

## Programme of study – Design & Technology 2020-21

**Subject intent:** *“Look at usual things with unusual eyes.” –Vico Magistretti*

The Design and Technology curriculum has been devised to allow students to apply their creativity and imagination to design and make products that solve real and relevant problems, within a variety of fun and challenging projects. They need to think carefully about the needs, wants and values of other people and what they require in a product. Students will learn how to take risks, becoming resourceful, innovative, enterprising and capable members of society. Through the evaluation of past and present designers and products, they develop a critical understanding of their impact on daily life and the wider world. Students will use research and exploration to identify and solve multi-faceted design problems. They will design products that use a variety of innovative approaches to create non-stereotypical responses, using techniques like biomimicry and inclusive design. The course blends technical knowledge with practical skills and encourages pupils to use specialist tools, techniques, processes and equipment, including computer-aided manufacture, such as 3D printing, laser cutting, automated embroidery machinery and CNC milling. Students are taught to test, evaluate and refine their ideas and products using an iterative approach to design and making. They will acquire a broad range of technical knowledge and draw from a wide range of disciplines to put them on the first step to careers as broad as aerospace engineer, movie set designer, architect or tree surgeon.

## Food and Nutrition – Curriculum Intent

**“First we eat, then we do everything else.” -M.F.K. Fisher**

Students will be taught to understand and apply the principles of nutrition and healthy eating. They will learn essential skills to cook a wide variety of dishes, so that they are able to feed themselves and others affordably and well. Students will develop an understanding of international cuisine through safe food handling, preparation and storage. They will become competent in a range of cooking techniques such as selecting and preparing ingredients; using utensils and electrical equipment; applying heat in different ways; using organoleptic skills to decide how to season dishes, combine ingredients and adapt their own recipes. Students will learn about the social and environmental impact of food choices, including source, seasonality and characteristics of a broad range of ingredients to instil a love of cooking now and in later life.



### **KS3 National Curriculum Statement**

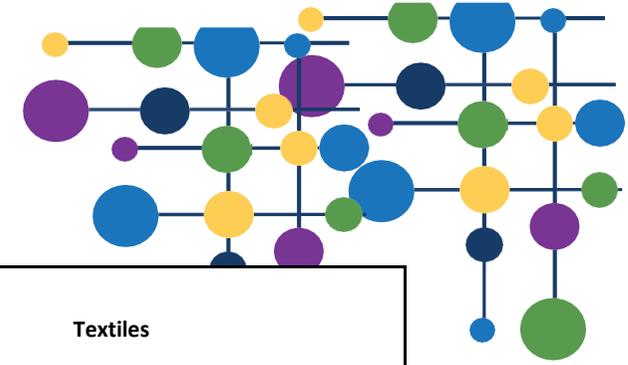
Through a variety of creative and practical activities, pupils should be taught the knowledge, understanding and skills needed to engage in an iterative process of designing and making. They should work in a range of domestic and local contexts [for example, the home, health, leisure and culture], and industrial contexts [for example, engineering, manufacturing, construction, food, energy, agriculture (including horticulture) and fashion].

As part of their work with food, pupils should be taught how to cook and apply the principles of nutrition and healthy eating. Instilling a love of cooking in pupils will also open a door to one of the great expressions of human creativity. Learning how to cook is a crucial life skill that enables pupils to feed themselves and others affordably and well, now and in later life.

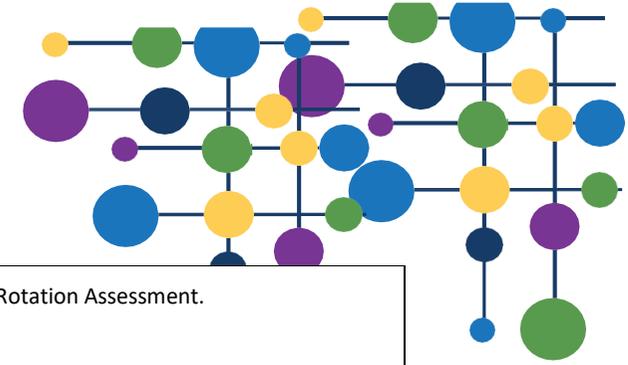
### **KS3 National Curriculum Aims**

The national curriculum for design and technology aims to ensure that all pupils:

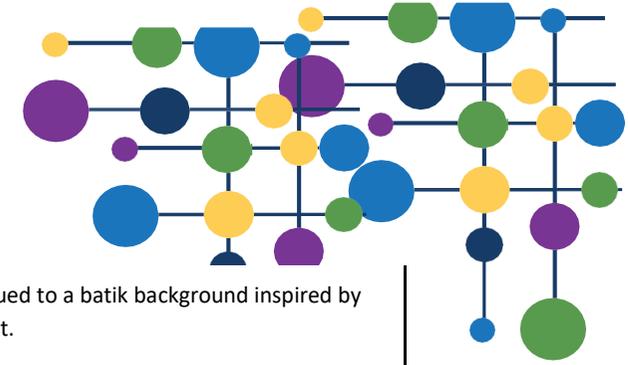
- develop the creative, technical and practical expertise needed to perform everyday tasks confidently and to participate successfully in an increasingly technological world
- build and apply a repertoire of knowledge, understanding and skills in order to design and make high-quality prototypes and products for a wide range of users
- critique, evaluate and test their ideas and products and the work of others
- understand and apply the principles of nutrition and learn how to cook.



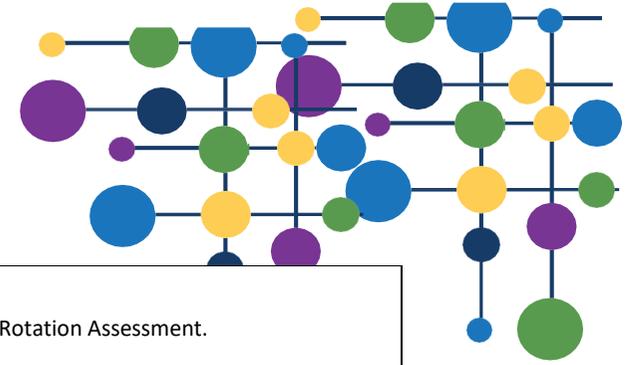
Year group	Product Design	Food	Textiles
<p style="text-align: center;"><b>Due to COVID Restrictions / Year Group Bubbles there is no access to specialist Design and Technology workshops or food room. This means KS3 lessons will initially focus on theory and graphics skills within the first term, with the hope of introducing safe practical activities into Term 2 and 3. It's important that we can be reactive to the ongoing situation and best meet the needs of our learners, so the programme of study will be subject to change.</b></p>			
<p style="text-align: center;"><b>7</b></p> <p>(12 Week rotation in each specialist area)</p>	<p><b>Jewellery Design Unit</b></p> <p>Students design and make pewter cast jewellery to a given theme. They will research and create a brief, develop a specification and from this generate ideas for designs. Using CAD software they model and test their designs, and produce a mould before casting and finishing their designed product.</p> <p><b>Eco Design Unit</b></p> <p>This introduces the concept of designing with the environment in mind, using examples from a range of familiar products, re-thought in keeping with the Six Rs principles. It discusses a product's life cycle and the 'cradle to the grave' concept. Using waste materials students are asked to design and make a new product prototype reusing waste items.</p>	<p><b>Cooking for Others Unit</b></p> <p>This covers the introduction to the kitchen environment, food safety and safe working, establishing routines and building basic culinary skills. It considers food safety through personal hygiene, as well as healthy eating principles. Practical lessons have students making a variety of healthy dishes, including fruit and vegetables.</p>	<p><b>Jon Burgerman Project</b></p> <p>This project covers the introduction to the textile environment, equipment safety and safe working practises, establishing routines and building confidence and basic textile skills. It considers safety through the safe use of equipment, as well as conduct within the classroom. Practical lessons have students designing, learning how to thread and use a sewing machine independently, hand sewing and creating their own 'Batik' dyed fabric. All culminating into a Burgerman toy.</p>
<p><b>Assessment:</b></p>	<ul style="list-style-type: none"> <li>● Baseline Assessment</li> <li>● Ongoing assessment of project work against NC objectives.</li> </ul>	<ul style="list-style-type: none"> <li>● Baseline Assessment</li> <li>● Ongoing assessment of project work against NC objectives.</li> </ul>	<ul style="list-style-type: none"> <li>● Baseline Assessment</li> <li>● Ongoing assessment of project work against NC objectives.</li> </ul>



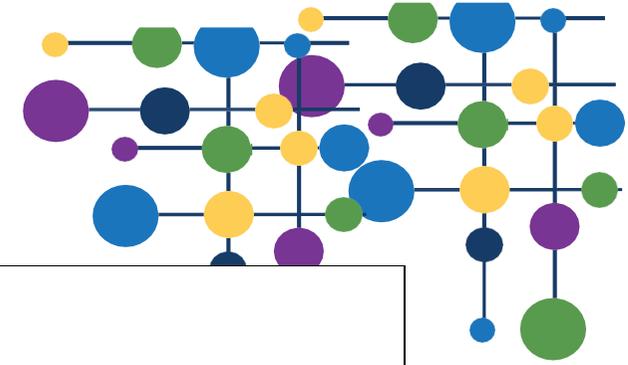
	<ul style="list-style-type: none"> <li>End of Rotation Assessment.</li> </ul>	<ul style="list-style-type: none"> <li>End of Rotation Assessment.</li> </ul>	<ul style="list-style-type: none"> <li>End of Rotation Assessment.</li> </ul>
<p><b>Why This?</b></p> <p><b>Why Then?</b></p>	<p>The underlying principle of the curriculum is that students' learning should be developed cumulatively. This means that learning from previous key stages should be revisited in planning and practice at KS3, to be used in a more sophisticated way in subsequent key stages. The KS3 course is designed to develop cultural capital as they apply their new knowledge and skills to real world problems and scenarios, helping them to mature into successful problem solvers capable of making socially responsible choices.</p> <p>These units of work provide Year 7 with important technical knowledge, as well as a strong base of fundamental skills that will be required throughout their studies. They also relate to the typical age related expectations set out by DATA (Design and Technology Association) in their progression framework, which has been adopted to support with KS3 planning.</p>		
<b>Year group</b>	<b>Product Design</b>	<b>Food</b>	<b>Textiles</b>
<p><b>8</b></p> <p>(12 Week rotation in each specialist area)</p>	<p><b>Lantern Team Project Unit</b></p> <p>Design and manufacture a small batch of identical lanterns based around a theme. Students work in groups to design and manufacture lanterns to help them understand manufacturing processes including batch and scales of production.</p> <p><b>Salad Server Unit</b></p> <p>Students develop an understanding for a basic product: salad servers and explore how design can improve the product. They investigate a range of options before producing a specification, making examples and considering finishing techniques.</p>	<p><b>Cooking around the World Unit</b></p> <p>In this unit students will investigate designing international dishes. They will develop an understanding of different needs and wants and demonstrate an understanding of the need for a healthier dishes. Students will be developing a range of preparation and cookery methods whilst making dishes. They will list the sources and function of ingredients in a recipe, describe the consequences of poor diet, such as lacking in protein and explain the different needs for nutrients at different life stages. They will then prepare a range of dishes, following recipes and demonstrating safe use of equipment.</p>	<p><b>Cultural Mask Unit</b></p> <p>In this unit students will build on the textile knowledge they gained in year 7 and investigate the Mexican celebration 'Day of the Dead'. They will design a range of mask ideas and will develop an understanding of different embellishment techniques, creating samples to evidence this. A final mask will be created which showcases the technical knowledge they have gained and an evaluation completed on the end product.</p> <p><b>British Graffiti Project</b></p> <p>Pupils will study the work of infamous British graffiti artists Bambi and Banksy. They will experiment with typography and fonts in this Graphics driven unit, divising their own styles of graffiti tag, translated into</p>



			fabric and applied to a batik background inspired by their chosen artist.
<b>Assessment:</b>	<ul style="list-style-type: none"> <li>Ongoing assessment of project work against NC objectives.</li> <li>End of Rotation Assessment.</li> </ul>	<ul style="list-style-type: none"> <li>Ongoing assessment of project work against NC objectives.</li> <li>End of Rotation Assessment.</li> </ul>	<ul style="list-style-type: none"> <li>Ongoing assessment of project work against NC objectives.</li> <li>End of Rotation Assessment.</li> </ul>
<b>Why This?</b> <b>Why Then?</b>	These units of work are designed to build on skills and deepen knowledge learned in Year 7, while also covering further aspects of the National Curriculum for D&T. We are following a cumulative model and the work covered here relates to typical age related expectations according to DATA.		
<b>Year group</b>	<b>Product Design</b>	<b>Food</b>	<b>Textiles</b>
<b>9</b>  (12 Week rotation in each specialist area)	<p><b>Learning to Learn Unit</b></p> <p>In this unit, students design and make an educational product for a child, identifying a 'client' (child between 0-5) and understanding her needs, wants and interests; conducting product analysis, generating ideas and a specification, prototyping and planning production, manufacturing and evaluating the product.</p>	<p><b>Functions of Ingredients Unit</b></p> <p>In this unit pupils will deepen their knowledge of nutrition and the dietary needs of different age groups. Pupils will learn the importance of carbohydrates, protein and fats, as well as a variety of dishes designed for specific consumers with complex dietary requirements.</p>	<p><b>Holly Levell Inspired Unit</b></p> <p>In this unit pupils will design and make a Holly Levell inspired product from felt &amp; other fabrics. In this project students research the artist Holly Levell, develop their skills in the use of textile equipment, (ensuring its safe use), design and generate a pattern to be able to create their own individual product. Their final product is evaluated.</p>
<b>Assessment:</b>	<ul style="list-style-type: none"> <li>Ongoing assessment of project work against NC objectives.</li> </ul>	<ul style="list-style-type: none"> <li>Ongoing assessment of project work against NC objectives.</li> </ul>	<ul style="list-style-type: none"> <li>Ongoing assessment of project work against NC objectives.</li> </ul>



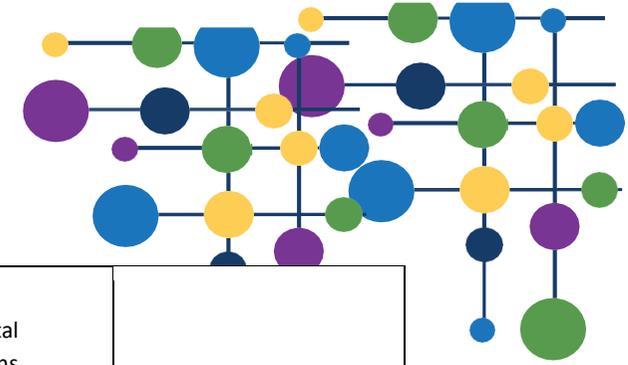
	<ul style="list-style-type: none"> <li>• End of Rotation Assessment.</li> </ul>	<ul style="list-style-type: none"> <li>• End of Rotation Assessment.</li> </ul>	<ul style="list-style-type: none"> <li>• End of Rotation Assessment.</li> </ul>
<p><b>Why This?</b> <b>Why Then?</b></p>	<p>These units of work build on previous learning, while prioritising the most important skills and knowledge required to meet the national curriculum. As pupils progress through KS3, the course is intended to pass the onus from teacher to student. The level of control at the start is high, meaning design briefs are created for pupils to work to, success criteria is provided and outcomes are similarly themed. As they progress to year 9 the level of control is lessened, meaning pupils discover their own problem, create their own design briefs, specifications and outcomes reliant only on pupil's imagination. The NC encourages pupils to work with real life contexts and encourage iterative design, and that is the aim of our Year 9 curriculum. These skills are not only invaluable in becoming a confident problem solver and creative thinker, but could be applied to a multitude of KS4 subjects.</p>		



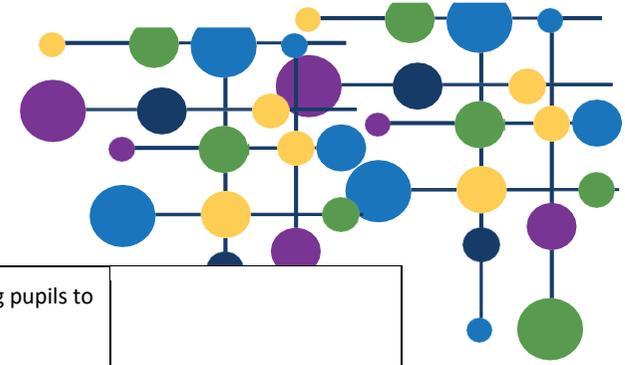
**GCSE Design and Technology**

**Due to COVID restrictions the use of Design and Technology workshops have had to change. KS4 will follow this programme of study where restrictions allow, with some content moved or replaced. It's important that we can be reactive to the ongoing situation and best meet the needs of our learners, so the programme of study will be subject to change.**

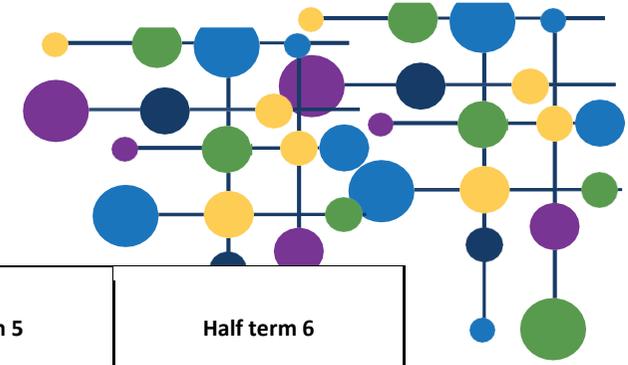
Year group	Half term 1	Half term 2	Half term 3	Half term 4	Half term 5	Half term 6
<b>10</b>	<p><i>2/4 lessons will focus on NEA designing and practical skills and preparation</i></p> <p><b>Key Skills:</b></p> <p>Specialist techniques using various FPT. Show and use tools, equipment with accuracy, use of production aids, high quality finish.</p> <p>Polymer: Keyring / Bookend</p> <ul style="list-style-type: none"> <li>- Laser cut,</li> <li>- 3D print.</li> <li>- Additive processes.</li> </ul> <p><i>2/4 lessons will be theory/ written exam preparation</i></p> <p><b>Key Knowledge</b></p>	<p><i>2/4 lessons will focus on NEA designing and practical skills and preparation</i></p> <p><b>Key Skills:</b></p> <p>Metal: Coat Hook</p> <ul style="list-style-type: none"> <li>- Measuring and Marking out.</li> <li>- Wastage processes.</li> <li>- Brazing, Annealing,</li> <li>- Surface finishing.</li> </ul> <p>Textiles</p> <ul style="list-style-type: none"> <li>- Weaving and Felting.</li> <li>- Use of sewing machines.</li> </ul> <p><i>2/4 lessons will be theory/ written exam preparation</i></p> <p><b>Key Knowledge</b></p>	<p><i>2/4 lessons will focus on NEA designing and practical skills and preparation</i></p> <p><b>Key Skills:</b></p> <p>Pop Up Mechanisms and Flat pack products</p> <p>Micro Bit Programming, Input, Processes and Outputs.</p> <p><i>2/4 lessons will be theory/ written exam preparation</i></p> <p><b>Key Knowledge</b></p> <ol style="list-style-type: none"> <li>1. Sustainability (new and emerging technologies)</li> <li>2. Sustainable materials</li> <li>3. Sources and</li> </ol>	<p><i>2/4 lessons will focus on NEA designing and practical skills and preparation</i></p> <p><b>Contemporary Lighting extended Project</b></p> <p><b>Key Skills:</b> NEA Research and Analysis Designing and Making Principles</p> <p><b>Assessment Objectives</b> AO1/AO2</p> <p><i>2/4 lessons will be theory/ written exam preparation</i></p> <p><b>Key Knowledge</b></p> <ol style="list-style-type: none"> <li>1. Tolerances</li> <li>2. Surface finishes</li> <li>3. Production aids</li> </ol>	<p><i>2/4 lessons will focus on NEA designing and practical skills and preparation</i></p> <p><b>Contemporary Lighting extended Project</b></p> <p><b>Key Skills:</b> NEA</p> <p>Model Making</p> <p>Designing and Making Principles</p> <p><i>2/4 lessons will be theory/ written exam preparation</i></p> <p><b>Key Knowledge</b></p> <p>Green Gable preparation: Materials, properties and origins; Processes and finishes (step by step)</p>	<p><i>2/4 lessons will focus on NEA designing and practical skills and preparation</i></p> <p><i>1/4 lessons will be theory/ written exam preparation</i></p> <p>NEA Contexts Released 1st June</p> <p>AO1:</p> <p>Context analysis, theme/ mood board, client profile, existing products research, materials research, design brief and specification, 2 pages of design sketches.</p> <p>Intervention sessions and behaviour policy used to ensure all students adhere to internal deadlines.</p>



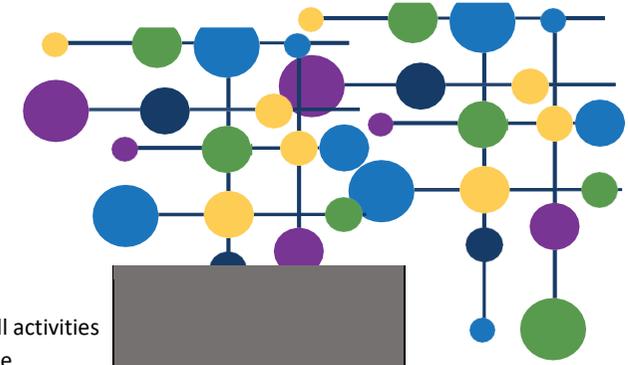
	<ol style="list-style-type: none"> <li>1. Materials and their properties (2 lessons)</li> <li>2. New materials (2 lessons)</li> <li>3. Energy generation</li> <li>4. Mechanical devices</li> <li>5. Systems</li> </ol> <p>Key Assessment: Exam question based on theory content covered to date. Topic review lesson</p>	<ol style="list-style-type: none"> <li>1. New and emerging technologies including cad/cam, industry and enterprise, planned obsolescence, tech push, market pull, automation, inclusive design.</li> <li>2. Scales of production</li> <li>3. Commercial processes</li> <li>4. QC</li> <li>5. Production aids</li> <li>6. Forces and stresses</li> </ol> <ol style="list-style-type: none"> <li>1. Topic review lesson</li> </ol>	<p>origins</p> <ol style="list-style-type: none"> <li>4. Selecting and using materials (specialist).</li> <li>5. Stock forms (specialist)</li> </ol> <p>Topic review lesson</p>	<ol style="list-style-type: none"> <li>4. companies</li> <li>5. Topic review lesson</li> </ol>	<p>questions); environmental considerations (extended questioning); design strategies (extended questioning).</p>	
Assessment	HT1 Assessment	HT2 Assessment	HT3 Assessment	HT4 Assessment	HT 5 Assessment	<b>Green Gable: 2 Hr Assessment.</b>
<p><b>Why this?</b></p> <p><b>Why then?</b></p>	<p>HT1 - This is a retrieval of knowledge and skills taught throughout KS3. Students worked with stock forms and applied finishing techniques to products and it is important that they retain the underlying purpose of this, especially for the specialist area of timber.</p> <p>Looking at the work of others also helps prepare students for their upcoming Mini NEA, as they will need to use the work of others as inspiration in AO2.</p>			<p>Students will complete a condensed version of an NEA task (Mini NEA) to prepare them for Year 11. NEA guidelines are very clear about the amount of support that can be given to students with regard to their coursework. To best prepare students to be independent, they complete a condensed version of the NEA. This way they have something that they created themselves to use as a guide. This work can also be</p>		<p>The NEA context is released the 1st of June and it is vital that pupils start as soon as possible to give them the best chance of completing their coursework on time. This is worth 50% of their overall mark.</p>



	<p>Science Link: Year 8 - Energy + The Earth - Climate Change and Recycling.</p> <p>Maths Link: Year 8 - Rounding, Length and area</p> <p>Humanities Link: Year 7 - Extreme Environments: Sustainable management / Threats. Year 8 – Glaciation and Climate change – Causes / Evidence / Effects / Responses.</p> <p>It's important that students continue to acquire the theoretical knowledge. The areas covered here directly relate to the mini NEA context and also areas that haven't been previously addressed in preparation for Green Gable Exams.</p> <p>Mechanisms is an area often overlooked at KS2, so it's important to cover it earlier in the course and return to it later.</p> <p>The systems area reinforces work completed as part of the KS3 ICT curriculum and could be used by students as part of their NEA.</p> <p>Introducing it now ensures students have it as an option later when they start to work independently.</p> <p>Science Link: Year 7 - Forces Year 8 - Forces in Action</p> <p>Science Link: Year 8 - Energy + The Earth - Climate Change and Recycling.</p> <p>Maths Link: Year 7 Working with Data. Year 8 Statistics - Handling Data</p>	<p>marked and given individual feedback, allowing pupils to improve it, both things disallowed in Year 11.</p>	
--	---	--	--



Year group	Half term 1	Half term 2	Half term 3	Half term 4	Half term 5	Half term 6
<b>11</b> Context	<p><i>3/4 lessons will focus on NEA designing and practical skills and preparation</i></p> <p><i>1/4 lessons will be theory/ written exam preparation</i></p> <p><b>AO2</b></p> <p>NEA: Section C, D &amp; E Design ideas are improved and include annotation, client feedback and links to specification. 2-3 different models made and tested, then developed into the final product, manufacturing specification and flowchart. Students start making final products. Intervention sessions used to ensure all students adhere to internal deadlines.</p>	<p><i>3/4 lessons will focus on NEA designing and practical skills and preparation</i></p> <p><i>1/4 lessons will be theory/ written exam preparation</i></p> <p><b>AO2</b></p> <p>NEA: Section D, E &amp; F Students manufacturing final products and evidencing all skills used, testing with client is ongoing. Intervention sessions used to all students adhere to internal deadlines. Aim to complete products by 18th December.</p>	<p><i>3/4 lessons will focus on NEA designing and practical skills and preparation</i></p> <p><i>1/4 lessons will be theory/ written exam preparation</i></p> <p><b>AO3</b></p> <p>NEA: Section E and F. Complete evidencing pages for practical work/ final product photos (in use), testing and evaluation sections done. Any students with incomplete products or who can gain marks by improving these products invited to intervention. All pages reviewed and complete by no later than February 14th.</p>	<p>Revision</p> <p>Complete exam theory and preparation lessons.</p> <p>Fortnightly Cycle: Past paper, mark, review, teach - especially problem solving</p>	<p>Revision</p> <p>Complete exam theory and preparation lessons.</p> <p>Fortnightly Cycle: Past paper, mark, review, teach - especially problem solving</p> <p>GCSE Exam</p>	
<b>Assessment</b>	<b>HT1 Assessment</b>	<b>Cross Fell: 2Hr Assessment.</b>	<b>HT3 Assessment</b>	<b>Snowden: 2 Hr Assessment.</b>	<b>Everest: 2hr GCSE Exam.</b>	



**Why This?**

Evaluating performance of our first cohort show that students need to fully focus on their NEA through this time. Retrieval and retention will be maintained in lessons through Do Now Tasks, Homework, and a theory lesson once every 2 weeks. These will be monitored and used for future planning.

**Why Then?**

A firm deadline and a guide to how work should be progressing is issued. This should allow maximum time for revision and exam preparation. The deadline will allow time for the majority of marking to take place in time to be sent to AQA. Any student that failed to meet the deadline is given a small window of opportunity in catch up sessions to complete their work after February Half Term.

This is the final run up to the GCSE Exam and all activities will be focused on preparation. Lessons will use retention and recall to cover content from KS4.

Targeted Intervention sessions will be planned using PLC data from Snowdon, as well as from previous assessments.

WTMs will be used to target certain Command words that students have historically struggled with.

