

# YEAR 12 | PRODUCT DESIGN

**The curriculum and assessment of students at this stage of education has been carefully designed to promote deep learning of Product Design...**

The curriculum for A level Design and Technology: Product Design at KS5 focuses on developing students' understanding of core concepts such as design theory, material science, and production techniques. It integrates theoretical knowledge with hands-on practice, encouraging students to explore and experiment with different materials and processes.

**Theoretical Component:** Students study topics like design principles, ergonomics, and sustainability. This involves understanding how design decisions impact functionality, aesthetics, and user experience.

**Practical Component:** Students complete design and make projects, where they apply their knowledge to create innovative products. These projects require them to research, design, prototype, and evaluate their work.

**Assessment:**

- **Written Exams:** Testing understanding of theory and application.
- **Coursework Projects:** Assessing practical skills, creativity, and problem-solving abilities through real-world design challenges.

The goal is to produce well-rounded designers who can apply their learning to create functional and aesthetically pleasing products while considering environmental and user needs.

## HALF TERM 1

### Material Classifications and Properties

**All students will know:**

**how to name specific materials for a wide range of applications, be able to provide detailed and justified explanations of why specific materials and combinations of materials are suitable for given applications (Physical, working and mechanical properties, Product function, Aesthetics, Cost, Manufacture and Disposal.**

**A understanding of material classifications for metals. Timbers. Polymers, compliant materials, composites, smart and new materials.**

**All students will be assessed:**

**In class tasks and private study essays**

**Reading skills needed for this unit:**

**Reading for meaning, comprehension, Skimming, scanning, critical analysis, inference, evaluation,**

**Key vocabulary:**

**Tensile Strength, Compressive Strength, Durability, Flexibility, Hardness, Thermal Conductivity, Density, Elasticity, Malleability, Plasticity**

## HALF TERM 2

### Industry Practices

**All students will know:**

**How to work with a variety of materials in the manufacture of products for mass production including the importance of planning and detailed designing.**

**How to explain why different material as suitable for different applications and their performance characteristics and understand ways enhancements can be used to improve materials working and physical properties.**

**How to work with a variety of material in the school design studio environment including CAD and Cam facilities.**

**All students will be assessed:**

**In class tasks and private study assessments**

**Reading skills needed for this unit:**

**Reading for meaning, comprehension, Skimming, scanning, critical analysis, inference, evaluation,**

**Key vocabulary:**

**Function, Aesthetics, Ergonomics, Usability, Materials, Manufacturing Processes, Sustainability, Design Brief, Performance**

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### HALF TERM 3

#### Design Communication

**All students will know:**

Different design communication methods and be able to explain and demonstrate design proposal, intentions to a range of audiences through report writing, use of graphs, tables and charts, 2D and 3D sketching, use of mixed media and CAD.

**All students will be assessed:**

In class tasks and private study assessments.

**Reading skills needed for this unit:**

**Reading for meaning, comprehension, Skimming, scanning, critical analysis, inference, evaluation,**

**Key vocabulary:**

Sketching, CAD (Computer-Aided Design), Prototyping, Technical Drawing, Annotating, Rendering, Mock-ups, Wireframes, Specifications, Presentation

### HALF TERM 4:

#### Independent Project: Research

**All students will know:**

Through study and critical analysis of existing products develop and understanding of design developments, specification criteria, fitness for purpose, critical assessment of products, society and environmental impacts.

Students will also begin to work on their own projects that meets a brief of their own choosing and aim over project to solve the context.

**All students will be assessed:**

**In class tasks and self study assessment**

**Reading skills needed for this unit:**

**Reading for meaning, comprehension, Skimming, scanning, critical analysis, inference, evaluation,**

**Key vocabulary:**

Experiment, Observation, Case Study, Validity, Reliability, Ethics, Citation, Findings, Conclusion, Recommendations

## HALF TERM 5

### Independent Project: Design Development

**All students will know:**

How computer systems are used to plan and control manufacturing, reduce waste and respond quickly to changes in customer demand.

In the independent project students will be working on initial concepts of ideas and working on the feasibility to develop projects that are fit for purpose and consider a range of external factors.

**All students will be assessed:**

In class tasks and self study assessments

**Reading skills needed for this unit:**

Reading for meaning, comprehension, Skimming, scanning, critical analysis, inference, evaluation,

**Key vocabulary:**

Concept Development, Sketching, Prototyping, Research, Iteration, Constraints

## HALF TERM 6

### Independent project: Realisation of designs

**All students will know:**

**All students will be assessed:**

In class task and self-study assessments

Mock examinations

**Reading skills needed for this unit:**

Reading for meaning, comprehension, Skimming, scanning, critical analysis, inference, evaluation,

**Key vocabulary:**

Specifications, Evaluation, Testing, Refinement, User Feedback, Aesthetics, Ergonomics, Sustainability, Manufacturing, Tolerance

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### HOW STUDENTS CAN BE SUPPORTED AT HOME

[ENGINEERING - DESIGN AND TECHNOLOGY \(technologystudent.com\)](https://www.technologystudent.com)

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### HOW THIS LEARNING WILL BE EMBEDDED ELSEWHERE IN THE CURRICULUM

Links to other KS5 curriculum areas and life long skills

# YEAR 13 | PRODUCT DESIGN

COMING SOON

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## HALF TERM 1 TITLE

All students will know:

All students will be assessed:

Reading skills needed for this unit:

Key vocabulary:

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## HALF TERM 2 TITLE

All students will know:

All students will be assessed:

Reading skills needed for this unit:

Key vocabulary:

[TEXT]

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**HALF TERM 3**  
TITLE

All students will know:

All students will be assessed:

Reading skills needed for this unit:

Key vocabulary:

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**HALF TERM 4**  
TITLE

All students will know:

All students will be assessed:

Reading skills needed for this unit:

Key vocabulary:

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**HALF TERM 5**  
TITLE

All students will know:

All students will be assessed:

Reading skills needed for this unit:

Key vocabulary:

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**HOW THIS LEARNING WILL  
BE EMBEDDED ELSEWHERE  
IN THE CURRICULUM**

[TEXT]

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**HOW STUDENTS CAN BE  
SUPPORTED AT HOME**

[TEXT]

