

Key Stage 4

DESIGN & TECHNOLOGY – KS4

We provide a high-quality design and technology education that should give students opportunities to create, innovate, design, make and evaluate a variety of high quality products that are fit for purpose. Students will continue to work on the technical skills and craftsmanship to execute practical tasks, thereby developing confidence to increase their skills, knowledge and competence in using materials, machinery, techniques and processes. Students develop their practical skills and use these safely with a range of resistant and non-resistant materials, drawing media tools and equipment, in both 2D and 3D. They are shown how to communicate their ideas and designs skillfully and accurately in 2D and 3D, using a variety of techniques, including digital technology, manufacture in a range of material areas and CAD. They should know about good design, everyday products and use correct technical terminology with Design & Technology literacy. They will be allowed to investigate and analyse the rich history of design and technological innovation and the work of others, including iconic designs, to inform their own work. They will be shown developments in design and technology and the responsibilities of designers, including environmental responsibilities.

Extra-curricular opportunities

Use of workshops with teacher supervision, Tournaments and Events.

How you can support your child's progress:

Encourage all work to be completed to meet the set deadlines. Purchase of essential, advanced graphics equipment to ensure high quality presentation skills are developed. Purchase of the recommended revision material is strongly recommended to support all aspects of the course but in particular to aid the development of theoretical underpinning knowledge. Regular revision of the resources on Moodle which support the work in class.

Year	Learning	Assessment
Year 10	<p>Sketching Skills, Projects & Theoretical Underpinning</p> <p>Term 1, Term 2 and Term 3 until June</p> <p>Projects to include the following skills where appropriate:</p> <p>Analysis, understand inspiration for design, Brief, product analysis, Sketching Skills, Research, user, client, Specification, sketching & generating ideas, Design Ideas generation & presentation skills, Development, 3D sketching / development, Modelling, Working Drawings, accurate drawing of Final Design, Orthographic projection laser cutting, CAD, CAM, One off & batch manufacture, patterns (surface decoration) Finishing & Assembly, Evaluation, Testing, Presentation & Evidencing.</p>	<p>Practical Outcome (Formative & Summative): Research, Analysis, Design Ideas Sketching & Presentation skills, 3D Sketching, Initial Design Ideas, Development, Modelling, Final Design, CAD/ CAM skills, Finishing, Assembly, Components, Detailing, Testing and Evaluation, Manufacture & Quality of Finish.</p> <p>Theoretical underpinning: Specialist Technical Principles.Each</p>

Year
11

Theoretical Underpinning: Core Technical Principles: New and emerging technologies; Energy generation and storage; Developments in New materials; Systems approach to designing; Mechanical Devices; Materials and their working Properties. Timber, Plastics & Paper and Card: Selection of Materials or components; Forces and Stresses; Ecological and Social Footprint; Sources and Origins; Using and working with materials; Stock forms; Types and sizes; Scales of production; Specialist Techniques and processes & Surface treatment and finishes

Sketching skills to include:

- Instruction regarding sketching equipment – pencil, fine line pens
- All freehand sketching on A3 Paper- Sketching skills to include:
 - Basic 2D shapes
 - Basic Rendering using appropriate media – 2D shapes
 - Converting 2D to 3D basic shapes sheet
 - Basic rendering – 2D to 3D shapes
 - Enhancement using range of techniques – add pencil **weight of line**, fine line pen, outline pen, markers – colouring in, rendering (using light)
 - Isometric Sketching(examination prep only)
 - 2 Point Perspective sketching – boxes (demo)
 - 2 Point Perspective sketching – crating boxes and forming into shapes 2 Point perspective sketching 3D forms
 - Addition of shadows/linking boxes
 - Styrofoam modelling of pre-set product / form – to learn modelling skills

Term 3 June onwards

NEA Major Project

Theoretical underpinning: Specialist technical principles.

Contextual design challenges linking to NEA.

NEA Major Project:Portfolio, Research, Brief and Design Specification

Term 1 – NEA Major Project

NEA Major Project: Portfolio, Design Ideas, Development, Modelling, CAD skills, Further Development, Final Design concept, Modelling Final Design (CAD).

topic is assessed at the end using exam questions.

Core Technical Principles.

Each topic is assessed at the end.

Skills and extended writing tasks are assessed separately.

A mock exam is given at the end of the year which includes exam questions from each taught topic

NEA

Contextual challenge released on June 1st

AO1 Identifying & investigating design possibilities & Producing a Design Brief & Specification

Theoretical

underpinning: Continue with Core technical Principles.

Each topic is assessed at the end using exam questions.

Skills and extended writing tasks are assessed separately.

A mock exam is given which includes exam questions from each taught topic

Generating Design Ideas, Developing Design Ideas,

	<p>Term 2 – NEA Major Project</p> <p>NEA Major Project: Portfolio, Completion of CAD, Evidence of CAD, Manufacture of Coursework, Finishing, Completion & Detailing of manufactured outcome, Submission of Portfolio & manufacture, Examination Preparation</p> <p>Term 3 – Examination Preparation</p> <p>Examination Preparation through test papers, questions, practise papers, use of textbook.</p>	<p>Realising Design Ideas, Modelling, Testing, Further Development, Final Design Solution, Planning for Manufacture, Design for CAD</p> <p>AO2 Realising Design Ideas</p> <p>AO3 Analysing and evaluating, realisation, finishing, assembling, Testing & Evaluation, Submission of final Portfolio & completed (working) manufactured work</p> <p>Revision, Test papers/questions, examination practise.</p>
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Every student at Key Stage 4 must study a Design & Technology subject.

There are two different subject areas to choose from:

- **AQA GCSE FOOD PREPARATION AND NUTRITION**
- **AQA GCSE DESIGN & TECHNOLOGY** - with a specialism in one of the following:
 - GRAPHIC PRODUCTS
 - RESISTANT MATERIALS

DESIGN & TECHNOLOGY GCSE:

LEVEL: GCSE AQA (8552)

COURSE COMPONENTS:

Non-exam Assessment (NEA): 50%

TERMINAL EXAMINATION: 50%

COURSE CONTENT:

- Complete a range of assignments that respond to design situations
- Develop a range of graphic/drawing techniques
- Develop a range of modelling techniques and manufacturing processes
- Use of computer graphics, computer aided design, computer aided manufacture
- Develop an awareness of industrial practices

Non-exam Assessment (NEA) DETAILS: (50%)

Students must produce a Final Major Project which demonstrates their design, make and evaluation abilities.

- 10% is allocated to practical work
- 40% is allocated to research, design and evaluation

What is assessed:

Practical application of:

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

How it is assessed

- Non-exam assessment (NEA): 30–35 hours approximately
- 100 marks

WRITTEN EXAMINATION DETAILS: (50%)

What is assessed:

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

How it is assessed

- Written exam: 2 hours
- 100 marks
- 50% of GCSE

Questions

Section A - Core technical principles (20 marks). A mixture of multiple choice and short answer questions

Section B - (30 marks)

Several short answer questions and one extended response

Section C - Designing and making principles (50 marks)

A mixture of short answer and extended response questions including a 12 mark design question.

The GCSE will be graded 9-1

SPECIAL REQUIREMENTS:

- Students will require drawing and writing equipment and an A3 folder
- In some cases some students may wish to buy special materials of their own

POSSIBLE CAREER LINKS GRAPHIC PRODUCTS:

Graphic Designer, Engineering, Advertising, Fashion, Interior Design, Architect, Product Design.

For further information see **Miss Brown/ Mrs Turner**

POSSIBLE CAREER LINKS RESISTANT MATERIALS:

Apprenticeships, Engineering, Architect, Product Design, Manufacturing Engineer, Construction.

For further information see **Mr Greaves/ Mrs Turner**

DESIGN & TECHNOLOGY: FOOD PREPARATION AND NUTRITION GCSE

GCSE AQA FULL COURSE (8585)

COURSE COMPONENTS:

COURSE CONTENT:

The new specification for Food Preparation and Nutrition equips you with the knowledge, understanding, skills and encouragement you need to learn to cook. The course will give you the ability to apply principles of food science, nutrition and healthy eating.

The theory is divided into 5 key sections:

- Food, Nutrition and Health
 - Food Science
 - Food Safety
 - Food Choice
 - Food Provenance

CONTROLLED ASSESSMENT DETAILS: (50%)

Task 1 Food investigation 15%

A written or electronic report (1,500-2,000 words) including photographic evidence. Students looking at the working characteristics, functional and chemical properties of food.

Task 2 Food preparation assessment 35%

Students to prepare cook and present a final menu of three dishes cooked within 3 hours.

A written or electronic report including photographs.

WRITTEN EXAMINATION DETAILS: (50%)

- Students will sit one examination paper, of which there is a single tier
- The exam will be 1 hour and 45 minutes
- The GCSE will be grades 9-1
- Multiple choice 20 marks
- Five questions each with a number of sub questions 80 marks

SPECIAL REQUIREMENTS:

Students must provide their own ingredients on specific dates.

POSSIBLE CAREER LINKS:

Research and Development, Food Manufacture, Health and Safety, Product Design, Hospitality and Catering Industry, Food Science and Nutrition.

For further information see **Mrs Gregory/Mrs Thomas**.

Please see the images below for examples of GCSE controlled assessment projects that the students have created: