A-Level Product Design

Year 12

William Hulme's Grammar School
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Overview	Throughout this A Level Product Design course, we aim to unlock pupil's creativity and imagination to become the designers of the future. We teach them to be inquisitive about all things design and be inspired by everything around them. We develop students into independent problem solvers, by teaching them how to independently produce bespoke products in response to a given design brief. In Year 12, students will further develop the subject knowledge gained from GCSE Design Technology and get a deeper understanding of all theory aspects of the course in preparation for the Non-Exam Assessment and external exams. Theory lessons will be delivered alongside small focused practical tasks to further embed knowledge. Lesson context is delivered in a range of ways ranging from, lesson PowerPoints, textbooks and YouTube clips. The NEA commences in the summer term. The course is delivered over six, 100-minute lessons per fortnight.

		Assessment
Autumn Term 1A	Students get introduced to the A Level Product Design course and begin further developing their subject knowledge in the following areas: ■ **Material characteristics, properties and processes.** Students must know and understand physical and mechanical properties, characteristics, stock forms, manufacturing processes, finishes and enhancements of the following materials: Paper and boards, timbers, metals and plastic materials. ■ **Digital design and manufacture** ■ Students also understand the Modern industrial and commercial practice which involves CAD/CAM and learning how to use our CAD software (2D Design, Google Sketch up, Quick Cam 2D, VR Milling), virtual modelling, rapid prototyping as well as setting up these machines. ■ **Quality assurances and quality control** ■ Students will understand the importance of QA & QC within manufacturing and identify the pieces of equipment needed to accurately measure within specific tolerances. ■ **Accuracy and tolerance.** Students become aware of the importance of accuracy in the manufacturing process and the instruments used to measure and check products. **Practical Task: 'Scaled Flat packed furniture' Project –** Students to design and make an accurate piece of flat packed furniture ¼ scale to be manufactured on the CNC Router, with making diary PowerPoint. ■ **Focus:** CAD/CAM software, accuracy of design, tolerances.	Exam questions & Material presentation to the class Practical grade for the piece of furniture.
Autumn Term 1B	Students continue to further develop their subject knowledge in the following areas: ■ **Material characteristics, properties and processes.** Students must know and understand physical and mechanical properties, characteristics, stock forms, manufacturing processes, finishes and enhancements of the following materials: smart, modern and composite materials. ■ **Adhesives.** Students learn about the different types of adhesives available, how they are applied and what materials they can be used on. ■ **Jigs and fixtures.** Students become aware of how jigs and fixtures are used in the manufacturing of product in large quantities. ■ **Scale of production.** Students become aware of the different quantities products can be manufactured in and the characteristics and set up of these systems.	Exam questions Practical grade for a 3-D printed tool

Autumn Term 1B	**Practical Task: 'Scaled Flat packed furniture' Project –** Students to complete the making of a piece of flat packed furniture ¼ scale. ■ **Focus:** CAD/CAM software, accuracy of design, tolerances. **'3 D printed tool' Project**	
Spring Term 2A	Students to develop their subject knowledge in the following areas: ■ **Evaluation and analysis of Products.** Students to understand 1st and 2nd hand research and how to evaluate and analyse products using ACCESSFMM (Aesthetics, cost, customer, Environment, Safety, Size, Materials and Manufacturing process) ■ **Responsible and Inclusive Design.** Students will be aware of, and be able to explain, the development of products that are inclusive in their design so that they can be used by a wide range of users including the disabled, children and the elderly. They will also learn about social, moral and ethical decisions made by designers and manufacturers. ■ **Design Styles, Influences, Designers and their work.** Students should be aware of, and able to discuss, how key historical design styles, design movements and influential designers that have helped to shape product design and manufacture. ■ **Product Analysis and Disassembly.** Students to be able to analyse an existing product and write a critical report. **Practical Task: Analysis of a product –** Students to critically analyse an existing product using ACCESSFMM. ■ **Focus:** Critical analysis in a range of areas and formal extending writing techniques. **'Sustainable Desk Light' project –** Students to design and make a sustainable desk light. ■ **Focus:** Sustainability, Creativity, wiring and PAT Testing	**Assessment** Exam questions Analysis of a Product Grade.
Spring Term 2B	■ **Socio Economic influences.** Students should be aware of, and able to discuss, how socio-economic influences have helped to shape product design and manufacture, including: post WW1: the Bauhaus and development of furniture for mass production, WW2: rationing, the development of 'utility' products, contemporary times: fashion and demand for mass produced furniture & decorative design. ■ **Major developments in technology.** Students should be able to discuss, how major developments in technology are shaping product design and manufacture, including: microelectronics, new materials, new methods of manufacture, advancements in CAD/CAM. ■ **Social, moral and ethical issues.** Students should be aware of, and able to discuss, the responsibilities of designers and manufacturers, including Sustainability, the 6 R's, fairtrade and Cultural and religious beliefs. ■ **Product Life Cycle.** Students to understand design (product) introduction, evolution, growth, maturity, decline and replacement. Students should be familiar with examples of how designers refine and re-develop products in the lifecycle of specific products. **Introduction to the NEA.** Students to Identify a unique and challenging design problem to solve. **'Sustainable Desk Light' project –** Students to continue to make a sustainable desk light. **Focus:** Sustainability, Creativity, wiring and PAT Testing	Exam questions Making grade of the desk light.

Summer Term 3A	■ **Introduction to Section A - the 'Contextual challenge' slides** Students to write up a design context for their chosen brief and research into existing data to support their choice of design problem to intend to solve. ■ **Section A - the 'Client profile' slides** Students to identify a client (from their preferred Target market) to interview and inform their project throughout. They will also liaise with a manufacturing or retail client that they will also consider throughout the NEA. ■ **Section A - the 'Research Plan' slide** Students to identify areas of relevant research, (both first hand and second hand) they need to cover throughout the NEA. They will state what research they will complete, how they will get it and what they are hoping to gain from it. **Practical Task: Setting up of NEA Digital Portfolio and complete the pages stated above.**	**Assessment** Quality Of NEA coursework
Summer Term 3B	■ **Introduction to Section A - the 'Product Analysis and disassembly' slides** Students to critically analyse existing products using ACCESSFMM. ■ **Section A - the 'initial design ideas' slides** Students begin sketching a wide range of unique ideas based on their first initial thoughts, research and client's needs and wants. These will be annotated to recognise what are areas of strength and what could be further developed. **Practical Task: complete the pages stated above.**	Quality Of NEA coursework Mock Exam Grade

Useful Resources for Supporting Your Child at Home:	**Homework:**
AQA Assessment Objectives	Revision for ongoing theory covered in textbooks. Coursework with ongoing deadlines.