Curriculum Map: Design & Technology Year 10

	Autumn 1 **Wooden Puzzle**	**Autumn 2** **Mini NEA – Iterative Design**	**Spring 1** **Mini NEA – Iterative Design**	**Spring 2** **Mini NEA – Iterative Design**	**Summer 1** **Mini NEA – Iterative Design**	**Summer 2** **GCSE NEA** **1.1 Investigation of needs and research** **1.2 Product specification**
Content Declarative knowledge 'I Know'	1.13 Performance characteristics of a wide range of materials, components and manufacturing processes, in order to be able to discriminate between them and select appropriately. 1.14 Implications for designers and manufacturers of the following when developing designs and manufacturing products: - social, ethnic and economic groups - environmental, social and economic Issues - 'Green Designs'. - recycling and reusing - Human capability. - Cost of materials. - Manufacturing capability. 1.14.8 Environmental impact – life cycle analysis (LCA).	7.1.1 When designing or modifying a product, students should be able to apply their knowledge and understanding of timbers, components and manufacturing processes. 7.2 To apply knowledge and understanding of the advantages, disadvantages and applications of the following, in order to be able to discriminate between them and select appropriately: - Natural timbers – hardwoods - Natural timbers - Manufactured timber - Sources and origins - Physical characteristics	7.2 To apply knowledge and understanding of the advantages, disadvantages and applications of the following, in order to be able to discriminate between them and select appropriately: - Working properties - Social footprint - Ecological footprint 7.3 The influence of the following factors when selecting materials for a specific application: - Aesthetic factors - Environmental factors - Availability factors - Cost factors - Social factors - Cultural and ethical factors 7.4 An awareness of the influence of forces and stresses that act on materials and the methods that can be	7.6 Application, advantages and disadvantages, of a range of processes, scales of production and techniques when manufacturing products, in order to be able to discriminate between them and select appropriately for use. 7.7 Application, advantages and disadvantages, of the following specialist techniques when manufacturing products, in order to be able to discriminate between them and select appropriately for use: - Tools and equipment - Shaping	7.7 Application, advantages and disadvantages, of the following specialist techniques when manufacturing products, in order to be able to discriminate between them and select appropriately for use: - Fabricating/constructing - Assembling 7.8 Application, advantages and disadvantages of finishing techniques and methods of preservation, in order to be able to discriminate between them and select appropriately for use.	1.1a The needs of the end user. 1.1b A design problem from the context provided and a need for a product that could solve the problem.

	1.15 Strategies, techniques and approaches employed when investigating and analysing the work of others. 1.16 Strategies, techniques and approaches employed when generating design ideas. Understand the hazards and control measures associated with a range of different tools and equipment (Timbers). 3.1b The selection and application of: a materials b range of tools, including marking-out tools, hand tools and machinery c range of techniques f surface treatments and finishes used in the manufacture of the prototype.		employed to resist them. 7.5 To apply knowledge and understanding of the advantages, disadvantages and applications of different forms/sizes of materials, in order to be able to discriminate between them and select appropriately.			
Skills Procedural Knowledge 'I know how to'	Demonstrate safe and skilful use of a range of tools. Manufacture a high-quality functioning product.	**Identify design context** Discuss what makes 'good design' Describe how products are developed using an iterative design process Consider a range of possible design briefs for this project.	**Design & Prototype** Develop your design ideas using models, sketches and prototypes Discover the limitations of the components you will work with through experimentation	**Develop, test, evaluate** Practice modelling and prototyping skills Develop the aesthetics and form of your design to appeal to the user Test and evaluate your design based on feedback Generate refined models and prototypes		1.1c Investigate existing products to inform the product specification for the prototype, from past and present designers. 1.2b Production of a product specification that includes statements

	Demonstrate a sustained high degree of safe working practice for self and others. Produce a prototype showing a wide range of making skills with precision and accuracy. Accurately assemble and finished the prototype to a high quality.	Suggest a possible design brief Define the following terms: aesthetics, form, ergonomics Generate a range of suitable design briefs for the project **Model, test, evaluate** Experiment with the different ways light and lighting can be used Generate a range of ideas through sketching and modelling, testing and evaluating Generate a range of ideas through sketching and modelling, testing and evaluating Demonstrate an understanding of ergonomics Describe how products are developed using an iterative design process	Fit components into models Develop the aesthetics and form of your design to appeal to the user Apply experiments with lighting to design work		that are technical, measurable and justified, and include consideration of: a form b function c user requirements d performance requirements e material and component requirements f scale of production g cost h sustainability i performance requirements. 1.2c Identify criteria, which will be used to evaluate the success of the prototype.
Strategies Conditional Knowledge 'I know when to'	Apply a comprehensive understanding of tools and equipment to select the appropriate tool for the task (Timbers).	Use the iterative design process to make creative leaps.	Develop products through the iterative design process	Develop, test and evaluate design ideas through various media Test and evaluate your design	1.1d Carry out a range of research strategies to gather relevant information, to inform the design specification for the prototype, including: a market research b research into the context in which the prototype will be used c research into other possible materials

					d any sustainability issues that will be considered relevant to the intended prototype.
Key Questions	How can specialist tools be used to mark out and manufacture a high-quality product with accuracy and precision?	How can iterative design strategies be used to identify a context? How can iterative design strategies be used to generate creative ideas?	How can iterative design strategies be used to design and develop a prototype?	How can iterative design strategies be used to develop, test and evaluate a product?	What is a design context and how does this influence the outcomes of design practice?
Assessment topics	AO4 Core Technical Skills	AO1 Investigate, AO2 Design & Prototype, AO3 Analyse and Evaluate, AO4 Core Technical Skills	AO1 Investigate, AO2 Design & Prototype, AO3 Analyse and Evaluate, AO4 Core Technical Skills	AO2 Design & Prototype, AO3 Analyse and Evaluate, AO4 Core Technical Skills	AO1 Investigate, AO3 Analyse and Evaluate
Cross curricular links/Character Education	**Health and Safety –** Developing a working knowledge of safety. **Maths** - Accuracy and precision - Arithmetic and numerical computation - Geometry and trigonometry	**Art and Design** - The characteristics, properties and effects of using different media, materials, techniques and processes, and the ways in which they can be used creatively. - Developing their ideas through investigations informed by selecting and critically analysing sources.	**Maths** - Arithmetic and numerical computation - Geometry and trigonometry **Science** - Use scientific vocabulary, terminology and definitions - Using materials **Art and Design** - Refining their ideas as work progresses through experimenting with media, materials, techniques and processes. **Computer Science** - Think creatively, innovatively, analytically, logically and critically. **Science** - Using materials		**Maths** - Arithmetic and numerical computation - Handling data **Business** - The impact of ethical and environmental considerations on businesses, including sustainability. **Geography** - Effective presentation, communication and evaluation of material.
		Cognitive skills • Problem solving • Systems thinking – decision making and reasoning. • Critical thinking –analysing, synthesising and reasoning skills. • ICT literacy • Communication skills • Collaborative problem solving			

		• Adaptability • Self-management and self-development