

Year 12 (Product Design)

Term	Topic	Knowledge	Skills Complex activity: Writing genre:
Autumn T1 & T2 Unit 1 -5 Performance of Materials	Papers & Boards: Performance, Application & Recycling Polymers: Characteristics, Applications, Stock Forms & Types, Elastomers & Biodegradable polymers. Woods: Stock Forms, Performance & Testing & Finishing Metals: Stock Forms, Performance & Testing Composites: Composites, Smart & Modern Recap and Retrieval Assessment for each unit	Understanding the fundamentals of material sources and production. Discern between similar stock forms Describe specific properties, characteristics, uses and methods of manipulation Understanding recycling of materials products and the environmental impact of their use Describe suitable ways to test the strength and performance characteristics of materials	Source comprehension / analysis / evaluation/debate Developing empathy and understanding Writing genres - Technical style essay (analysis) Evaluating impact Source comprehension / analysis / evaluation/debate Engagement in practical activities
Spring T1 & T2 Unit 6-9 Processing Materials	Papers & Boards: Forming processes, Bonding, jigs, & fixtures & Finishing Polymers: Working with polymers, Forming & Finishing Woods: Working with woods, Forming & Finishing Metals: Forming, Joining, Wasting and Finishing Recap and Retrieval Assessment for each unit	Understand the main ways to manipulate materials to produce the types of products produced in industry. Understanding how materials are used in conjunction with hand, machine and digital techniques, using forming and bonding techniques Comparison between school workshop and industry based processing. Developing knowledge of the use of additives and subtractive forming techniques Understanding the use of basic and advanced joining methods including the specific uses of CNC machines. Knowledge of temporary, semi-permanent and permanent methods of bonding, including welding, wasting, external finishing techniques	Source comprehension / analysis / evaluation/debate Developing empathy and understanding Writing genres - Technical style essay (analysis) Evaluating impact Source comprehension / analysis / evaluation/debate Engagement in practical activities



<p>Summer T1 &T2</p> <p>Unit 10 Industrial practice</p> <p>Unit 11 - Product design considerations</p> <p>Unit 12 - Product design</p> <p>NEA - AO1 (A)</p> <p>Identifying and investigating design possibilities</p>	<p>Industrial Practice: Scales of Production, Efficient use of materials, Computer Systems, Digital Design & Modelling</p> <p>Product Design Considerations: Product Development, Inclusive design, Safe working practices, Protecting designs, Manufacture, Efficient manufacturing, Design for disassembly.</p> <p>Product Design: Feasibility studies, Enterprise, Communicating data & Design communication</p> <p>AO1 (A): Identifying and investigating design possibilities</p> <p>Recap and Retrieval Assessment for each unit</p>	<p>Identify the characteristics of modern and commercial industrial practice and their impact on manufacturing efficiency.</p> <p>Understand the way we develop, design and make products and presents a modern methodology for sustainable and inclusive designing.</p> <p>Understand the importance of disassembly, focussing on strategies for material reduction, integral fittings and fixtures.</p> <p>Explore the role smart materials are beginning to play in the process of industrial disassembly.</p> <p>Understand different enterprise opportunities as well as the post product realisation processes of branding and marketing</p> <p>Conduct a feasibility study to gauge a products potential and why it is vital in a products success</p>	<p>Source comprehension / analysis / evaluation/debate</p> <p>Developing empathy and understanding</p> <p>Writing genres - Technical style essay (analysis)</p> <p>Evaluating impact</p> <p>Source comprehension / analysis / evaluation/debate</p> <p>Engagement in practical activities</p>
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