



DESIGN TECHNOLOGY

Why is the study of Design and Technology important?

Design and Technology is a practical and valuable subject. It enables you to actively contribute to the creativity, culture, wealth and well-being of yourself, your community and your nation. It teaches you how to take risks and so become more resourceful, innovative, enterprising and capable. You will develop a critical understanding of the impact of design and technology on daily life and the wider world. Additionally, it provides excellent opportunities for you to develop and apply value judgments of an aesthetic, economic, moral, social, and technical nature both in your own designing and when evaluating the work of others.

What skills will the study of Design and Technology teach you?

Design and Technology use knowledge, skills and understanding from within the subject itself and also a wide range of other sources, especially but not exclusively science and mathematics. Design and Technology will teach you to:

- Develop resilience by not being afraid of challenges when solving problems, but to break them down and keep trying.
- Be creative in developing solutions to real world problems.
- Use modelling and annotated sketches to develop and communicate ideas.
- How to act responsibly within a practical environment thinking of the safety of yourself and others.
- Identify how to competently use a range of practical techniques across a range of disciplines.
- Apply and use CAD/CAM equipment to design and manufacture a range of products and components considering scale of production and precision.
- Work independently and part of a team to solve complex problems.
- Construct reasoned arguments to ethical, social and moral problems that have arisen due to technology and communicate these in an effective way.
- Identify links between different materials and contextual references.
- Test, evaluate and refine their ideas and products against a specification, taking into account the views of intended users and other interested groups.
- 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 (for example, selecting and preparing ingredients: using utensils and electrical equipment, applying heat in different ways: using awareness of taste, texture and smell to decide how to season dishes and combine ingredients, adapting and using their recipes).
- Understand the source, seasonality and characteristics of a broad range of ingredients.

What will you know and understand from your study of Design and Technology?

- How to classify materials including smart materials and discuss their physical properties.
- How to use simple electronic circuits incorporating inputs and outputs.
- How to manufacture products with reference to their materials physical properties.
- Students will learn to use and adjust equipment and machinery dependent on task.
- Use learning from science and mathematics to help design and manufacture components and products.
- Students will learn to consider the influence of a range of lifestyle factors and consumer choices when designing and analysing products.
- Students will know and understand additional factors to consider such as ergonomics, anthropometrics or dietary needs.
- How to use a variety of approaches, for example biomimicry and user-centred design to generate creative ideas and avoid stereotypical responses.
- Students will be able to evaluate their work against an increasing range of designers, engineers, chefs, technologists and manufacturers and be able to relate their product to their own designing and making.
- Students will be able to evaluate products through disassembly to determine how they are constructed and function and consider the life cycle analysis.
- How to competently use a range of cooking techniques for example, selecting and preparing ingredients; using utensils and electrical equipment.
- Students will know the principles of nutrition and health including energy, nutrients, water, fibre, diet and health and nutritional needs throughout life and the risks of an unbalanced diet.
- Students will have a repertoire of predominantly savoury dishes in line with the principles of the eatwell guide.
- Students should be able to feed themselves taking into account personal preference, socio-economic aspects, nutritional and health needs.
- Students will understand the healthy and varied diets as depicted in the eatwell plate and 8 tips for healthy eating.
- Students should explore the origin and product of food products and ingredients.
- Students should consider how seasons may affect the food available.
- Students should consider the function, nutrient profile and sensory attributes of ingredients.
- Students should study a range of food commodities eg. cereals, fruits, vegetables, meat, fish, eggs, fats/oils, milk dairy food products.
- Students will develop a range of preparation, cooking and presentation skills.
- Students will learn to plan menus for a range of individual and nutritional needs.
- Students will learn how to prepare and cook safely preventing food poisoning.
- Students will explore the effect of advertising, marketing and packaging on food choice.

How can you deepen your understanding of Design and Technology?

You are encouraged to use a wide variety of websites to support and further develop your understanding of Design and Technology.

<https://www.bbc.co.uk/bitesize/subjects/zdn9jhv>

<https://www.bbc.co.uk/bitesize/subjects/zbtvxyc>

<https://www.bbc.com/education/subjects/zmhg9j6>

<https://www.bbc.co.uk/bitesize/guides/zh4g4qt/revision/1>

<https://www.the-warren.org/engineering%20contents.html>

<http://www.technologystudent.com/>

How are you assessed in Design and Technology?

There are half termly assessment points each year that we term Praising Stars©. For younger years we base our assessment on our subject mapping of the age related expectations across the curriculum, assessing students' performance at their current stage of study against expectation. At GCSE we make informed predictions informed by our holistic assessment of their progress against the key assessment objectives and their aspirational GCSE targets. These are also the basis for any appropriate support and intervention.

Throughout lower school in Design and Technology you will be assessed using the following assessment objectives which ensure that you can cumulatively build your subject understanding in preparation for future GCSE and A Level study.

Key Assessment Objectives

In design and technology students are assessed 4 main criteria these are in preparation for Engineering and include :

- **(A01)** Design
- **(A02)** Make (Including health and safety)
- **(A03)** Evaluation
- **(A04)** Technical Knowledge.

In food technology students are assessed against 4 criteria in preparation for Hospitality and Catering these are:

- **(A01)** Understand health and safety relating to food and cookery.
- **(A02)** Understand and apply the principles of nutrition and health.
- **(A03)** Understand the source, seasonality and characteristics of a broad range of ingredients.
- **(A04)** Understand factors relating to food choice (so that they are able to feed themselves and others a healthy and varied diet).
- **(A05)** Developing practical cooking skills (so that they become competent in a range of cooking techniques and able to cook a repertoire of predominantly savoury dishes).

How can Design and Technology support your future?

Design and Technology will initially help you to decide whether you would like to choose either Engineering, Graphics or Hospitality and Catering in Year 9. Furthermore, it can lead to a wide variety of different courses and careers. Local colleges run a wide range of courses including :

Level 2/3 Engineering Technology

Level 3 Engineering: Electrical/Mechanical

Apprenticeships (electrical and mechanical)

Level 2 Culinary Skills and Hospitality Service

Level 3 Professional cookery

Apprenticeships

Study of Design and Technology can lead to a wide range of careers:

Careers that the study of Design and Technology supports include:

- Graphic Designer
- Logo Designer
- Interior Designer
- Systems Engineer
- Carpenter
- Joiner
- CAD Technician
- Bricklayer

- Fabrication & Welding
- Waiting staff
- Chefs (head, sous, pastry etc)
- Receptionist
- Hotels and bar managers
- Events manager
- Food technologists
- Engineering – electrical, mechanical, civil, environmental

Term	Year 7	Year 8
Autumn 1	Food - Range of basic food preparation and cooking skills Hygienic working practices Understanding of equipment Eatwell and 8 tips Function of Nutrients - Main food groups Importance of Exercise	Food - Range of more complex food preparation and cooking skills How to identify food risks. Use by/Best before dates Safe storage, cooking and reheating. Nutritional requirements of specific groups. Packaging
Autumn 2	Food - Range of basic food preparation and cooking skills Food Sources Food Processing Food Choices - personal, seasonality, food miles, waste, packaging	Food - Range of more complex food preparation and cooking skills. Understanding of ingredients. Food choices - religion, vegetarianism, animal welfare, advertising
Spring 1	Resistant Materials -Mirror Cutting, sawing, filing, shaping, drilling, painting Prototypes Measuring Finishing techniques Working with machinery	Resistant Materials Metal work lathe (facing off, drilling, tapering, knurling, threading) Templates Finishing techniques Jigs Taping Polishing Adhesives (epoxy or contact)
Spring 2	Resistant Materials - Mirror Cutting, sawing, filing, shaping, drilling, painting Prototypes Measuring Finishing techniques Working with Machinery	Resistant Materials Metal work lathe (facing off, drilling, tapering, knurling, threading) Templates Finishing techniques Jigs Taping Polishing

		Adhesives (epoxy or contact)
Summer 1	Graphics - Chocolate Bar Specification Modelling, Photoshop Vacuum Forming Isometric drawing skills Rendering	Graphics – Memphis Light Product Analysis Research Develop design ideas Photoshop Circuit boards (electronics) Evaluation
Summer 2	Graphics - Chocolate Bar Specification Modelling, Photoshop Vacuum Forming Isometric drawing skills Rendering	Graphics – Memphis Light Product Analysis Research Develop design ideas Photoshop Circuit boards (electronics) Evaluation

Explanatory Notes: The department has 3 rotations each rotation for 13 weeks.