapting and using their own recipes] • Understand the source, seasonality and characteristics of a broad range of ingredients • Cook a repertoire of predominantly savoury dishes so that they are able to feed themselves and others a healthy and varied diet

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6	<p>STEAM Rollercoaster challenge</p> <p>Group challenge to design and produce a rollercoaster structure.</p>	<p>Students will:</p> <p>Work in groups to design a rollercoaster structure</p> <p>Be introduced to structures/forces</p> <p>Look at existing structures/bridges/designers/architecture etc.</p> <p>Follow a brief and specification</p> <p>Produce a rollercoaster structure</p>	<ul style="list-style-type: none"> • Identify and solve their own design problems and understand how to reformulate problems given to them • Develop and communicate design ideas using annotated sketches, detailed plans, 3-D and mathematical modelling, oral and digital presentations • Select from and use a wider, more complex range of materials, components and ingredients, taking into account their properties • Understand how more advanced mechanical systems used in their products enable changes in movement and force • Analyse the work of past and present professionals and others to develop and broaden their understanding

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Term	Project details	Knowledge and understanding	N C links
1/2	<p><u>Metals based project</u></p> <p>Jewellery or keyring pewter casting project.</p> <p>Textiles-small gift bag for it to go in.</p>	<p>Be introduced to metals Ferrous/non ferrous</p> <p>Properties and processes related to metals</p> <p>Design jewellery/keyring related to different cultures? Cultural event?</p> <p>Use pewter casting to produce final outcome</p> <p>Students have not done textiles – Be introduced to textiles</p> <p>Basic sewing/decoration techniques</p> <p>Materials/properties</p> <p>Produce a gift bag for the final product to go in?</p>	<ul style="list-style-type: none"> • Use research and exploration, such as the study of different cultures, to identify and understand user needs • Develop and communicate design ideas using annotated sketches, detailed plans, 3-D and mathematical modelling, oral and digital presentations • Select from and use a wider, more complex range of materials, components and ingredients, taking into account their properties • Test, evaluate and refine their ideas and products against a specification, taking into account the views of intended users and other interested groups • Understand developments in design and technology, its impact on individuals, society and the environment, and the responsibilities of designers, engineers and technologists
3/4	<p><u>Main project</u></p> <p>Project combining skills developed over KS3.</p> <p>(Lantern?) (Carnival/event)</p>	<p>Students will:</p> <p>Use the skills/techniques developed over KS3 to produce a piece of work that covers Ao's of GCSE(Intro to GCSE that can be completed in KS4)</p> <p>Base the project on a research theme (A01)</p> <p>Develop a specification based on research carried out</p> <p>Use the research carried out to develop ideas using a range of media and techniques. (AO2/3)</p>	<ul style="list-style-type: none"> • use research and exploration, such as the study of different cultures, to identify and understand user needs • identify and solve their own design problems and understand how to reformulate problems given to them • develop specifications to inform the design of innovative, functional, appealing products that respond to needs in a variety of situations • develop and communicate design ideas using annotated sketches, detailed plans, 3-D and mathematical modelling, oral and digital presentations

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		<p>Model ideas</p> <p>Use CAD/CAM as an element of the design process.</p> <p>Include an electronic circuit element.</p> <p>Use a combination of materials, tools and machines to produce a final piece (A04)</p>	<p>select from and use specialist tools, techniques, processes, equipment and machinery precisely, including computer-aided manufacture</p> <p>test, evaluate and refine their ideas and products against a specification, taking into account the views of intended users and other interested groups</p> <p>understand how more advanced electrical and electronic systems can be powered and used in their products [for example, circuits with heat, light, sound and movement as inputs and outputs]</p> <p>to analyse and evaluate their own work, and that of others, in order to strengthen the visual impact or applications of their work</p> <p>about the history of art, craft, design and architecture, including periods, styles and major movements from ancient times up to the present day</p>
5/6	<p><u>Food technology</u></p> <p>Planning meals for specific event/client</p> <p>Dietary needs</p> <p>Cooking skills and techniques.</p>	<p>Students will:</p> <p>Modify recipes to suit consumer needs/dietary requirements.</p> <p>Read and follow a recipe</p> <p>Develop an understanding of what need to be considered when planning a meal for a specific event/consumer.</p>	<ul style="list-style-type: none"> • Understand and apply the principles of nutrition and health • Become competent in a range of cooking techniques [for example, selecting and preparing ingredients; using utensils and electrical equipment; applying heat in different ways; using awareness of taste, texture and smell to decide how to season dishes and combine ingredients; adapting and using their own recipes]

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		<p>Plan and cook using skills techniques that have been developed over KS3.</p>	<ul style="list-style-type: none"> • Understand the source, seasonality and characteristics of a broad range of ingredients • Cook a repertoire of predominantly savoury dishes so that they are able to feed themselves and others a healthy and varied diet
6	<p>STEAM Rollercoaster challenge</p> <p>Group challenge to design and produce a rollercoaster structure.</p>	<p>Students will:</p> <p>Work in groups to design a rollercoaster structure</p> <p>Be introduced to structures/forces</p> <p>Look at existing structures/bridges/designers/architecture etc.</p> <p>Follow a brief and specification</p> <p>Produce a rollercoaster structure</p>	<ul style="list-style-type: none"> • Identify and solve their own design problems and understand how to reformulate problems given to them • Develop and communicate design ideas using annotated sketches, detailed plans, 3-D and mathematical modelling, oral and digital presentations • Select from and use a wider, more complex range of materials, components and ingredients, taking into account their properties • Understand how more advanced mechanical systems used in their products enable changes in movement and force • Analyse the work of past and present professionals and others to develop and broaden their understanding