Long Term Plan: Design & Technology KS3 2021-2022

The Westleigh School	TERM 1 (Week1-15)	Term 2 (Week 16-27)	Term 3 (Week 28-39)
YEAR 7- **Product Design/Construction (TMC)**	**Topic description- T1 ATC/T1 TTM Carousel D4 CAD/CAM D5 Practical workshop area** Workshop Health & Safety- Working in a practical environment Tanagram /Puzzle project **Subject Key piece-** Practical Tanagram /Puzzle production using a range of resistant materials **Literacy focus- Oracy** Key Subject terminology Product Analysis Product Evaluation **Assessment :DC1** Baseline Assessment- Product evaluation/function Health and Safety within a practical environment-Hand tools and machinery **(Students to complete 2 Assessment per project)** **SMSC:** Team building skills, sharing equipment, peer mentoring, Responsibility for personal and group safety, understanding that resources are not infinite and need to be used appropriately.	**Topic description: ATC T2/ TTM T3 Carousel D4 CAD/CAM D5 Practical workshop area** **Block Bot-** Develop a functional working wooden toy design following a set design brief. • Students will analyse and review a given set design problem. • Develop a range of detailed design proposals that meeting the briefs requirements • Analyse existing target market products in a group setting sharing their thoughts ideas, opinions (Group Discussion Teacher Led) • Develop a final design proposal that meets the requirements of the brief • Complete a detailed design specific action unique to their individual solution • Develop key practical skills using a range of workshop hand tools and machinery. • Manufacture a functional design that complies with the specification criteria • Evaluate the practical outcome against the key criteria outlined in the specification. Subject Key piece KP1 – Final design. KP2 – Block bot production Assessment- DC2: Tools equipment and fabrication methods	**Topic description-** **ATC T3/ TTM T2 Carousel D4 CAD/CAM D5 Practical workshop area** **Ear Budd –Design** Design and manufacture a modern, functional ear bud design using Computer Aided Design-fabrication methods/ traditional manufacturing skills - Laser cutter/vinyl production methods Traditional workshop hands kills **Subject Key piece:** CAD/CAM signage design-Multiple material manufacture Acrylic/Hardwood/Softwood/Man-made timbers Manufacture a functional Ear bud storage device that meets the requirements of the set brief **Assessment- DC3** CAD/CAM Production methods Design task problem solving- Consumer needs **Literacy focus- Oracy** Developing key subject knowledge and terminology associated with –Computer Aided Design/Manufacture

	Knowledge Skill base: Use of a variety of equipment to develop knowledge and understanding of Health and safety in a practical environment. Understand the differences in materials, properties and sustainability. Develop set design proposals from design briefs utilising key information and details to design and manufacture a working functional product. Develop practical knowledge and understanding machine processes and methods of manufacture.	Literacy focus Oracy. Reading – Research activity materials properties and health & safety. Frayer Model developing key subject vocabulary (ACCESSFM) **Assessment- DC2** Practical Assessment – Timed practical challenge Students to manufacture a functional product utilising a range of hand tools and workshop machinery/equipment to develop a practical solution to set design problem ? Tools equipment fabrication process Design task- Developing a range of practical solution for specific target Market **Literacy focus- Oracy:** Key subject terminology-Keywords Aesthetics Construction Manufacture Product Analysis Evaluate Consumer Functionality Dimensions/scale Production methods Recycle Sustainability Final product evaluation Prototype production **Knowledge Skill base:**	**Key Language:** Production Methods One off production Batch Production Mass Production Continuous Production Just in time Production CAD Machinery and equipment Laser Cutter Vinyl Cutter Accuracy Quality control **Knowledge Skill base:** Students will develop a good knowledge of the workshop by completing set practical tasks under supervision to help guide, support and monitor their progress. Students will be involved in designing and manufacturing products using a variety of practical workshop hand tools and machinery. Students will be able to understand design briefs and take the information to produce practical outcomes following a detailed specification. Students will develop a clear understanding of industrial processes an understand mass, batch and prototype production methods Develop a clear understanding of the design process and the different methods of manufacture CAD/CAM

		Develop practical skills and processes using hand tools and machinery. Understand how a practical environment works efficiently and safely. Increase knowledge and understanding of materials, properties and their uses. Students will also understand how to design effectively considering, Aesthetics, costing, functionality and the consumer. Students will also develop a vocabulary regarding key terminology within the subject that will also improve literacy skills.	
<u>YEAR 8</u> **Product/Construction (TMC)**	**Topic description- T1 TTM D4/D5** Multi-Media Storage device Timber/Acrylics/CAD/CAM Production Methods **Subject Key piece-** Students will develop a range of practical skills working with a variety of workshop Hand-tools & Equipment to manufacture a functional storage device. Multimedia storage product design & manufacture Final Evaluation review product outcome-3RD Party feedback **Literacy focus- Oracy** Existing product research Key subject terminology Specification **Assessment- DC1** Product analysis-key terminology Production methods Hand- tools & Machinery methods of manufacture	**Topic description: T2 ATC/TTM T2 ATC Carousel D4 CAD/CAM D5 Practical workshop area** **Topic description:** **Functional Toy Project** **Subject Key piece-** **Student will create a functional toy design following a set brief. Working from engineering scaled drawings to develop a clear understanding of scale, dimensions and accuracy.** **Students will produce a range of design proposal to develop the traditional toy deciding on key material type, finishing techniques and fabrication process.** **Students will develop a clear understanding of CAD/CAM and traditional construction methods** **Literacy focus- Oracy:** **Students will develop knowledge of key subject vocabulary** Economic Environmental Aesthetics	**Topic description: T1 ATC/ T3 TTM Carousel practical food area availability** **Food and Nutrition- Cooking Skills-** Developing practical Food skills and competence- Working safely and efficiently in a practical environment • Weigh and measure ingredients accurately. • Prepare ingredients and equipment • Selecting& Adjusting cooking times • Testing dishes for readiness • Judge and modify sensory analysis • Use of key kitchen equipment. • Cooking methods and processes **Subject Key piece:** KP1 – Macaroni Cheese. KP2 – Design and produce your own practical dish following a set brief/Starter,main,desert- Controlled practical assessment **Assessment- DC1:** Controlled practical assessment following set brief- Practical cooking skills. **Literacy focus- Writing:**

	Design task- following set proposal **Knowledge Skill base:** Students will develop key knowledge of a variety of equipment to develop a clear understanding of Health and safety in a practical environment. Understand the differences in materials, properties and sustainability. Develop set design proposals from design briefs utilising key information and details to design and manufacture a working functional product. Develop practical knowledge and understanding machine processes and methods of manufacture. Students will develop an understanding of CAD/CAM and develop practical outcomes using CAM processes. Students will also learn and develop key skills and knowledge on how to use Photoshop effectively and accurately to improve the final outcome of their concept model **SMSC:** Team building skills, sharing equipment, peer mentoring, Responsibility for personal and group safety, understanding that resources are not infinite and need to be used appropriately.	Functionality Computer Aided Design Computer Aided Manufacture Consumer Target Market Material classification/type Fabrication **Assessment- DC2** Production methods Traditional woodworking joints and fabrication processes Design Task- Designing for a specific target market **Knowledge Skill Base:** Students to develop a clear knowledge and understanding electronic components, symbols and circuit diagrams. Students will learn soldering techniques, wood construction methods, marking cutting and assembling and finishing meeting the requirements of a set design brief producing an effective Amplifier speaker unit. **SMSC:** Students to understand the effect products can have on the environment and particular user groups in society. Students to consider the world around them and the impact products can have material sources-Global Environmental issues • Develop clear knowledge and understanding of the 6 R's (Re-think,Refuse,Reduce,Reuse, Recycle,Repair)	Create a virtual blog about the dishes you have created over the term. 3RD Party feedback and Q+A practical discussion www/EBI peer discussion and evaluation

		• Develop a clear understanding that resources are limited and constant use can have severe impacts on the global environment.	
<u>YEAR 9</u> **Product Design/Construction/Engineering Food.** **(TMC)**	**Topic description- T1 TTM/T1 ATC Carousel D4 CAD/CAM D5 Practical workshop area** **Lighting Design Influences** Students will develop their practical skills using a range of hand tools and industrial machinery and processes to create unique prototype concept model meeting the specific needs of a set target market. Students will learn how to shape, form and manipulate a variety of materials accurately and successfully to produce high quality practical outcomes. Students will use their practical skills and knowledge of the design process to increase their understanding of the following criteria. 1. Numeracy /Costing of materials and resources if producing prototypes commercially on a large scale production. 2. Prototype modelling techniques through traditional and modern CAD	**Topic description- ATC T2/TTM T3(Carousel practical food area availability** **Food and Nutrition- Cooking Skills-** **Multicultural foods from around the world** Developing practical Food skills and competence through the use of world foods. Working safely and efficiently in a practical environment • Weigh and measure ingredients accurately. • Prepare ingredients and equipment • Selecting& Adjusting cooking times • Testing dishes for readiness • Judge and modify sensory analysis • Use of key kitchen equipment. • Cooking methods and processes **Subject Key piece:** KP1 – Chicken tikka tandoori. KP2 – Lasagne **Literacy focus- writing** Focus on written work in the booklets and sensor analysis from practical work.	**Topic description-TTM2/ATC T3** **Carousel D4 CAD/CAM D5 Practical workshop area** **Amplifier Speaker Project** Amplifier Speaker device – Students to manufacture a function working PCB and develop a suitable storage housing for an amplifier speaker project-Jack port device Students will develop a detailed knowledge and understanding of CAD/CAM, through a unique an individual project. Understand the design cycle and apply their learning to designing and manufacturing a functional product using a range of CAD/CAM and traditional production methods. **Subject Key piece:** Manufacture a function Amplifier device and circuit Board-Electronics **Literacy focus- Oracy** Develop key subject language associated with electronic components, fabrication process

	methods using a variety of software packages to enhance and develop designing. 3. Students will understand that there a variety of finishing techniques that can be applied to materials to provide different functions, to improve style, for preservation, functionality and cost implications. 4. Students will develop industrial knowledge of processes and practice to enhance their understanding when designing products but also increase their knowledge of commercial production **Subject Key piece:** Prototype Light design – Students will manufacture and produce a prototype functional L.E.D light design following a specific design movement, design movement or theme **Literacy focus- Oracy** 1. Literacy- Students will be introduced to new subject specific vocabulary and processes that will help improve the both verbal and written skills when analysing and discussing topics within the Design Technology Specification. **Assessment- DC1**	**Assessment- DC1** Controlled practical assessment- Food practical **SMSC:** Team building skills, sharing equipment, peer mentoring, Responsibility for personal and group safety, understanding that resources are not infinite and need to be used appropriately. S: Students to develop an understanding of the world around them with regards to food, product miles and sustainability. Students to use their own initiative and imagination to create dishes fit for consumption. Students to increase their knowledge and understanding of their own environment and the world around them by knowing how food is produced and manufactured M: Students to be aware of the importance of right and wrong and understand that there are high expectations and safety guidelines that are set in place for the safety and well- being of all students, especially when participating in practical activities. Students respect and understand the viewpoints of their peers and understand that they are responsible for their actions. S: Students to develop a positive attitude and participate in understanding engaging in developing positive skills, beliefs and attitudes working in peer groups and volunteering and engaging in extra- curricular opportunities in the wider school community C: Students to research and develop a detailed knowledge and understanding of a variety of influences and modern cultures through design and manufacturing products for consumers of all faiths, beliefs and religion. Creating positive attitudes towards ethnic, socio economic groups in the community and globally.	**Assessment- DC1** Practical Assessment – Timed practical challenge- Construction methods. Theory- Product analysis-key terminology Production methods Hand- tools & Machinery methods of manufacture Design task- following set proposal- Meeting requirements of a specific target market **SMSC:** Continue to develop Team building skills, sharing equipment, peer mentoring, Responsibility for personal and group safety, understanding that resources are not infinite and need to be used carefully along with the importance of recycling. **Knowledge Skill base:** Students will develop a clear understanding of creating products from a detailed specification and a plan production processes. Develop Knowledge and understanding of key GCSE criteria. 1: CAD/CAM- 2D-Design Computer Aided Manufacture Software 2. Recycling and sustainability. 3: Materials and Costing. 4: Consumer Target Markets. 5: Jigs and Templates 6: Traditional and contemporary woodworking joints 7: Finishing techniques 8: The importance of Accuracy and Scale production 9: Develop key terminology and subject specific language

	Design task- Developing specific products following consumer requirements. Knowledge and understanding of key material, manufacture processes and practical workshop equipment Health and Safety. **SMSC:** Students to understand the effect products can have on the environment and particular user groups in society. Students to consider the world around them and the impact products can have material sources-Global Environmental issues **Knowledge Skill base:** Students will learn how to shape, form and manipulate a variety of materials accurately and successfully to produce high quality practical outcomes. Students will use their practical skills and knowledge of the design process to increase their understanding of the following criteria. 1. Numeracy /Costing of materials and resources if producing prototypes commercially on a large scale production. 2. Prototype modelling techniques through traditional and modern CAD methods using a variety of software packages to enhance and develop designing.	**Knowledge Skill base:** Students will develop knowledge and understanding of HACCP, continue to gain knowledge in ingredients, methods of cooking and presentation. Students will develop vital practical skills knowledge and understanding of working with a range of utensils and equipment safely, independently and accurately. These specific skill sets will be developed through practical activities such as cooking.	10: Understand the importance of function and ergonomics

	3. Students will understand that there a variety of finishing techniques that can be applied to materials to provide different functions, to improve style, for preservation, functionality and cost implications. 4. Students will develop industrial knowledge of processes and practice to enhance their understanding when designing products but also increase their knowledge of commercial production.		