Curriculum Plans: Year 12 Design and Technology

School Term	Topic	**Knowledge:** By the end of the unit students will know:	**Skills**: What skills will students have developed by the end of this unit?	**Key terms**: What new key terms and vocabulary will be learnt in this unit?	**Summative Assessment:** How will pupils be assessed in this unit?
1.1	**Technical Principles and Design & Making Principles** 1.1 Materials and their applications 2.1 Design methods and Processes 1.2 Performance characteristics 2.2 Design Theory Desk Lamp Project	• The properties and applications of materials. • Design processes, methods, and material performance characteristics. • How to apply theory in designing practical products.	• Developing design ideas using CAD and sketching. • Using materials effectively in product design. • Producing and evaluating a functional desk lamp.	Material properties, design methods, performance characteristics, CAD, sketching, prototyping.	**Assessment**: Desk lamp skills presentation covering 1.1, 2.1, 1.2, 2.2.
1.2	**Technical Principles and Design & Making Principles** 1.3 Enhancement of materials 1.4 Forming, redistribution and addition processes 2.7 Accuracy in design and manufacture 1.9 Health and safety Stationery Box Project	• Material enhancement techniques. • Accuracy and forming processes in manufacture. • Health and safety principles.	• Developing technical skills in material forming and redistribution. • Producing an accurate stationery box design, ensuring safety throughout.	Material enhancement, forming processes, accuracy, health and safety, specialist tools.	**Assessment**: Stationery box skills presentation covering 1.3, 1.4, 2.7, 1.9.
2.1	**Technical Principles and Design & Making Principles** 1.5 Use of finishes 2.4 Design processes 1.6 Modern and industrial scales of practice 1.7 Digital design and manufacture	• The role of finishes in design. • How modern and industrial scales of practice impact manufacturing. • Digital design tools in the manufacturing process.	• Applying finishes to prototypes. • Using digital design software and tools to scale production processes. • Planning for industrial-scale manufacture.	Finishes, industrial scales of practice, digital design, modern manufacturing, CAD.	**Assessment**: Practical work focusing on finishes and digital design processes (1.5, 2.4, 1.6, 1.7).
2.2	**Technical Principles and Design & Making Principles** 1.8 Requirements of product design and development 2.5 Critical analysis and evaluation Furniture Project (skills-based)	• The key requirements for product design. • The role of critical analysis in refining and developing products • How to evaluate products using design criteria and user feedback	• Producing a furniture project prototype based on design requirements. • Evaluating prototypes through testing and feedback. • Refining designs based on critical analysis.	Product design, critical analysis, evaluation, design refinement, testing and feedback, iterative design.	**Assessment**: Furniture project, skills-based assessment covering 1.8 and 2.5.
3.1	**Technical Principles and Design & Making Principles** 1.10 Protecting design and intellectual property 1.11 Design for manufacturing, maintenance, repair and disposal 2.8 Responsible design	• The importance of intellectual property protection. • Design considerations for the full product lifecycle, including repair and disposal. • Principles of responsible and sustainable design.	• Applying responsible design practices. • Producing detailed plans for manufacturing, including maintenance and repair considerations. • Managing intellectual property concerns.	Intellectual property, responsible design, sustainable design, lifecycle management, manufacturing processes.	**Assessment**: Project work and evaluation focusing on 1.10, 1.11, and 2.8.

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3.2	**Technical Principles and Design & Making Principles** 2.3 Technology and cultural changes 1.13 Enterprise and marketing in the development of products 1.14 Design communication	• How technology and cultural changes affect product design. • The role of enterprise and marketing in product development. • Effective design communication techniques.	• Developing marketing strategies for products. • Communicating design ideas effectively through sketches, CAD models, and presentations. • Adapting designs to cultural trends.	Technology changes, cultural influences, enterprise, marketing, design communication, product development.	**End of Year Assessment**: Final project and evaluation, covering technology, marketing, and design communication principles (2.3, 1.13, 1.14).