Hutton Church of England Grammar School and Sixth Form

Design Technology Curriculum Information, Intent and Map

Curriculum Vision

The department aims to support all KS3 students in achieving their flight path or above, while ensuring all KS4 and KS5 students reach their target grades in GCSE and GCE examinations. A strong emphasis is placed on maintaining high levels of safety and safe working practices. Students are challenged to become creative, responsible and articulate designers, while also being given opportunities to develop skills beyond the assessment framework. The curriculum prepares students for future pathways in work, academia, industry and collaborative practice, with a clear focus on embedding numeracy and literacy through design and make tasks across all year groups. Learning is underpinned by knowledge and skills drawn from across the wider curriculum, reinforcing connections throughout the school. An iterative approach to teaching encourages critical thinking, independence and resilience, as students solve problems and refine their ideas to produce robust designs. The design cycle provides structure to learning, helping students plan, develop and gain confidence in tackling new topics and acquiring new skills. This is all supported by the school's Church of England ethos, which promotes the value of individual gifts and strengths.

Exodus 31:1-6

Then the LORD said to Moses, "See, I have chosen Bezalel son of Uri, the son of Hur, of the tribe of Judah, and I have filled him with the Spirit of God, with wisdom, with understanding, with knowledge and with all kinds of skills to make artistic designs for work in gold, silver and bronze, to cut and set stones, to work in wood, and to engage in all kinds of crafts. Moreover, I have appointed Oholiab son of Ahisamak, of the tribe of Dan, to help him. Also I have given ability to all the skilled workers to make everything I have commanded you'

Design and Technology Programmes of Study: Key Stage 3 National Curriculum in England

Purpose of Study

Design and technology is an inspiring, rigorous and practical subject. Using creativity and imagination, pupils design and make products that solve real and relevant problems within a variety of contexts, considering their own and others' needs, wants and values. They acquire a broad range of subject knowledge and draw on disciplines such as mathematics, science, engineering, computing and art. Pupils learn how to take risks, becoming resourceful, innovative, enterprising and capable citizens. Through the evaluation of past and present design and technology, they develop a critical understanding of its impact on daily life and the wider world. High-quality design and technology education makes an essential contribution to the creativity, culture, wealth and well-being of the nation

Aims

The national curriculum for design and technology aims to ensure that all pupils:

- develop the creative, technical and practical expertise needed to perform everyday tasks confidently and to participate successfully in an increasingly technological world
- build and apply a repertoire of knowledge, understanding and skills in order to design and make high-quality prototypes and products for a wide range of users
- critique, evaluate and test their ideas and products and the work of others
- understand and apply the principles of nutrition and learn how to cook

Attainment Targets

By the end of key stage 3, pupils are expected to know, apply and understand the matters, skills and processes specified in the programme of study

Subject Content in Key Stage 3

Through a variety of creative and practical activities, pupils should be taught the knowledge, understanding and skills needed to engage in an iterative process of designing and making. They should work in a range of domestic and local contexts and industrial contexts. When designing and making, pupils should be taught to:

Design

- use research and exploration, such as the study of different cultures, to identify and understand user needs
- identify and solve their own design problems and understand how to reformulate problems given to them
- develop specifications to inform the design of innovative, functional, appealing products that respond to needs in a variety of situations
- use a variety of approaches to generate creative ideas and avoid stereotypical responses
- develop and communicate design ideas using annotated sketches, detailed plans, 3-D and mathematical modelling, oral and digital presentations and computer-based tools

Make

- select from and use specialist tools, techniques, processes, equipment and machinery precisely, including computer-aided manufacture
- select from and use a wider, more complex range of materials, components and ingredients, taking into account their properties

Evaluate

- analyse the work of past and present professionals and others to develop and broaden their understanding
- investigate new and emerging technologies
- test, evaluate and refine their ideas and products against a specification, taking into account the views of intended users and other interested groups
- understand developments in design and technology, its impact on individuals, society and the environment, and the responsibilities of designers, engineers and technologists

Technical Knowledge

- understand and use the properties of materials and the performance of structural elements to achieve functioning solutions
- understand how more advanced mechanical systems used in their products enable changes in movement and force
- understand how more advanced electrical and electronic systems can be powered and used in their products
- apply computing and use electronics to embed intelligence in products that respond to inputs and control outputs using programmable components

Cooking and Nutrition

As part of their work with food, pupils should be taught how to cook and apply the principles of nutrition and healthy eating. Instilling a love of cooking in pupils will also open a door to one of the great expressions of human creativity. Learning how to cook is a crucial life skill that enables pupils to feed themselves and others affordably and well, now and in later life.

Pupils should be taught to:

- understand and apply the principles of nutrition and health
- cook a repertoire of predominantly savoury dishes so that they are able to feed themselves and others a healthy and varied diet
- become competent in a range of cooking techniques
- understand the source, seasonality and characteristics of a broad range of ingredients

Key Stage 4

When picking GSCE options, pupils can pick the following pathways within Design Technology –

- Design Technoolgy: Graphics
- Design Technology: Resistant Materials
- Food Preparation and Nutrition (Not available for 2026 GCSE options)

Design Technology: Graphics — Key Stage 4 (GCSE)

Aims of the Course

GCSE Graphics offers students the opportunity to develop creativity, visual communication skills and problem-solving through design. The course encourages pupils to explore how products are created for commercial and creative industries. Through studying Graphics, students will:

- develop creative thinking and design skills;
- build confidence using a range of graphic and modelling techniques;
- understand how products are designed for real-world applications;
- communicate ideas visually and effectively.

Course Overview

Qualification
GCSE Design & Technology (Graphics pathway) follows the Edexcel specification and is studied over two years. The course focuses on applying the design process to create innovative and commercially relevant products.

What You Will Study

Students will explore the design process through a range of creative and practical tasks. Areas of study include:

- designing products with strong visual impact
- developing 3D prototypes for commercial use
- packaging, advertising and product design
- applying design ideas to real-world contexts

Students will use both traditional and modern techniques to develop imaginative solutions to design problems.

How Graphics Is Taught

Students learn through a combination of practical design projects, classroom activities and commercial design tasks. Emphasis is placed on teamwork, creativity and problem-solving, with students developing ideas from concept through to a final prototype.

Assessment

Assessment consists of two components:

- Non-Examined Assessment (50%) – a design and make project completed over approximately 30–40 hours.
- Written Examination (50%) – a 1 hour 45 minute paper assessing core design knowledge and specialist content.

Why Study Graphics?

Graphics is ideal for students interested in creative industries and design. It develops transferable skills such as creativity, communication and problem-solving, and supports progression into careers such as graphic design, architecture, product design, interior design and digital media.

Design Technology: Resistant Materials — Key Stage 4 (GCSE)

Aims of the Course

GCSE Resistant Materials enables students to develop practical manufacturing skills alongside creative design thinking. The course focuses on designing and making products using a range of materials while understanding real-world manufacturing processes. Through studying Resistant Materials, students will:

- develop practical skills using tools, materials and equipment;
- understand how products are designed and manufactured;
- apply problem-solving skills to real design challenges;
- create functional and high-quality products.

Course Overview

Qualification
GCSE Design & Technology (Resistant Materials pathway) follows the Edexcel specification and is studied over two years. The course combines practical making with theoretical understanding of design and manufacturing.

What You Will Study

Students will design and manufacture products using a variety of materials and processes. Areas of study include:

- working with woods, metals, plastics and composites
- understanding industrial processes and manufacturing techniques
- using CAD/CAM and modern technologies
- exploring sustainability and environmental impact

Students will develop their ideas through designing, making and evaluating products.

How Resistant Materials Is Taught

Learning takes place through practical projects, design tasks and theory lessons. Students develop their skills through hands-on experience and are encouraged to work collaboratively, applying problem-solving skills to produce a final outcome.

Assessment

Assessment consists of two components:

- Non-Examined Assessment (50%) – a design and make project completed over approximately 30–40 hours.
- Written Examination (50%) – a 1 hour 45 minute paper covering core and specialist knowledge.

Why Study Resistant Materials?

Resistant Materials is ideal for students interested in practical design and engineering. The course develops creativity, technical skills and problem-solving, supporting progression into careers such as engineering, architecture, product design and manufacturing.

Food Preparation and Nutrition — Key Stage 4 (GCSE)

Aims of the Course

GCSE Food Preparation and Nutrition enables students to develop a deeper understanding of food, nutrition and healthy eating. The course encourages pupils to make informed decisions about food and equips them with essential life skills. Through studying Food Preparation and Nutrition, students will:

- develop knowledge of nutrition and its impact on health;
- understand where food comes from and how it is produced;
- build confidence in preparing and cooking a range of dishes;
- learn how to make healthy, affordable and informed food choices.

Course Overview

Qualification
GCSE Food Preparation and Nutrition follows the AQA specification and is studied over two years. The course combines practical cooking skills with scientific and nutritional understanding, allowing students to apply theory to real-life situations.

What You Will Study

Students will develop both practical and theoretical knowledge of food through a range of engaging topics, including:

- food science and the properties of ingredients
- nutrition and healthy eating
- practical cooking and preparation skills
- designing and making dishes from a variety of ingredients
- understanding food choice and its impact on health

Students will explore how ingredients work, how meals can be adapted, and how to prepare a range of dishes safely and effectively.

How Food Preparation and Nutrition Is Taught

Learning takes place through a combination of practical cooking sessions, theory lessons and structured projects. Students develop their skills through hands-on experience, supported by classroom learning and independent tasks.

Pupils are encouraged to work collaboratively, apply problem-solving skills and develop sustainable, healthy outcomes through their work.

Assessment

Assessment for GCSE Food Preparation and Nutrition consists of:

- Written Examination (50%) – testing knowledge of food preparation and nutrition.
- Non-Examined Assessment (50%):
    - *Food Science Investigation* (30 marks)
    - *Food Preparation Assessment* (70 marks), including planning, cooking and presentation.

Why Study Food Preparation and Nutrition?

This course develops valuable life skills as well as academic knowledge. It is particularly suited to students with an interest in cooking, health and science. GCSE Food Preparation and Nutrition supports progression into careers such as hospitality, catering, nutrition, dietetics, sports science and health-related professions, as well as providing essential skills for everyday life.

Curriculum Map

Key Stage 3 Design Technology

Year 7	The order will depend on your son's group	Skills Learned
Project 1	Introduction to Timber-Desk Tidy Your task is to design and make a Desk Tidy that will hold your pens and pencils and prevent them from 'disappearing'. Introduction to Plastics-Key Fob This firm has asked you to design and make an attractive acrylic key fob which may be sold in the company's shops. This project is also an introduction to the workshop. You will learn that safety of yourself and others is the most important aspect.	**DESIGNING-** Understanding contexts, users and purposes, Generating, developing, modelling and communicating ideas **EVALUATING-** Own ideas and products, Existing products **MAKING-** Planning, Practical skills and techniques TECHNICAL **KNOWLEDGE-** Making products work
Project 2	Introduction to Papers & Boards-Ugly Head Spatial awareness is a key skill for a designer. Spatial awareness is the ability to know how objects relate to each other in space or in a three dimensional world. Your task is to design a net for a cube. A net is a flat shape that can fold into a 3D object. On this net you are to draw six sides of a head.	**DESIGNING**- Understanding contexts, users and purposes, Generating, developing, modelling and communicating ideas **EVALUATING-** Own ideas and products, Existing products **MAKING-** Planning, Practical skills and techniques **TECHNICAL KNOWLEDGE-** Making products work
Project 3	Introduction to CAD/CAM-Earphone Tidy Your task is to design and prototype an earphone tidy. It will be made from high impact polystyrene. Students create their own brief following their research	**DESIGNING-** Understanding contexts, users and purposes, Generating, developing, modelling and communicating ideas **EVALUATING**- Own ideas and products, Existing products **MAKING-** Planning, Practical skills and techniques **TECHNICAL KNOWLEDGE-** Making products work
Project 4	Introduction to Plastics- Phone stand Introduction to Timber Snakebox In this project you will use creative drawing techniques to illustrate your ideas, and using a simple mechanism animate your design. You will also be asked to use the workshop safely and use a range of materials and equipment to help the manufacture of your piece.	**DESIGNING-** Understanding contexts, users and purposes, Generating, developing, modelling
Project 5	Food & Nutrition: learning key skills in the kitchen including knife skills, mixing, baking, hob work, food hygiene and routines of the kitchen. Healthy living and food safety and equipment.	
Project 6	Food & Nutrition: Design Brief/Context Design and make a healthy packed lunch that includes a range of savoury and sweet food products that are suitable to be included in a school lunch box, are presented as individual portions and can be easily eaten without cutlery or mess.	

Year 8	Project	Skills Learned
Project 1	Design Brief/Context Your design task is to create a spatula that will meet the ergonomic needs of many people while fitting in with a distinct market niche. Design Brief/Context Vehicle Light- In this project you will manufacture an electronic circuit board, gaining an appreciation of electronic components; you will also design and make the case using industrial manufacturing processes.	DESIGNING - Understanding contexts, users and purposes, Generating, developing, modelling and communicating ideas EVALUATING - Own ideas and products, Existing products MAKING- Planning, Practical skills and techniques TECHNICAL KNOWLEDGE- Making products work
Project 2	Design Brief/Context You will design, prototype and make a working clock inspired by a design movement. You should use no more than five colours of acrylic and the clock should be no larger than 150 x 150mm. It should use a quartz movement and be powered by one AA battery	DESIGNING- Understanding contexts, users and purposes, Generating, developing, modelling and communicating ideas EVALUATING Own ideas and products, Existing products MAKING- Planning, Practical skills and techniques TECHNICAL KNOWLEDGE- Making products work
Project 3	Design Brief/Context Three dimensional computer aided design has become normal in industry. A 3D CAD drawing will be used to design the product, show a realistic image and then manufactured using Cam or rapid prototyping.	DESIGNING- Understanding contexts, users and purposes, Generating, developing, modelling and communicating ideas EVALUATING- Own ideas and products, Existing products MAKING- Planning, Practical skills and techniques TECHNICAL KNOWLEDGE- Making products work
Project 4	Design Brief/Context Pop Up Card- You have been asked to develop a campaign based around a postal camper van. All items must be drop flat and be delivered with a scene and information about a destination.	DESIGNING- Understanding contexts, users and purposes, Generating, developing, modelling and communicating ideas EVALUATING- Own ideas and products, Existing products MAKING- Planning, Practical skills and techniques TECHNICAL KNOWLEDGE- Making products work
Project 5	Food & Nutrition: Students will be learning about Special diets including ages, allergies, intolerance, religion, vegetarians and vegans. They will practice and develop skills in blending, shaping and assembly, dough, knife skills, Frying, baking, and making sauces.	
Project 6	Food & Nutrition: Design Brief/Context Design and make a range of savoury and sweet food products that are healthy alternatives to the junk food that can be bought premade from shops and fast food restaurants.	

Year 9	Project	Skills Learned
Project 1	Design Brief/Context The Automata museum wishes to sell a range of mechanical toys which young children can buy and play with at home. The mechanical toy should be simple, cheap to manufacture and attract the interest of young children. It should be relatively cheap to buy so that the children can afford to buy it with their pocket money. The product should represent a folk or fairy tale by using characters from the tale.	DESIGNING- Understanding contexts, users and purposes, Generating, developing, modelling and communicating ideas EVALUATING Own ideas and products, Existing products MAKING- Planning, Practical skills and techniques TECHNICAL KNOWLEDGE- Making products work
Project 2	Design Brief/Context Design and make a USB powered light that will be used as a task light when working in the evenings. You will use a combination of materials to produce your light and it will be additionally decorated with Vinyl. You to consider the wants and needs of a given user when designing the product.	DESIGNING- Understanding contexts, users and purposes, Generating, developing, modelling and communicating ideas EVALUATING Own ideas and products, Existing products MAKING- Planning, Practical skills and techniques TECHNICAL KNOWLEDGE- Making products work
Project 3	Design Brief/Context Olympic promotional products- Some products have strong historic links. In this project you are to consider some historic references and use design theories to make them relevant to today's consumer.	DESIGNING- Understanding contexts, users and purposes, Generating, developing, modelling and communicating ideas EVALUATING- Own ideas and products, Existing products MAKING- Planning, Practical skills and techniques TECHNICAL KNOWLEDGE- Making products work
Project 4	Design Brief/Context Designing using research, stylising products for a market. Use of Accurate 2D design, batch production line bending.	Understanding contexts, users and purposes, Generating, developing, modelling and communicating ideas EVALUATING-Own ideas and products, Existing products MAKING- Planning, Practical skills and techniques TECHNICAL KNOWLEDGE- Making products work
Project 5	Food & Nutrition: Science – Investigation into the working characteristics of ingredients. Nutritional analysis – Understanding the contents of recipes and being able to improve and analyse the value of ingredients. Food provenance – Looking closely to a range of countries and understanding the route of methods of cooking, farming and traditional ingredients	
Project 6	Food & Nutrition: Multicultural foods and food science	

Curriculum Map

Key Stage 4 – Graphic Design and Resistant Materials

We follow the Edexcel GCSE Design Technology Specification 1DT0 with pathway 1Dt0/1B for Graphic Design and pathway 1DT0/1F for Resistant Materials

	Year 10	**Year 11**
Half term 1	Mini Project. That includes theory for syllabus and how to create design and research sheets for the GCSE. **Theory** 1.1 The impact of new and emerging technologies 1.2 Critical evaluation of new and emerging Technologies. 1.3 How energy is generated and stored. 1.4 Developments in modern and smart materials.	Contextual challenge – Investigate Specification Design **Theory** 1.16 Use different design strategies to generate initial ideas and avoid design fixation
Half term 2	Mini Project. That includes theory for syllabus and how to create design and research sheets for the GCSE. **Theory** 1.5 The functions of mechanical devices used to produce different sorts of movements 1.6 How electronic Systems provide functionality to products and processes 1.7 The use of programmable components	Contextual challenge Design Review Develop – Review Revision & Mock Exams **Theory** 1.17 Develop, communicate, record and justify design ideas,
Half term 3	Mini Project. That includes theory for syllabus and how to create design and research sheets for the GCSE. **Theory** 1.8 – 1.12 The Categorisation of the types, properties and structure of materials.	Contextual challenge – Manufacture
Half term 4	Mini contextual challenge **Theory** 1.13 All design and Technological practice takes place within contexts which inform outcomes 1.14 Investigate environmental, social and economic challenges	Contextual challenge – Manufacture Testing and Evaluation
Half term 5	Revision **Theory** Design contexts. The sources, origins, physical and working properties of specialist material Selection of specialist material The impact of forces and stresses. Stock forms Alternative processes Specialist techniques, tools, equipment Appropriate surface Treatments and finishes	Prepare for assessment of NEA Revision & Exams
Half term 6	Contextual challenge – Investigate **Theory** 1.15 Investigate and analyse the work of past and present professionals and companies Revision & Mock Exams	Revision & Exams

Curriculum Map

Key Stage 4 – Food and Nutrition

We follow the AQA GCSE Food Preparation and Nutrition

	Year 10	**Year 11**
Half Term 1	Nutrition and practical skills.	Final NEA1 food science. Worth 15% of final grade.
Half Term 2	Nutrition and practical skills. Mock NEA2 research and practical skills.	Final NEA1 food science. Worth 15% of final grade. Start NEA2 worth 35% of final grade. 1st November.
Half Term 3	Food safety and factors effecting food choice. (Exam question practice)	NEA2
Half Term 4	Nutrition and practical skills. Mock NEA2 research and practical skills.	NEA2 and exam theory
Half Term 5	Mock NEA1 food science investigation. Specific dietary needs.	Revision & Exams
Half Term 6	Theory and food science exam questions.	GCSE Exams