

Design & Technology

“Design is intelligence made visible” Alina Wheeler

Design & Technology allows all pupils to engage in problem solving, critical analysis, being creative, developing ideas through 2D and 3D modelling, to make and evaluate.

The study, design, development, application, implementation, support and management of computer and non-computer based technologies for the express purpose of communicating product design intent and constructability.

What is studied at KS3- projects based on the iterative design process

All KS3 teaching is through projects based on the iterative design process, with supporting theoretical knowledge. These increase in complexity from year 7 through to year 9. The projects are one or several of the following

Make only – MO

Design only – DO

Design & Make - DMA

Year	Technology		Textiles	
7	Stationary display stand	DMA	Night Light Tie dye pencil cases	DMA MO
8	Art Deco pewter pendant/key fob	DMA	Wild and whacky winter hats	DMA
9	Graphics	Product Design	Pattern grading	MO

	Promotional Mug packaging Architectural modelling	DMA DMA	Pop art 3D acrylic clocks Streamlining speakers Post-Modernist Memphis mirrors	DMA MO DMA	Decorative surface design Garment manufacture	DMA MO
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What is studied at KS4 – Edexcel GCSE in Design & Technology

The specification is 50% examination and 50% Non-examination Assignment (NEA)

The examination element is divided into two areas:- Core theory and a chosen material theory. We offer 3 material areas as follows

Subject	Material
Graphics	Paper and board
Product design	Polymers
Textiles	Fibre and textiles

Within the examination Core theory is 40% and the chosen material is 60%.

The course is divided into the three areas,

Core theory - 1hour/fortnight from September year 10 through to February in year 11.

Topics covered are:-

1.1 The impact of new and emerging technologies

1.2 How the critical evaluation of new and emerging technologies informs design decisions; considering contemporary and potential future scenarios from different perspectives, such as ethics and the environment

1.3 How energy is generated and stored in order to choose and use appropriate sources to make products and power systems

1.4 Developments in modern and smart materials, composite materials and technical textiles

1.5 The functions of mechanical devices used to produce different sorts of movements, including the changing of the magnitude and the direction of force.

1.6 How electronic systems provide functionality to products and processes, including sensors and control devices to respond to a variety of inputs, and devices to produce a range of outputs

1.7 The use of programmable components to embed functionality into the products in order to enhance and customise their operation

1.8 The categorisation of the types, properties and structure of ferrous and non-ferrous metals.

1.9 The categorisation of the types, properties and structure of papers and board

1.10 The categorisation of the types, properties and structure of thermoforming polymers and thermosetting polymers

1.11 The categorisation of the types, properties and structure of natural, synthetic, blended and mixed fibres and woven, non-woven and knitted textiles

1.12 The categorisation of the types, properties and structure of natural woods, hardwoods and softwoods and manufactured boards.

1.13 All design and technological practice takes place within contexts which inform outcomes

1.14 Investigate environmental, social and economic challenges when identifying opportunities and constraints that influence the processes of designing and making.

1.15 Investigate and analyse the work of past and present professionals and companies in order to inform design

1.16 Use different design strategies to generate initial ideas and avoid design fixation.

1.17 Develop communicate, record, and justify design ideas, applying suitable techniques.

Material theory – in year 10 m2hrs /fortnight from September to June

Topics covered:-

1 Design context

2 The sources, origins, physical and working properties of thermoforming and thermosetting polymers and their social and ecological footprint

3 The way in which the selection of thermoforming and thermosetting polymers is influenced.

4 The impact of forces and stresses on thermoforming and thermosetting polymers and how they can be reinforced and stiffened.

5 Stock forms, types and sizes in order to calculate and determine quantity of thermoforming and thermosetting polymers required

6 Alternative processes that can be used to manufacture thermoforming and thermosetting polymer products to different scales of production.

7 Specialist techniques, tools, equipment and processes that can be used to shape, fabricate, construct and assemble a high-quality thermoforming and thermosetting polymers prototype.

8 Appropriate surface treatments and finishes that can be applied to thermoforming and thermosetting polymers for functional and aesthetic purposes.

Non-Examination Assignment

2 mini Non-Examination Assignment style projects - 2hrs/fortnight from September to June in year 10.

The formal NEA starts in June of year 10 and is completed in February in year 11. A formal evaluation takes place in year 11 through the annual exhibition in March.

Revision of all theoretical materials for the examination from February through to May in year 11.

What is studied at KS5- AQA A' Level Fashion & Textiles

The specification is 50% examination and 50% Non-examination Assignment (NEA).

The examination involves 2 papers:-

Paper 1 – Technical principles

Paper 2 – Designing and making principles

Theoretical Knowledge

Year 12 – 5 hrs / fortnight Paper 1- sections 1.1- 1.9 as listed below

- 1.1 Materials & their applications
- 1.2 Performance characteristics of materials
- 1.3 Methods of joining and using components
- 1.4 The use of finishes
- 1.5 Enhancement of materials
- 1.6 Modern industrial and commercial practice
- 1.7 Digital design and manufacture
- 1.8 Requirements of textile and fashion design & development
- 1.9 Health & safety

Year 13- 4 hrs /fortnight Paper 1 – sections 1.10 -1.14 and paper 2 – sections 2.1 – 2.10 as listed below from September through to February

Paper 1 continued

- 1.10 Protecting intellectual property
- 1.11 Design manufacture maintenance, repair and disposal
- 1.12 Feasibility studies
- 1.13 Enterprise and marketing in the development of products
- 1.14 Design communication

Paper 2

- 2.1 Design methods and processes
- 2.2 Design theory
- 2.3 How technology and cultural changes can impact on the work of designers
- 2.4 Design processes
- 2.6 Selecting appropriate tools, equipment and processes

- 2.7 Accuracy in design and manufacture
- 2.8 Responsible design
- 2.9 Design for manufacture and project management
- 2.10 National and international standards in product design

Revision of all exam theory from February to May.

Non-examination assignment

Year 12- 4hrs/fortnight from September to June

2 mini NEA style projects

Waistcoat project incorporating the design of 4 decorative fabrics

Garment project incorporating:- Biomimicry, CAD/CAM and electronics

June start the formal NEA and is completed in February in Year 13. A formal evaluation takes place in year 11 through the annual exhibition and Fashion show in March.