

# Department Name: Design and Technology

**Department's vision:** Design and Technology is a subject which prepares pupils for work and life in the 21st century by allowing them to participate confidently and successfully in an increasingly technological world. Giving students a body of knowledge that builds a range of skills, up-to date subject knowledge, and creative thinking will make them adaptable in the face of change. Design and Technology can do this by empowering them to independently research, plan, implement and reflect and ensure they are equipped with the knowledge to develop practical skills and technical knowledge to participate in modern society.

YEAR GROUP	Rotation 1	Rotation 2	Rotation 3	Rotation 4
Year 7	Metal Pewter Casting	Moodlight Project	Textiles Pouch	Food
What will students know by the end of the topic...	Students investigate existing products and create a specification for their product. Students learn about ferrous and non-ferrous materials and how materials can be cast in moulds.	Students learn measuring and wasting skills, apply a range of finishing techniques and learn how to create joints. Students understand how manufactured boards, electronics and polymers can be combined to form a product.	Students investigate a design task, conduct a questionnaire and investigate linked data. Students investigate decorative techniques including tie dye and use a broad range of material joining techniques.	Students learn how to competently use a range of cooking techniques for example, selecting and preparing ingredients; using utensils and electrical equipment. Students also learn about food safety, cross contamination, heat transfer methods, dextrinization, coagulation, food groups, enzymic browning, proving, fermentation and the eat well late through a variety of practical experiences.
Year 8	Mobile Phone Stand	Clock	Textiles Pencil Case	Food
What will students know by the end of the topic...	Students learn how to use 3D CAD to model, develop and present their ideas. Students produce 3D models to develop and communicate ideas. Students learn about timbers and polymers as well as the benefits of CAD CAM.	Students conduct product analysis and a questionnaire in order to influence their design decisions. They create a card model of their chosen design and can utilise CAD. Students create a mould for their product and conduct vacuum forming.	Students conduct client interviews and investigate iconic designers to influence their design. Students exploit the use of CAD/CAM equipment to manufacture products, increasing standards of quality by designing a CAD print and using dye sublimation.	Students learn how to compare the cost of food when planning to eat out or cook at home. Students learn about the influence of food marketing, advertising and promotion on their own diet and purchasing behaviour. Students learn the importance of energy balance and the implications of dietary excess or deficiency, e.g. malnutrition, maintenance of a healthy weight. They use nutrition information and allergy advice panels on food labels to help make informed food choices. Students learn how to modify recipes and cook dishes that promote current healthy eating messages.

	Half Term 1	Half Term 2	Half Term 3	Half Term 4	Half Term 5	Half Term 6
Y9 What will students know by the end of the topic...	<p><b>Practical Application of knowledge</b> Resistant Materials— Desk Tidy Textiles— Bag For Life Research includes— Product analysis, client interviews, questionnaire. Students write a specification and design CAD ideas including iterations. Students model their ideas. Students create a manufacturing specification and evaluate their prototype against their specification.</p> <p><b>Theoretical element</b> <b>New and emerging technologies</b>—Students must know and understand the impact of new and emerging technologies on contemporary and potential future scenarios in relation to the following areas: Industry, enterprise, sustainability, people, culture, society, environment and production techniques. <b>Energy generation and storage</b>- Students should understand how energy is generated and stored and how this is used as the basis for the selection of products and power systems. <b>Developments in new materials</b>- Students should be aware of developments in new materials including</p>		<p><b>Practical Application of knowledge</b> Resistant Materials—MP3 Amplifier Textiles— Shorts Project Research includes task analysis and market research, develop a design brief and creation of initial ideas. Students test out construction techniques and construct a prototype including cutting list and manufacturing diary. Students evaluate their final prototype and suggest modifications.</p> <p><b>Theoretical element</b> <b>Systems approach to designing</b>- Students should consider electronic systems including programmable components to provide functionality to products and processes, and enhance and customise their operation. <b>Mechanical devices</b>- Different types of movement Changing magnitude and direction of force <b>Materials and their working properties</b>- Students should know and understand the categorisation of the types and properties of the following materials.— Papers and boards— natural and manufactured timbers.</p>		<p><b>Practical Application of knowledge</b> Resistant Materials— Graphics Project—Communication of Design Ideas Textiles— Graphics Project—Communication of Design Ideas Students increase their confidence of communication of design ideas by utilising drawing techniques such as CAD, Isometric, 2 point perspective and exploded diagrams.</p> <p><b>Theoretical element</b> <b>Materials and their working properties</b>- Students should know and understand the categorisation of the types and properties of the following materials.— Metals and Alloys Polymers and Textiles.</p>	
Y10 What will students know by the end of the topic...	<p><b>Practical Application of knowledge</b>—Mock NEA runs throughout the year <b>Theoretical element</b> <b>Selection of materials or components</b>- In relation to at least one material category or system, students should be able to select materials and components considering various factors. <b>Forces and stresses</b>—In relation to at least one material category or system, students should know and understand the impact of forces and stresses and the way in which materials can be reinforced and stiffened. <b>Ecological and social footprint</b>- In relation to at least one material category or system, students should have a knowledge and understanding of the ecological and social footprint left by designers. <b>Sources and origins</b>—In relation to at least one material category, students should know and understand the sources and origins of materials</p>		<p><b>Practical Application of knowledge</b>—Mock NEA runs throughout the year <b>Theoretical element</b> <b>Properties of materials</b>- Students must know and understand how different properties of materials and components are used in commercial products, how properties influence use and how properties affect performance. <b>The modification of properties for specific purposes</b> <b>How to shape and form using cutting, abrasion and addition</b> <b>Stock forms, types and sizes</b> In relation to at least one material category or system, students should know and understand the different stock forms types and sizes in order to calculate and determine the quantity of materials or components required. <b>Scales of production</b> In relation to at least one material category or system, students should be able to select materials and components considering scales of production and referencing the processes listed in Specialist Techniques. <b>Specialist techniques and processes</b> he use of production aids, tools and equipment and how materials are cut shaped and formed to a tolerance Content Potential links to maths and science</p>		<p><b>Practical Application of knowledge</b>—Mock NEA runs throughout the year <b>June</b>— Official NEA begins. <b>Theoretical element</b> <b>Specialist techniques and processes</b> Commercial processes The application and use of Quality Control to include measurable and quantitative systems used during manufacture <b>Surface treatments and finishes</b> In relation to at least one material category or system, students should have knowledge and understanding of surface treatments and finishes.</p>	
Y11 What will students know by the end of the topic...	<p><b>Practical Application of knowledge</b>- Official NEA runs throughout the year <b>Theoretical element</b> <b>3.3 Designing and making principles</b> Students should know and understand that all design and technology activities take place within a wide range of contexts. They should also understand how the prototypes they develop must satisfy wants or needs and be fit for their intended use. For example, the home, school, work or leisure. They will need to demonstrate and apply knowledge and understanding of designing and making principles in relation to the following areas:</p> <ul style="list-style-type: none"> <li>• investigation, primary and secondary data</li> <li>• environmental, social and economic challenge</li> <li>• the work of others</li> <li>• design strategies</li> </ul>		<p><b>Practical Application of knowledge</b>— Official NEA runs throughout the year <b>Theoretical element</b> <b>3.3 Designing and making principles</b> Students should know and understand that all design and technology activities take place within a wide range of contexts. They should also understand how the prototypes they develop must satisfy wants or needs and be fit for their intended use. For example, the home, school, work or leisure. They will need to demonstrate and apply knowledge and understanding of designing and making principles in relation to the following areas:</p> <ul style="list-style-type: none"> <li>• communication of design ideas / prototype development / selection of materials and components / tolerances / material management / specialist tools and equipment / specialist techniques and processes</li> </ul>		<p><b>Practical Application of knowledge</b>—Easter Deadline for NEA <b>Theoretical element</b> <b>Revision of course and [preparation for written examination.</b></p>	

## Key Stage Four Specification Link

AQA Design and Technology: <https://www.aqa.org.uk/subjects/design-and-technology/gcse>

WJEC Food and Nutrition: <https://www.wjec.co.uk/media/frjcwjfo/wjec-gcse-food-and-nutrition-spec-from-2016-e.pdf>

**What will students see in their books or folders?**

The ways in which designers use a range of strategies to confirm and influence the way a student will see the world through an enquiring eye and investigative mind

**This subject supports students' reading and literacy through...**

Being able to understand the value of the way technological language and vocabulary engages minds and promotes enthusiasm for subject specific grammar

**This subject supports students' numeracy through...**

Knowing how to calculate and plan for efficient use of materials that will make resourceful, capable and effective members of society

**This subject promotes the following revision strategies as the most effective means of retaining content...**

- ◆ Topic Focus
- ◆ Team Teaching
- ◆ Reflection
- ◆ Learning by doing

**Opportunities for exploring this subject further are available through ...**

DATA  
Bitesize  
Technologystudent.com  
www.stem.org.uk  
The Design Museum

Design Technology

