

# DESIGN AND TECHNOLOGY

## GCSE

### Course Overview

Students taking this subject will learn common core Design and Technology content but will specialise in specific material areas. Although there are practical elements to the subject, theory-based work will take priority in Year 10 to build up the necessary knowledge for the final examination. The focus in Year 11 will be the school-based assessment component.

Students will learn all aspects of design and technology then will specialise in a material area. On this course you will:

- ★ solve problems in a creative way using a variety of materials and techniques
- ★ design and make a prototype that meets a set design brief
- ★ use a combination of wood, metal, plastic and smart materials
- ★ use CAD/CAM – utilising design software such as 2D design and Pro DESKTOP including use of the laser cutter

### Examination Board and Assessment

AQA Examination Board			
Non-exam assessment Practical application of:		30-35 hours	50%
<ul style="list-style-type: none"> <li>★ Core technical principles</li> <li>★ Specialist technical principles</li> <li>★ Designing and making principles (100 marks)</li> </ul>			
<b>Paper 1:</b>	Core technical principles (20 marks)	Written examination 2 hours	50%
Section A	Specialist technical principles (30 marks)		
Section B	Designing and making principles (50 marks)		
Section C			

### Is this course right for me?

Students who enjoy both the theory side of design and the practical element of creating will enjoy DT.

## **TECHNOLOGY DEPARTMENT: STATEMENT OF CURRICULUM INTENT**

### **INTENT**

Our intention in the Technology department is to enthuse student's creativity and give them experiences which tool them up to be able to solve real and relevant problems within a variety of contexts. We intent to deliver an ambitious curriculum which is accessible to all, which provides the widest possible range of opportunities for all students, no matter their circumstances to become self-motivated, confident and creative learners. Students will develop technical and practical skills valued by employers and our main priority is for students to be problem solvers who are resilient whilst taking risks.

As a department we believe that students learn best by practical experience, experimenting and taking risks. We achieve this through inspiring lessons and imaginative teaching which makes connections to industry and further education. Our passion is to deliver a well-rounded curriculum in which all students gain confidence to take their learnt skills outside of the classroom. Our main areas of focus are practical skills and technical knowledge, with these combined skills we believe students will be able to design, make, analyse and evaluate products of high quality.

### **KS3**

Lessons are taught on a rotation and give students a strong foundation of skills and prepare them with life skills and the transition on to our KS4 course. Pupils will experience a range of projects through modules of Food and Nutrition, Resistant materials, Textiles, Systems and Controls and Computer Aided Design. They will undertake a range of projects where they will gain knowledge in:

#### **Food and Nutrition**

- Safety in the food room.
- Healthy eating.
- Seasonal foods.
- Enzymic browning.
- Food Poisoning and Safety
- Nutrients
- Recipe Adaptation
- Development to different cultures
- Designing meals to follow healthy eating guidelines.

#### **Textiles**

- Sew/hand stitch.
- Material identification – felt, cotton and nylon.
- Fabric construction.
- Develop an understanding of different ways to decorate fabric.
- Understand how to collect and use sources of research
- Pattern cutting.
- Threading and using sewing machines.
- Fabric printing,
- Analyse and designing for user.
- Attaching fastenings

#### **Resistant Materials**

- Workshop health & safety.
- Using basic hand tools.
- Analysing products,
- Working with wood, plastic and metal.
- Basic electrical circuits.
- Soldering to make a circuit.
- Using a range of finishing techniques
- Design development
- Knowledge of 2-D design
- Design eras of the last 100 years.
- Gain and use knowledge the different joints
- Computer aided design and manufacture

### **KS4**

At KS4 we provide a broad range of subjects and use a variety of exam boards such as OCR, AQA and WJEC. We made this decision to give students a breath of choice and wanted to offer courses which could then lead onto work, apprenticeship and higher education. As a department we recognise that students want to have practical experiences that will help them in their life after school no matter the path they chose and our KS4 curriculum is designed for that purpose. The subjects we offer are Food and Nutrition, Design and Technology, Child Development and Constructing the Built Environment.

## AQA Food and Nutrition

This **GCSE** in **Food Preparation and Nutrition** will equip students with the knowledge, understanding and skills to be able to feed themselves and others better. Students develop practical cookery skills and techniques as they explore the underlying principles of **food science, nutrition, food traditions and food safety.**

**Assessment Objective 1:** Demonstrate knowledge and understanding of nutrition, food, cooking and preparation.

**Assessment Objective 2:** Apply knowledge and understanding of nutrition, food, cooking and preparation.

**Assessment Objective 3:** Plan, prepare, cook and present dishes, combining appropriate techniques.

**Assessment Objective 4:** Analyse and evaluate different aspects of nutrition, food, cooking and preparation including food made by themselves and others.

## AQA Design and technology

This GCSE places greater emphasis on understanding and applying iterative design processes. Students will use their creativity and imagination to design and make prototypes that solve real and relevant problems, considering their own and others' needs, wants and values.

**Assessment Objective 1:** Identify, investigate and outline design possibilities to address needs and wants.

**Assessment Objective 2:** Design and make prototypes that are fit for purpose.

**Assessment Objective 3:** Analyse and evaluate: design decisions and outcomes, including for prototypes made by themselves and others wider issues in design and technology.

**Assessment Objective 4:** Demonstrate and apply knowledge and understanding of: technical principles designing and making principles.

## WJEC Constructing the Built Environment

This level 1/2 qualification has been devised around the concept of a 'plan, do, review' approach to learning, where learners are introduced to a context for learning, review previous learning to plan activities, carry out activities and review outcomes and learning. This approach mirrors many work-related activities in construction and also provides for learning in a range of contexts from urban to rural environments in mainly small scale construction projects

1. Safety and security in construction
2. Developing construction projects
3. Developing construction projects

## OCR Child Development

This level 1/2 qualification covers all aspects of a child's development and parental responsibility, from conception to five years. Students develop the essential theoretical knowledge and practical skills needed to create the best conditions for a child's development and well-being.

**R018:** Health and well-being for child development

**R019:** Understand the equipment and nutritional needs of children from birth to five years

**R020:** Understand the development of a child from birth to five years

## **RESISTANT MATERIALS DEPARTMENT: STATEMENT OF CURRICULUM INTENT**

### **INTENT**

Our intention in the Technology department is to enthuse student's creativity and give them experiences which equips them to be able to solve real and relevant problems within a variety of contexts. We intend to deliver an ambitious curriculum which is accessible to all, which provides the widest possible range of opportunities for all students, no matter their circumstances to become self-motivated, confident and creative learners. Students will develop technical and practical skills valued by employers and our main priority is for students to be problem solvers who are resilient whilst taking risks.

As a department we believe that students learn best by practical experience, experimenting and building confidence. We achieve this through inspiring lessons and imaginative teaching which makes links to industry and real life. Our passion is to deliver a well-rounded curriculum in which all students gain confidence to take their learnt skills outside of the classroom. Our main areas of focus are practical skills and technical knowledge, with these combined skills we believe students will be able to design, make, analyse and evaluate products to the best of their ability.

### **KS3 - Resistant Materials**

We focus on working with a range of tools, equipment and materials. Students learn to use current technologies and also envisage what might exist in the future and consider the impact these developments might have. We want to give our students the opportunity to be able to use knowledge, skills and understanding from a wide range of sources, especially but not exclusively from science and maths. We want our students to have knowledge of the materials that they use. They need to know about the properties of materials but also where they come from and how they are refined so that become useful and because of the finite nature of the material world; students should know about their longevity and ecological footprint. We want our students to have knowledge of manufacturing so that they can work with materials successfully. Through their work in design and technology, we want them to know about manufacturing using a variety of processes such as CAD/CAM, joining and assembling materials along with the appropriate methods of finishing. Through our Key Stage 3 curriculum, we hope that students have the time to build the knowledge of making processes into skilful and safe use of them. We want our students to know how the real world works. How products are powered, controlled and structured. Embedded electronic intelligence is especially important as it has become commonplace in everyday products that our students experience. We want our students to have knowledge of design so that they are able to identify peoples' needs and wants, market opportunities, to be able to generate, develop and communicate design ideas and evaluate design ideas. We want to provide students with the opportunity to develop and apply value judgements regarding aesthetic, economic, moral, social and technical aspects of their design ideas and in the work of past and present designers. In particular, when students consider the success of a design idea we want them to be able to consider how the product affects the lives of those who use and make them, how do they affect the planet? Through learning about design and technology, we want our students to see the world as a place of opportunity where they and others can, through their own thoughts and actions improve their situation.

The projects covered at KS3 are listed on the next page, along with a brief description of the intended outcomes.

Year 7	Year 8	Year 9
<p><b><u>Pencil Box</u></b> We introduce students to working with wood, plastic, and with CAD/CAM during the manufacturing process. Students will be able to conduct a basic analysis of an existing product and complete a piece of research based on their chosen target market. They will be able to recognise and understand how to write a simple specification. Students will use their research to create suitable design ideas that will be made using a laser cutter. An evaluation will be completed to reflect on the success of their pencil box, along with identifying targets for future projects.</p> <p><b><u>Night Light</u></b> This project gives the students' knowledge on electronic circuits, including components and sub-systems. The main manufacturing process will involve using 2D design which is a computer software commonly used in industry. The practical activities will involve soldering a working circuit and bending plastic through the application of heat. Students will be encouraged to write a specification independently and to be more creative and experimental with design ideas.</p>	<p><b><u>Foot Stool</u></b> Extending on students underpinning knowledge they will be stretched and given the opportunity to build skills obtained in year 7. During this project they will be introduced to industrial manufacturing tools and equipment. Students will be encouraged to continually analysis and evaluate their work through quality control and peer assessment. Building on the knowledge of writing a specification, and analysing existing products, students will be introduced to ACCESSFM as a design tool to ensure the main design considerations are understood and covered.</p> <p><b><u>Coat Hook</u></b> This project gives the students the opportunity to gain knowledge of and work with metal. The design process will involve modelling and testing that will be used to develop and modify the final outcome. During practical lessons students will be introduced to metal working tools in order to mark out, cut, shape and assemble the pieces. Links will be made to industrial processes by demonstrating methods of mechanical fittings and bending jigs.</p>	<p><b><u>Small storage box</u></b> Based on a design era of the past 100 years, students will be expected to investigate and analyse through research in order to produce a design that is able to fulfil the design brief. Students by now should working more independently to create a high quality product that will aspire to replica a store quality item that could be commercially viable. Emphasis will be on the application of the finish. A manufacturing specification will be completed in order to show the practical processes that will include sequencing, quality control and testing.</p> <p><b><u>Passive Speaker</u></b> Following a practical key skills test, students will design and make a product following simple instructions to enable them to work independently. This will include design restraints which are common issues in industry. The design process will involve collecting data and applying it to their own designs. They are expected to annotate all parts of their final design ensuring there is clear detail about the chosen methods of manufacture that could be interpreted by a third party.</p>

#### **KS4**

At KS4 we offer GCSE Design and technology as an option. This builds upon what has been covered in KS3 for resistant materials and textiles. The course involves looking at a wide range of materials, industrial processes and technical knowledge. As a department we recognise that students want to have practical experiences that will help them in their life after school no matter the path they chose and our KS4 curriculum is designed for that purpose. This course can carve a pathway for students into work, apprenticeship and higher education.

The qualification will be divided into 2 units:

- **Paper 1:** 50% Externally assessed examination - Students will sit one final exam that will test their knowledge and understanding of the content covered in the course.
- **NEA:** 50% NEA (non-examination assessment) - Students will use their previous acquired skill set to complete a design and make portfolio based upon a contextual challenge set by the exam board.

#### **AQA Design and Technology**

This GCSE places greater emphasis on understanding and applying iterative design processes. Students will use their creativity and imagination to design and make prototypes that solve real and relevant problems, considering their own and others' needs, wants and values.

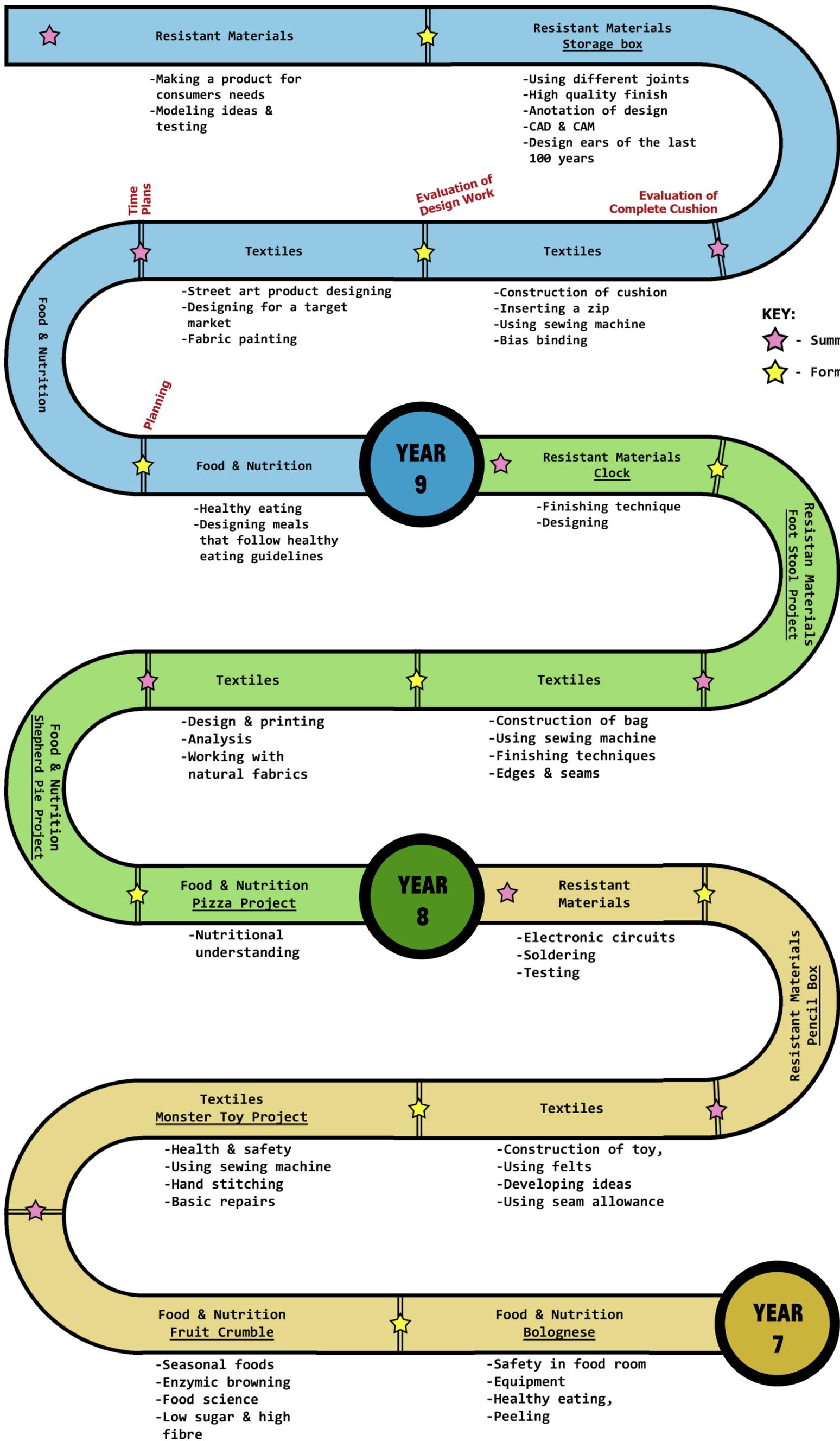
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# TECHNOLOGY KS3



**KEY:**  
 ☆ - Summative Assessment  
 ☆ - Formative Assessment

# DESIGN & TECHNOLOGY KS4

