

Design & Technology



**Bishop
Perowne**

Church of England College

Endeavour Forever

Revision Guidance

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Course Details

The specification you are studying is **Design & Technology 8552** with examination board **AQA** and the qualification is made up of **Two** different units:

Paper 1

What's assessed

- Core technical principles
- Specialist technical principles
- Designing and making principles

In addition:

- at least 15% of the exam will assess maths
- at least 10% of the exam will assess science.

How it's assessed

- Written exam: 2 hours
- 100 marks
- 50% of GCSE
- May/June 2022

Questions

Section A – Core technical principles (20 marks)

A mixture of multiple choice and short answer questions assessing a breadth of technical knowledge and understanding.

Section B – Specialist technical principles (30 marks)

Several short answer questions (2–5 marks) and one extended response to assess a more in-depth knowledge of technical principles.

Section C – Designing and making principles (50 marks)

A mixture of short answer and extended response questions

Non-exam Assessment (NEA)

What's assessed

Practical application of:

- Core technical principles
- Specialist technical principles
- Designing and making principles

How it's assessed

- Non-exam assessment (NEA): 30–35 hours approx.
- 100 marks
- 50% of GCSE
 - Due date: main folder and final prototype 22nd march (final write up 20th April)

Task(s)

- Substantial design and make task
- Assessment criteria:
 - Identifying and investigating design possibilities
 - Producing a design brief and specification
 - Generating design ideas
 - Developing design ideas
 - Realising design ideas

- Analysing & evaluating
- In the spirit of the iterative design process, the above should be awarded holistically where they take place and not in a linear manner
- Contextual challenges to be released annually by AQA on 1 June in the year prior to the submission of the NEA
- Students will produce a prototype and a portfolio of evidence
- Work will be marked by teachers and moderated by AQA

Links to exam board specification:

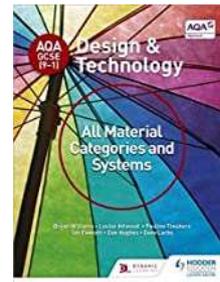
<https://www.aqa.org.uk/subjects/design-and-technology/gcse/design-and-technology-8552>

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Additional Textbooks and Revision resources

In the first instance, we would encourage students to utilise their “Collins” revision guides which they have purchased but please see details below of recommend texts:



Sample papers, revision resources & graded portfolios will be made available on the school intranet

[T:\Design and Technology\KS4\Design & Technology] Students have also been provided with a USB stick that has a number of resources on it including three sample exams and mark schemes.

Other sources:

www.technologystudent.com (comprehensive online resource)

www.focuslearning.co.uk (App that can be accessed on most platforms inc. phones)

Key dates (*Provisional*)

25th March 2022: NEA portfolio in for final marking

May 2022 (date to be confirmed): Paper 1

Subject specific vocabulary

These are definitions of key terms used in our GCSE Design and Technology specification (8552). Students should be familiar with and gain understanding of these terms.

Automation

The use of control systems for operating equipment such as machinery and processes in factories; this reduces human input.

Client

The person/people/audience being designed for and whose needs are being met.

Commercial process

Manufacturing method used to produce products in quantity.

Commercial product

A product intended to make money.

Conceptual stages (of design)

Use of models, sketches and computer aided design (CAD) to show the design of a product as it develops.

Continuous improvement

The identification of improvements and subsequent evolution of products.

Co-operative

A group of people united to meet common social, economic or cultural need through a jointly-owned business.

Crowd funding

A large number of people who raise money for a project or venture.

Ecological

The consideration of the environment and the impact that design can have on it.

Ethics

Moral decisions when designing and manufacturing.

Fabricate

Using processes such as cutting, bending, joining and assembly to produce products.

Finite

A material or source which will one day run out.

Functionality

How well a product carries out its purpose.

Fusibility

How well a material is converted by heat into a molten or liquid state dependent on its melting point.

Iterative design

Design methodology based on a cyclical process of analysing, prototyping and testing to refine a product. Each iteration and result starts the process again.

Lean manufacturing

Reducing and eliminating waste in a manufacturing process.

Life cycle assessment

A technique used to assess the environmental impact of a product at all stages of its manufacture, use and disposal.

Market pull

Products developed to meet the needs of society or a specific section of the market.

Mechanical device

Mechanism which produces and/or changes movement.

Nesting

The tessellation of shapes or nets on a material to minimise the amount of waste during manufacture.

Physical properties

Properties that refer to the actual matter that forms the material (e.g. insulation, conductivity, fusibility).

Planned obsolescence

Deliberately designing the lifecycle of a product to be short, forcing the user to update their products quickly.

Primary source

Research collected first-hand by a designer to develop a product or idea.

Primary source (of materials)

Where materials originate (polymers from oil etc) and the raw material that needs to be converted into a workable form.

Product

Item or artefact developed for an intended audience to solve a problem or meet a need.

Prototype

An early model or sample of a product used to test a concept.

Schematic diagram

Graphic symbols or simplistic diagrams used to convey a system (e.g. an underground map).

Social footprint

The impact a product or individual has on society.

Social responsibility

The idea that a designer needs to evaluate the impact their product could have on society and take action to make this better.

Stock form

The standard shape and size of materials as they are bought.

Technology push

Technological discoveries used to drive the development of a product.

Tolerance

The minimum and maximum measurements that can be accepted when manufacturing.

User

The person/people who make use of the product that has been developed by a designer.

User centred designer

Design development with the user at the centre of the focus. The designer tries to envisage how the product will actually be used, as opposed to focusing on other areas such as cost.

Working properties

How a material reacts to external forces

Revision Strategies:

Your Design & Technology exam is based on the following areas:

1. Core technical principles (Knowledge & Understanding)
2. Specialist technical principles
3. Designing and making principles
4. Key vocabulary (you need to understand this to access the questions)

Revision strategies that help with these areas:

| | |
|---|---|
| Knowledge & understanding (remembering facts!) | <ul style="list-style-type: none">• Flashcards• Testing a partner• Post-it notes• Using the question and answers in your revision guide and getting your parent or carer to test you!• Sketch the answers/find illustrations that will help you remember a principle, process or fact• Make up a comical rhyme or mnemonic |
| Specialist technical principles | <ul style="list-style-type: none">• Watch programmes like the “factory” “how it’s made” that show manufacturing processes• view everyday sources of information e.g. TV news/current affairs what are current design, social, ecological, environmental issues?• Google key topics. |
| Designing and making principles | <ul style="list-style-type: none">• Balancing arguments for and against• Practice analysing a product – what does it do? how well does it do it? how does it work? could it work better? How could it be improved?• A debate with your friends!• Practice formal drawing – Isometric/Orthographic• Practice sketching• Practice exam questions/ make up your own |
| Key Vocab | <ul style="list-style-type: none">• Writing out key terms/definitions, covering and testing your answers• Playing games (e.g. snap) with key terms/definitions |

NEA – Work to be completed:

1. Exploration of the theme/context (mind map, background research, analysis/evaluation of existing products, statement of need and Design Brief.
2. Evaluation of research/conclusions drawn, a look at the work of other designers that may be relevant to the styling or practicalities of your design, consideration of wider issues such as the social, moral, cultural, environmental impact of your design, client profile/questionnaire, target market for your product.
3. Refining of brief in the light of client feedback, Specification, initial ideas in sketch form and first concept models (these can be made from card, paper or other light weight modelling materials or can be CAD renderings)
4. Developed ideas, second/third prototype (can be part of the final idea or scale model of the whole item) Working drawings & Manufacturing specification. Evaluation, modification and proposals for the way forward.
5. Final proposal/prototype (can be full size or scaled. Must be capable of being evaluated against your specification).
6. Testing and evaluation of final proposal, other people's views sort, final write up. (this is the easter break)

A checklist of the above will be published in the 2nd half of the autumn term so that students and parents can track what work has been completed and what still needs to be done.

25th March 2022– all work to be submitted for moderation.

Practice Papers

Hints & tips:

- Find a quiet area in which to work
- Make yourself comfortable (*take a drink/something to eat i.e. sweets*)
- Set yourself a realistic time frame in which to answer the questions (*two one-hour sessions at this stage is probably best*). (*Set the timer on your phone or get someone to let you know when the time is up*)
- Read the paper through in its entirety before answering any questions. Then answer all questions starting with those that you **know** the answers to.
- Make sure that you have read the instructions
- Answer **all** multiple-choice questions (*whether you know the answers or not*)
- Give yourself a break – then open the answer booklet and work your way, systematically through the questions, writing in the correct answers where you have gone wrong or left a blank. (*Do this in green pen*)

