

Year 11 Design Technology Autumn Term

Week	Lesson 1	Lesson 2	Lesson 3	
1	<p>Case study:</p> <ul style="list-style-type: none"> look at an example factory such as Jaguar Land Rover/BMW / watch this video clip about automated production <p>Automated BMW production in groups students discuss the benefits and disadvantages of being a fully automated manufacturing system and the use of robotics.</p>	<ul style="list-style-type: none"> Understand and explain the following key terms to discuss Production methods in industry: Computer Aided Design (CAD) Computer Aided Manufacture (CAM) Flexible Manufacturing (FMS) Just in time (JIT) Lean Manufacturing 	<p>Discussion of Market pull and Technology push. Look at the following products and discuss how far market pull and technology push have influenced their development:</p> <ul style="list-style-type: none"> iPhone / women's blazer / wind-up radio. Discussion of crowd funding. Give examples of when this has been successful. 	
2	<p>Discussion of Market pull and Technology push. Look at the following products and discuss how far market pull and technology push have influenced their development:</p> <ul style="list-style-type: none"> iPhone / women's blazer / wind-up radio. Discussion of crowd funding. Give examples of when this has been successful. 	<ul style="list-style-type: none"> Ask students what they understand by Virtual marketing and retail and them to name examples that Students look at a range of objects that have been designed with a specific user group in mind. These user groups may include different age groups, interest groups or be based on gender (the pink tax). 	<p>Finite and non-finite resources, the disposal of waste, pollution and global warming</p> <ul style="list-style-type: none"> continuous improvement and efficient working planned obsolescence, design for maintenance. <p>Annotation of designs in terms of sustainability.</p>	

3	<p>Group analysis of designs in terms of Impact on the environment. Discussion of finite and non-finite resources, the disposal of waste, pollution and global warming.</p> <ul style="list-style-type: none"> • Use of life cycle assessment to understand the impact on the environment. 	<p>Evaluation of the ethical considerations surrounding a design/product.</p> <ul style="list-style-type: none"> • Investigation into production methods, use of labour, sourcing materials to provide us with the products we need. • Highlight the difference between renewable and non-renewable fuels. 	<p>Discuss key terminology including renewable and non-renewable fuels, fossil fuels, wind, solar, tidal, hydro-electrical, biomass, coal, gas, oil.</p> <ul style="list-style-type: none"> • Nuclear energy / Energy storage / Kinetic pumped storage systems / Alkaline and rechargeable batteries 	
4	<ul style="list-style-type: none"> • Define the terms input, process and output in a system. Define the term mechanism. • Give an example of a mechanism and assess students' knowledge of where and why mechanisms are used and the use of appropriate formula to complete calculations. 	<p>The 4 types of motion</p> <ul style="list-style-type: none"> • Discuss ways of changing one type of motion into another. • Identify specific mechanisms such as levers, linkages and rotary systems. • Learn how to create and understand diagrams that show motion. This may include calculations and measurement 	<p>Composite materials</p> <ul style="list-style-type: none"> • Students look at technical specifications and match the correct material with the correct specification <p>Material properties.</p> <ul style="list-style-type: none"> • Definitions for key properties (strength, toughness, hardness etc) given and students use note-taking skills to understand these. 	

5	<p>Design and Market Influences. Candidates should develop an understanding of the broad perspectives of the designed world. This will include the appreciation of line, shape, form, proportion, colour, movement and texture within a critical awareness of aesthetics and ergonomics.</p>	<p>Evolution of Product Design</p> <ul style="list-style-type: none"> • 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; • have a basic knowledge and understanding of major design movements since 1900 e.g. Arts & Crafts Movement, Art 	<p>Recognise that Design movements and cultural influences are still influencing new product development;</p> <ul style="list-style-type: none"> • have a knowledge and understanding that manufacturing industries are involved in continuous improvement (CI) and this is a major influence in product evolution; 	
6	<p>Design Methodology</p> <ul style="list-style-type: none"> • respond creatively to briefs, developing their own proposals and producing specifications for products and associated services • discuss and analyse the situation/problem; • know how to gather and respond to research, evaluate and select information and data to support the design and manufacture of products; 	<p>Design Methodology</p> <ul style="list-style-type: none"> • consider the factors involved in the design of a product which is to be produced/manufactured in quantity; • consider a wide range of users and create designs which are inclusive; • determine the degree of accuracy required for the product to function as planned, taking account of critical 	<p>Design Methodology Understand how graphic techniques, ICT equipment and software, particularly CAD, can be used in a variety of ways to model aspects of design proposals and assist in making decisions;</p> <ul style="list-style-type: none"> • have a knowledge and understanding that design ideas are protected in law through copyright, patents and registered designs 	

7	<p>Packaging</p> <ul style="list-style-type: none"> • have a knowledge and understanding of a variety of materials and processes used to package products and to be able to balance the likely impact upon the environment in terms of social responsibility and sustainability; • understand the different basic functions of packaging such as protect, inform, contain, transport, preserve and display; 	<p>Product marketing</p> <ul style="list-style-type: none"> • have a knowledge and understanding of the power of branding and advertising and the effect that they have upon different consumer groups; • be able to promote their own products using a variety of techniques, e.g. leaflets, flyers, point of sale, packaging and digital media. 	<p>Consumer issues</p> <ul style="list-style-type: none"> • have a knowledge and understanding of the work of consumer groups and pressure groups and the way products are evaluated – e.g. Which? reports; • have a knowledge and understanding of the work of standards agencies (BSI, ISO etc) and how these standards affect product design and manufacture and subsequent testing; 	
8	<p>Processes and Manufacture</p> <ul style="list-style-type: none"> • understand that products are manufactured to different scales of production i.e. one-offs, batch, mass, continuous, just in time (JIT); • design and make for one-off, batch and mass production 	<p>Processes and Manufacture</p> <ul style="list-style-type: none"> • work as part of a team on the batch production of products and/or components; • work as part of a team and experience different functions within simple batch production systems; 	<p>Processes and Manufacture</p> <ul style="list-style-type: none"> • use a range of procedures including CAD/CAM, where appropriate, to ensure consistency in the production of their products; • use both hand and machine methods of cutting and shaping materials appropriate to the scale of production. 	Half term 1
9	<p>Non Exam Assessment NEA Lesson Focus : * defining a design problem and completing the relevant page in the design folder.</p>	<p>Non Exam Assessment NEA Lesson Focus : * defining a design brief and completing the relevant page in the design folder.</p>	<p>Non Exam Assessment NEA Lesson Focus : * defining a target market and completing the relevant page in the design folder.</p>	
10	<p>Non Exam Assessment NEA Lesson Focus : * defining a typical customer and completing the relevant page in the design folder.</p>	<p>Non Exam Assessment NEA Lesson Focus : * research into existing products and completing the relevant page in the folder.</p>	<p>Non Exam Assessment NEA Lesson Focus : * undertake a product analysis and complete the relevant page in the folder.</p>	

11	<p>Non Exam Assessment NEA</p> <p>Lesson Focus :</p> <p>* produce a thorough and focused specification sheet utilising the ACCESSFM help sheet.</p>	<p>Non Exam Assessment NEA</p> <p>Lesson Focus :</p> <p>* produce a varied range of initial ideas with reference to the specification and with appropriate annotations throughout.</p>	<p>Non Exam Assessment NEA</p> <p>Lesson Focus :</p> <p>* produce a varied range of initial ideas with reference to the specification and with appropriate annotations throughout.</p>	
12	<p>Non Exam Assessment NEA</p> <p>Lesson Focus :</p> <p>* produce a varied range of initial ideas with reference to the specification and with appropriate annotations throughout.</p>	<p>Non Exam Assessment NEA</p> <p>Lesson Focus :</p> <p>* select a suitable idea for detailed development.</p>	<p>Non Exam Assessment NEA</p> <p>Lesson Focus :</p> <p>* use appropriate CAD systems such as Techsoft 2D Design to further develop the design and enhance the realistic presentation of the proposed solution.</p>	
13	<p>Non Exam Assessment NEA</p> <p>Lesson Focus :</p> <p>* begin initial 3D modelling using a variety appropriate materials and techniques</p>	<p>Non Exam Assessment NEA</p> <p>Lesson Focus :</p> <p>* begin initial 3D modelling using a variety appropriate materials and techniques</p>	<p>Non Exam Assessment NEA</p> <p>Lesson Focus :</p> <p>* begin initial 3D modelling using a variety appropriate materials and techniques</p>	
14	<p>Non Exam Assessment NEA</p> <p>Lesson Focus :</p> <p>* evaluate the initial models using sustainability and environmental criteria.</p>	<p>Non Exam Assessment NEA</p> <p>Lesson Focus :</p> <p>* evaluate the initial models using the specification criteria</p>	<p>Non Exam Assessment NEA</p> <p>Lesson Focus :</p> <p>* evaluate the initial models by testing with a target market representative.</p>	
15	<p>Non Exam Assessment NEA</p> <p>Lesson Focus :</p> <p>* evaluate the initial models using ergonomic criteria and suggest improvements at this stage.</p>	<p>Non Exam Assessment NEA</p> <p>Lesson Focus :</p> <p>* undertake further materials testing and research of specific processes and techniques relevant to your design.</p>	<p>Non Exam Assessment NEA</p> <p>Lesson Focus :</p> <p>* begin initial prototype planning in a specified scale relevant to your design.</p>	half term 2