Year 10 Design Technology Autumn Term

Week	Lesson 1	Lesson 2	Lesson 3	
1	**Timber based materials** **B**e able to identify common timbers such as pine, mahogany, teak, ash, beech used in the manufacture of products • be able to identify common manufactured boards i.e. MDF, plywood, chipboard, blockboard, hardboard;	**Timber based materials** • understand the different properties and uses of MMB's within commercial products; • understand that many timber-based materials are manufactured therefore the composition can be adjusted to create different properties for specific purposes; •	**Timber based materials** • Understand the stock forms for timber based materials i.e. rough sawn, PSE, sheet sizes and mouldings; • Have a basic understanding of the source of timber and the primary processes involved in conversion to workable materials.	
2	**Ferrous and non-ferrous metals** be able to identify common metals i.e. silver, stainless steel, mild steel, cast iron, brass, copper, zinc, aluminium, pewter; • understand the different properties and uses of such materials within engineering and domestic products; • understand that many metals are alloys or have coated finishes therefore the composition can be adjusted to create different properties for specific purposes e.g. casting alloys, plated metals;	**Ferrous and non-ferrous metals** • understand that the properties of metal can be changed by heat treatment; • have an understanding of the stock forms for metals i.e. sheet, rod, bar, tube; • have a basic understanding of the source of metals and the primary processes involved in conversion to workable materials.	**Plastics** be able to identify common thermoplastics i.e. high impact polystyrene, expanded polystyrene, acrylic, acetate, HDPE, PVC, PET; • be able to identify common thermosetting plastics i.e. GRP, Epoxy resin, UF, MF;	

3	**Plastics** • understand the ways in which plastics can be formed, especially with regard to consumer products, i.e. vacuum forming, injection moulding, blow moulding, line bending, compression moulding, extrusion;	**Plastics** • understand that most plastics are synthetic and that the composition can be adjusted to create different properties for specific purposes e.g. increase rigidity, reduce weight, insulation;	**Plastics** • understand the stock forms for plastic materials i.e. sheet, rod, powder, granules, foam; • have a basic understanding of the source of plastics and the primary processes involved in conversion to workable materials.	
4	**New Materials** • have a knowledge and understanding that the development of new and smart materials are allowing designers to meet a variety of user needs in new and exciting ways e.g. – Precious Metal Clays (PMC) used in jewellery manufacture.	**New Materials** • have an awareness of the importance of the development of nanomaterials and integrated electronics in the area of Design and Technology	**Manipulating and Combining Materials** • how materials can be combined and processed in order to create more useful, or desirable, properties;	

5	**Manipulating and Combining Materials** • how a range of materials are prepared for manufacture, allowing for waste and fine finishing; • about a variety of self-finishing and applied-finishing processes, and appreciate their importance for aesthetic and functional reasons;	**Manipulating and Combining Materials** • Name a variety of self-finishing and applied-finishing processes, and appreciate their importance for aesthetic and functional reasons; • that to achieve the optimum use of materials and components, account needs to be taken of the complex inter-relationships between materials, form and manufacturing processes;	**Manipulating and Combining Materials** • Understand that to achieve the optimum use of materials and components, account needs to be taken of the complex inter-relationships between materials, form and manufacturing processes;	
6	**Manipulating and Combining Materials** •Explain how materials can be combined and processed in order to create more useful, or desirable, properties; • how these properties are utilised in industrial contexts;	**Manipulating and Combining Materials** • Explain how a range of materials are prepared for manufacture, allowing for waste and fine finishing; • about a variety of self-finishing and applied-finishing processes, and appreciate their importance for aesthetic and functional reasons;	**Manipulating and Combining Materials** • Understand that to achieve the optimum use of materials and components, account needs to be taken of the complex inter-relationships between materials, form and manufacturing processes;	
7	**Manipulating and Combining Materials** • Understand how pre-manufactured standard components are used to improve the effectiveness of the manufacturing process and be able to identify a small range appropriate to the material areas studied.	**Evolution of Product Design** • identify ways in which products evolve over time because of developments in ideas, materials, manufacturing processes and technologies as well as because of social, political, cultural and environmental changes;	**Evolution of Product Design** • have a basic knowledge and understanding of major design movements since 1900 e.g. Arts & Crafts Movement, Art Nouveau, Art Deco, Bauhaus, Modernism, De Stijl, Memphis, Post Modernism;	

8	**Evolution of Product Design** • recognise that design movements and cultural influences are still influencing new product development; • have a knowledge and understanding that manufacturing industries are involved in continuous improvement	**Evolution of Product Design** • have a knowledge and understanding that sometimes new products are developed because of marketing pull and sometimes because of technological push.	**Evolution of Product Design** • have a knowledge and understanding that sometimes new products are developed because of marketing pull and sometimes because of technological push. • Clearly understand and explain the differences between the two concepts	Half term
9	**Practical phase.** Pupils will be investing materials through a practical design and make process. Metals project. Focus - Design Ideas	**Practical phase.** Pupils will be investing materials through a practical design and make process. Metals project. Focus - Sketching	**Theory phase.** Pupils will be investigating properties of materials and their correct selection when designing products.	
10	**Practical phase.** Pupils will be investing materials through a practical design and make process. Metals project. Focus - Modelling	**Practical phase**. Pupils will be investing materials through a practical design and make process. Metals project. Focus - Measuring and marking	**Theory phase.** Pupils will be investigating how to modify material properties for a specific purpose	
11	**Practical phase.** Pupils will be investing materials through a practical design and make process. Metals project. Focus - Health and safety	**Practical phase**. Pupils will be investing materials through a practical design and make process. Metals project. Focus - Basic tools for cutting	**Theory phase.** Pupils will be investigating how to use commercially available types and sizes of material	
12	**Practical phase.** Pupils will be investing materials through a practical design and make process. Metals project. Focus - Basic tools for Abrading	**Practical phase**. Pupils will be investing materials through a practical design and make process. Metals project. Focus - Machines for sanding	**Theory phase.** Pupils will be investigating the importance of quality control when producing products for manufacture	

13	**Practical phase**. Pupils will be investing materials through a practical design and make process. Metals project. Focus - Machines for drilling	**Practical phase.** Pupils will be investing materials through a practical design and make process. Metals project. Focus - Preparing material for finishing	**Theory phase.** Pupils will be investigating how materials are cut shaped and formed to a tolerance	
14	**Practical phase.** Pupils will be investing materials through a practical design and make process. Metals project. Focus - Abrasive papers and different grit sizes	**Practical phase.** Pupils will be investing materials through a practical design and make process. Metals project. Focus - Applying an undercoat for a finish	**Theory phase.** Pupils will be investigating the preparation and application of surface treatments and finishes	
15	**Practical phase.** Pupils will be investing materials through a practical design and make process. Metals project. Focus - Using transparent finishes such as waxes and varnish	**Practical phase.** Pupils will be investing materials through a practical design and make process. Metals project. Focus - Using opaque finishes such as brush paint and spray cans	**Theory phase.** Pupils will be investigating the importance of testing and evaluating products with particular reference to the original design specification	
16	**Practical phase.** Pupils will be investing materials through a practical design and make process. Metals project. Focus - Sealing a finish using clear spray	**Practical phase.** Pupils will be investing materials through a practical design and make process. Metals project. Focus - Sealing a finish using a clear wax	**Theory phase.** Pupils will be investigating ecological issues in design and manufacture and the growing importance of ethical consumerism	Half term