

KS4 CURRICULUM: Product Design (YEAR 12)

Curriculum Aim: Learning about Product Design will encourage learners to develop design and thinking skills that open up a world of possibility, giving them the tools to create the future. This specification will excite and engage learners with contemporary topics covering the breadth of this dynamic and evolving subject. It will generate empathetic learners who have the ability to confidently critique products, situations and society in every walk of their lives now and in the future.

Link to Prior Learning: The subject continues to build on the principles of iterative design, and develops theory knowledge on materials and industrial practices from GCSE

Overview

In Graphics you will learn about:

- Core design and technology principles with some emphasis on maths and science skills
- In-depth knowledge of how different materials and manufacturing processes are used to design and make products.
- Non-examination Assessment - Design and manufacture a product which reflects the contextual challenge and meets the needs of chosen stakeholders

	Focus / Topic	Knowledge & Skills	Assessments
Autumn 1	<p>Theory: Identifying requirements and learning from existing products</p> <p>Practical Skills: Working with wood</p> <p>Mock NEA: Ergonomic design</p>	<ul style="list-style-type: none"> ● What can be learnt by exploring contexts that design solutions are intended for? (1.1) ● What can be learnt by undertaking stakeholder analysis? (1.2) ● Why is it important to analyse and evaluate products as part of the design and manufacturing process? (2.1) ● What factors influence the selection of materials that are used in products? (5.1) ● What materials should be selected when designing and manufacturing products and prototypes in product design (5.2) ● Why is it important to consider the properties/characteristics of materials when designing and manufacturing products? (5.3) ● What considerations need to be made about the structural integrity of a design solution? (6.1) ● How can materials and processes be used to make iterative models? (7.1) ● How can materials and processes be used to make final prototypes? (7.2) 	<p>Exam question practice</p> <p>Practical skills portfolio</p>
Autumn 2	<p>Theory: Technological Advances and Wider Issues</p> <p>Practical Skills: Working with wood</p> <p>Mock NEA: Ergonomic design</p>	<ul style="list-style-type: none"> ● How usability is considered when designing prototypes (1.3) ● Why is it important to understand technological developments in Product Design? (2.2) ● Why is it important to understand both past and present developments in Product Design? (2.3) ● What can be learnt by examining lifecycles of products? (2.4) ● How do product designers use annotated 2D and 3D sketching and digital tools to graphically communicate ideas? (4.1) ● How do industry professionals use digital design tools to support and communicate the exploration, innovation and development of design ideas? (4.2) ● What factors influence the selection of materials that are used in products? (5.1) ● What materials should be selected when designing and manufacturing products and prototypes in product design (5.2) ● Why is it important to consider the properties/characteristics of materials when designing and manufacturing products? (5.3) ● What considerations need to be made about the structural integrity of a design solution? (6.1) ● How can materials and processes be used to make iterative models? (7.1) ● How can materials and processes be used to make final prototypes? (7.2) 	<p>Exam question practice</p> <p>Practical skills portfolio</p> <p>Mock NEA presentations</p>

Spring 1	Theory: Design Thinking and Communication Practical Skills: Polymers and Packaging	<ul style="list-style-type: none"> • What factors need to be considered whilst investigating design possibilities? (3.1) • What factors need to be considered when developing design solutions for manufacture?(3.2) • What factors need to be considered when manufacturing products? (3.3) • What factors need to be considered when distributing products to markets? (3.4) • How can skills and knowledge from other subject areas, including mathematics and science, inform decisions 	Exam question practice Practical skills portfolio
	Mock NEA: Problems around School	<ul style="list-style-type: none"> • in product design? (3.5)" • What factors influence the selection of materials that are used in products? (5.1) • What materials should be selected when designing and manufacturing products and prototypes in product design (5.2) • Why is it important to consider the properties/characteristics of materials when designing and manufacturing products? (5.3) • What considerations need to be made about the structural integrity of a design solution? (6.1) • How can materials and processes be used to make iterative models? (7.1) • How can materials and processes be used to make final prototypes? (7.2) 	
Spring 2	Theory: Technical Understanding and Manufacturing Processes Practical Skills: Polymers and Packaging Mock NEA: Problems around School	<ul style="list-style-type: none"> • How do designers use different approaches to design thinking to support the development of design ideas? (4.3) • How can products be designed to function effectively within their surroundings? (6.2) • What opportunities are there through using smart and modern technologies within products? (6.3) • How can materials and processes be used to make commercial products? (7.3) • What factors influence the selection of materials that are used in products? (5.1) • What materials should be selected when designing and manufacturing products and prototypes in product design (5.2) • Why is it important to consider the properties/characteristics of materials when designing and manufacturing products? (5.3) • What considerations need to be made about the structural integrity of a design solution? (6.1) • How can materials and processes be used to make iterative models? (7.1) • How can materials and processes be used to make final prototypes? (7.2) 	Exam question practice Practical skills portfolio
Summer 1	Theory: Health and Safety and Manufacturing Processes Practical Skills: Polymers and Packaging Mock NEA: Problems around School	<ul style="list-style-type: none"> • How is manufacturing organised and managed for different scales of production? (7.4) • How is the quality of products controlled through manufacture? (7.5) • How can designers assess whether a design solution meets its stakeholder requirements? (8.1) • How can product designers and manufacturers assess whether a design solution meets the criteria of technical specifications? (8.2) • What factors influence the selection of materials that are used in products? (5.1) • What materials should be selected when designing and manufacturing products and prototypes in product design (5.2) • Why is it important to consider the properties/characteristics of materials when designing and manufacturing products? (5.3) • What considerations need to be made about the structural integrity of a design solution? (6.1) • How can materials and processes be used to make iterative models? (7.1) • How can materials and processes be used to make final prototypes? (7.2) 	Exam question practice Practical skills portfolio Mock NEA presentations
Summer 2	Theory: Materials NEA: Analysis of Contexts and research	<ul style="list-style-type: none"> • How do designers and manufacturers determine whether design solutions are commercially viable? (8.3) • How can safety be ensured when working with materials in a workshop environment? (9.1) • What are the implications of health and safety legislation on product manufacture? (9.2) • What can be learnt by exploring contexts that design solutions are intended for? (1.1) • What can be learnt by undertaking stakeholder analysis? (1.2) • Why is it important to analyse and evaluate products as part of the design and manufacturing process? (2.1) 	Mock exam: w/b TBC NEA Deadlines Explore (AO1) 1.1 to 1.6 Create DT (AO2) 2.1 19/7/23

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Further Information

- Course code is OCR Design Technology: Product Design H406
- Students must create their own design contexts for the NEA
- Grade Make up:
 - Exam 1: Principles of Product Design - 1 hour 30 mins - 26.7%
 - Exam 2: Problem solving in Product Design - 01 hour 45 mins - 23.3%
 - Iterative design project - Approx. 65 hours - 50%
- Link to Specification: [OCR A Level Design and Technology H404-H406 Specification](#)

