


PRODUCT DESIGN





DESIGN & TECHNOLOGY

PRODUCT DESIGN

- Thank you for choosing to study **A-level - Product Design** at Penistone Grammar School
- This document is designed to give you a brief overview of the course, some suggested resources/wider reading so you can familiarise yourself with the specification and course requirements and give you an introduction to the first design task of Year 12.



DESIGN & TECHNOLOGY PRODUCT DESIGN

- The course will be delivered by 2 different members of the design & Technology department
 - Mr Dobson – Will deliver the practical NEA (Coursework element) worth 50%
 - Mr Jones – Will deliver the theory side of the course (Exam element) worth 50%

A LEVEL ASSESSMENT OVERVIEW

Component 1: Principles of Design and Technology	Component 2: Independent Design and Make Project
<ul style="list-style-type: none">• Written exam, externally assessed• 2 hours 30 minutes• 50% of qualification• 120 marks	<ul style="list-style-type: none">• Non-examined assessment, internally assessed and externally moderated• 50% of qualification• 120 marks
<p>The paper includes calculations, short-open and open-response questions, as well as extended-writing questions focused on:</p> <ul style="list-style-type: none">• Analysis and evaluation of design decisions and outcomes, against a technical principle, for prototypes made by others• Analysis and evaluation of wider issues in design technology, including social, moral, ethical and environmental impacts.• Students must answer all questions.• Students must have calculators and rulers in the examination <p>Content is Topics 1 - 12</p>	<p>The investigation report is internally assessed and externally moderated.</p> <ul style="list-style-type: none">• Students will produce a substantial design, make and evaluate project which consists of a portfolio and a prototype• The portfolio will contain approximately 40 sides of A3 paper (or electronic equivalent) <p>There are four parts to the assessment:</p> <p>Part 1: Identifying Opportunities for Design</p> <p>Part 2: Designing a Prototype</p> <p>Part 3: Making a Prototype</p> <p>Part 4: Evaluating own Design and Prototype</p>



EXAM BOARD INFORMATION

Specification – Edexcel Design & Technology – Product Design (2017)

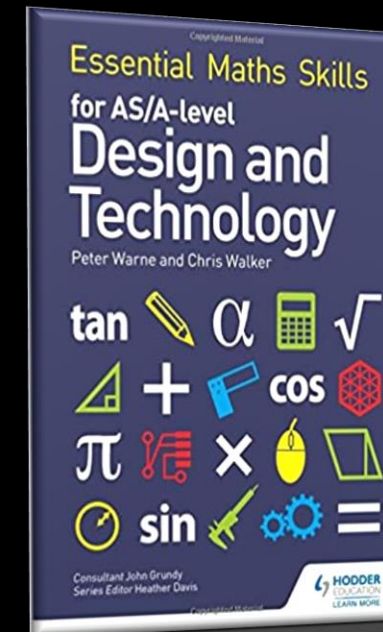
<https://qualifications.pearson.com/en/qualifications/edexcel-a-levels/design-technology-product-design-2017.html>

Resources for Product Design

Product Design Textbook

Essential Maths skills for D&T

You will have access
to a digital copy of these
textbooks in school





RECOMMENDED EQUIPMENT

- A large lever arch file and file dividers to keep work organised into sections
- An A3 sketch book/A3 portfolio display folder for A3 design work, sketching and storing coursework pages
- **Basic essential equipment – Pen, HB pencil, Eraser, 300mm rule, pencil sharpener, compass, calculator and maths set**
- **Recommended equipment – Black Fine liner, 0.5mm mechanical pencil, set of good quality coloured crayons, highlighters, Circle template, ellipse template, set square and 30/60 square**

YEAR 12 DESIGN TASK

Your first project will be a redesign and manufacture of an existing desk lamp

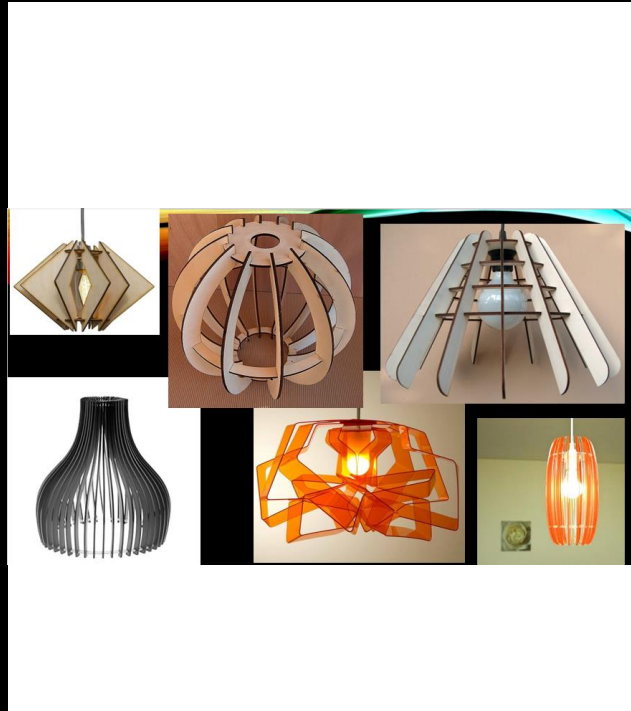
- This project is designed to enhance and develop your :
 - Design thinking, creativity, innovation and problem solving skills
 - Designing, sketching and communication skills
 - Modelling skills (both 2D and 3D manual and CAD)
 - Introduce advanced materials properties and manufacturing processes
 - Improve your CAD skills and manufacturing abilities
 - Improve time management
 - Produce high quality products
 - Evaluating products and suggesting areas for development and improvement

BASIC LAMP DESIGN

Design Challenge

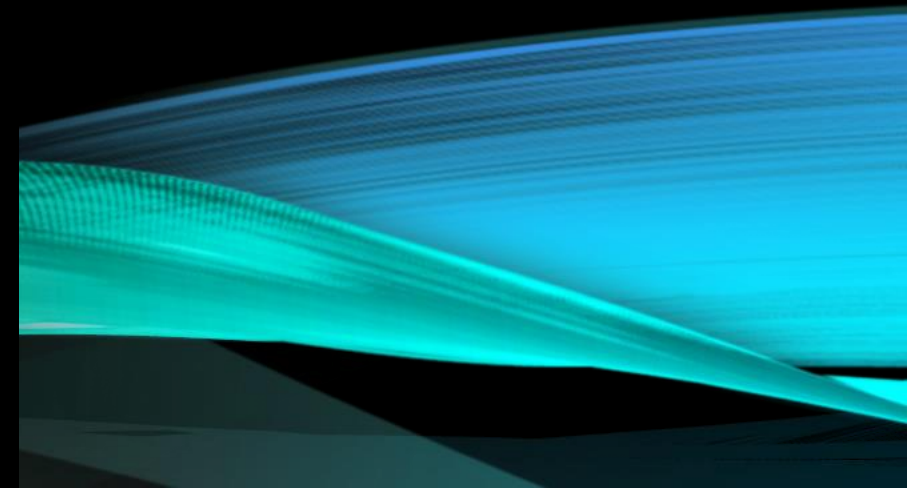
- Your first task will be to redesign the lamp shade opposite so that it can be manufactured using only a laser cutter and can be assembled or slotted together without the use of any adhesives
- The shape, style and material used will be entirely up to you as long as it can be cut on our school laser cutter
- All work to be completed on PowerPoint – sketches and images will need to be photographed and uploaded to your PowerPoint

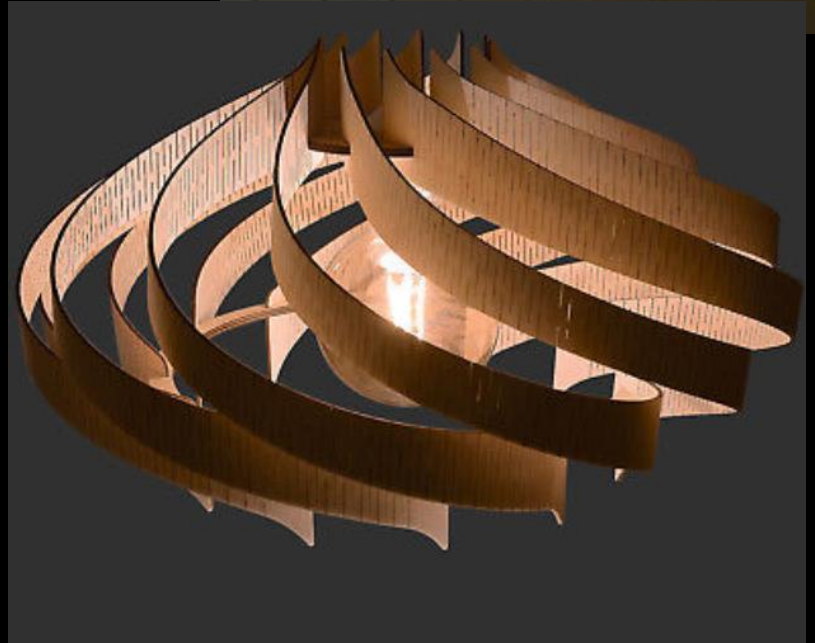
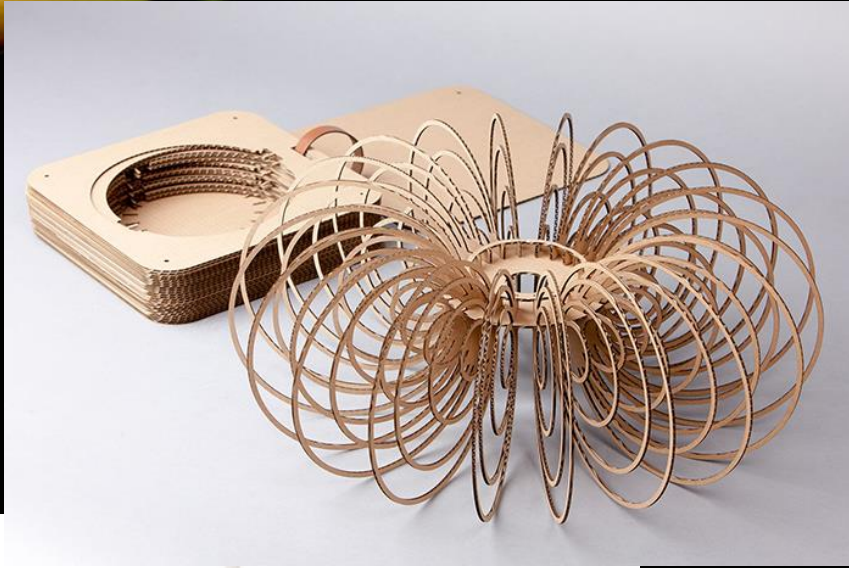




TASK 1

Create a design mood board of existing products







→ These measurements will help me to design my lamp because I will know how to attach my shade onto the base/neck

the diameter of the holder had to be the same as my stand and shade to ensure everything fits

Bulb Holder Dimensions

The diagrams show the following dimensions:

- Lamp Base:** Top diameter 1.5, bottom diameter 2.5, height 3.5.
- Bulb Holder:** Top diameter 1.5, middle diameter 2, bottom diameter 2.5, height 2.5.
- Shade:** Top diameter 2.5, bottom diameter 3.5, height 3.5.

This data will help me
to design my lamp
as I can ensure there's
enough clearance

so I can turn
the lamp on and off
and replace
the bulb.

18cm

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70mm
90mm
100mm
110mm
120mm
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990mm
1000mm

this means anyone
can use the lamp
as it fits my hand,
min. space for extra
if larger people used
it.


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had to ensure it
could be turned on
and off

added a silver
spacer to outside

The collage consists of 15 individual images arranged in a grid-like fashion. The images include:


- Example: A17 - 120" w 20" Bulb:** A diagram of a standard incandescent bulb with height and width measurements.
- BULB LENGTH & BULB WIDTH:** Two diagrams showing how to measure a bulb's length and width.
- Auraglow 2.4GHz Remote Control:** A small image of a remote control.
- Incanescent Light Bulb Types:** A collection of various incandescent bulb shapes and sizes.
- Incanescent light bulb - V:** A diagram showing the height and width of a standard incandescent bulb.
- difference between E26, E27 and A19 ...:** A diagram comparing the base sizes of E26, E27, and A19 bulbs.
- How to Measure a Light Bulb:** A diagram showing the measurement of a bulb's length and width.
- Auraglow 2.4GHz Remote Control ...:** A small image of a remote control.
- Incanescent Light Bulb Types (With ...:** A collection of various incandescent bulb shapes and sizes.
- Incanescent light bulb - V:** A diagram showing the height and width of a standard incandescent bulb.
- A21 Bulbs ...:** A diagram showing the measurement of an A21 bulb.
- replacing bayonet GLS bulbs ...:** A diagram showing the measurement of a bayonet GLS bulb.
- My Green Lighting ...:** A diagram showing various energy-saving light bulb options.
- Light Bulb Size Chart & Series Guide ...:** A diagram showing various light bulb sizes and series.
- Standard round Colored Festoon bulb ...:** A diagram showing the measurement of a standard round colored festoon bulb.
- Screw Bases:** A diagram showing various screw base types.
- Lamp Bases in All Shapes and Sizes ...:** A diagram showing various lamp base types.
- HyperSelect 9W LED Light Bulb A19 - E ...:** A diagram showing the measurement of a HyperSelect 9W LED light bulb.
- Light Bulb Types | Lighting Guide ...:** A diagram showing various light bulb types.
- Light Bulb Sizes, Shapes and ...:** A diagram showing various light bulb sizes and shapes.


- 

SMJ White Bayonet cap (B22)
Lampholder


★★★★★ (6) [Write a review](#)


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Anthropometric/ergonomic data

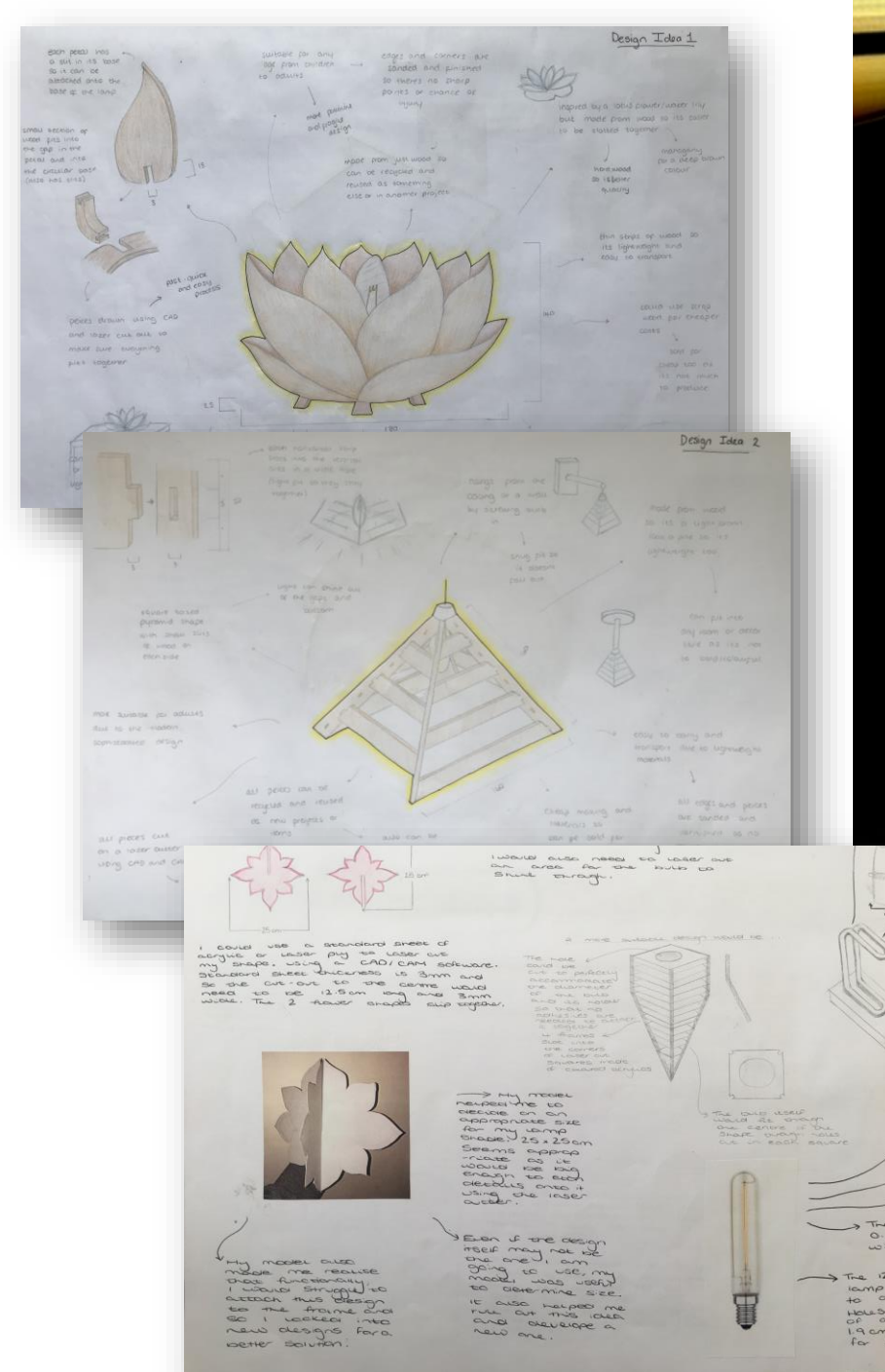
- Hand/finger sizes to allow for switching the lamp on and off and easy removal and replacing of bulbs etc.

TASK 3 - DESIGNING

Produce 4 different design ideas pages

Try to include a range of communication techniques

- 3D/Isometric
- Exploded views
- Detailed views
- Construction methods
- Detailed annotation



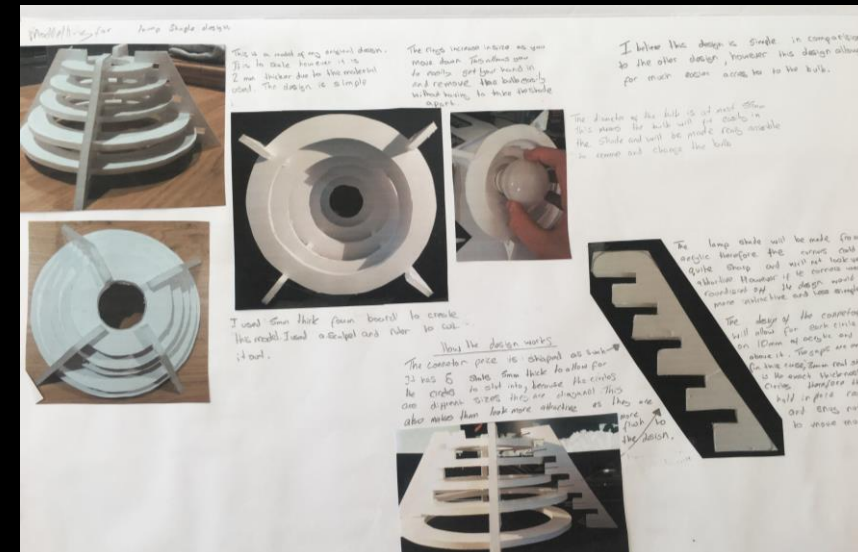
TASK 4 - MODELLING

Model one of your design ideas in cardboard or suitable modelling material

This model should:

- be actual size (to scale)
- Test that the design is workable
- The design will slot together easily
- Allows the user to easily remove and replace the bulb

You should evidence this work through a series of annotated photographs and sketches



BE CREATIVE...

You can make a start on this work as soon as possible

Feel free to e-mail any questions or queries you may have to:

bDobson@penistone-gs.uk

If I don't see you before we return in September have a great summer and stay safe

Thanks Mr Dobson & Mr Jones

