

Summer Work for A Level DT: Product Design students 2017

Specification at a glance

This qualification is linear. Linear means that students will sit all their exams and submit all their non-exam assessment at the end of the course. It is broken down into 3 parts,

Subject content

- 1. Technical principles - examined
- 2. Designing and making principles - examined
- 3. Non Exam Assessment (NEA) - coursework

There are two written exam papers for each element. In preparation for the first paper, Technical Principles, the work you need to complete is listed below.

3.1 Technical principles

3.1.1 Materials and their applications

Content	Potential links to maths and science
<p>Students are expected to be able to name specific materials for a wide range of applications.</p> <p>They must also be able to provide detailed and justified explanations of why specific materials and combinations of materials are suitable for given applications, with reference to:</p> <ul style="list-style-type: none">• Physical and mechanical properties and working characteristics• Product function• Aesthetics• Cost and manufacture and disposal.	<p>Understand the appropriate use of materials including polymers, composites, woods and metals based on their physical and working characteristics such as:</p> <ul style="list-style-type: none">• malleability• toughness• hardness• resistance to corrosion and degradation• thermal conductivity• electrical conductivity.• Calculation of quantities of materials sizes and costs.

Using the information provided on the previous page, please research and answer the following questions on A4 paper. Add your name to the page and the date completed.

- 1) Study the picture of the aluminium garden chair below and answer the questions listed.



- a) Explain in detail why aluminium is a suitable material for the garden chair.
- b) The garden chair has been made by forming and fabrication processes. Use notes and diagrams, drawn in pencil to describe the most appropriate methods of batch producing chairs like the one shown above.
- c) Describe in detail an appropriate method of finishing the chair. In your answer, you should refer to a specific finish and explain why it is suitable.

2)

- a) For each of the following materials, explain in detail why it is suitable for the product listed.

Your answer should make reference to:

- Product function
- Product aesthetics
- Product manufacture

Material	Product
i) Polyethylene Terephthalate (PET)	Mineral water bottle
ii) Veneered Medium Density Fibreboard	Dining table
iii) Recycled unbleached card	Liner for mobile phone packaging

6)

b) Recycled unbleached card is the material suitable for the liner of mobile phone packaging. Name an alternative material that could be used and give one reason why the material would be suitable.

7) The image below is of a children's polypropylene chair designed for use in play areas. It is suitable for children aged between 2-3 years.



Answer the following questions:

- a) The chair is made from polypropylene. Explain in detail, why this polymer is suitable for the chair.
- b) The chair has been rotationally moulded. Use notes and diagrams to describe this process to make the actual chair.
- c) Use notes and diagrams to critically evaluate the anthropometrics. Ergonomic and safety aspects of the chair. You should refer to specific anthropometric data for children, available on the internet.

All of the questions listed above can be researched using the internet or textbooks available either in the library or perhaps at home. Please do as much background reading about each question as you can to support your expected learning for next year.