Design and Technology
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National Curriculum	Year 7	Year 8	Year 9
DESIGN			
use research and exploration, such as the study of different cultures, to identify and understand user needs	Art and Design - How to design a ceramic Gaudi inspired house (e.g use drawings and knowledge of Gaudi to produce a sketch for a 'dream-like' ceramic house. The design includes **oval arches, cupolas, abstract and organic shapes** and cut out windows. Pupils need to consider closely composition and use of annotation. The design process is clear: - Pupils need to design and produce a template for a clay structure (e.g. Draw four walls and include architectural features on a separate piece of paper which can then be cut for the template). - How to roll out the clay using guides and rolling pins, creating a structure and 3D form for the Gaudi house (e.g. studying clay techniques and methods- using template to draw around the clay and using carving tools to carefully cut the sections needed for the structure of the house and windows (considering proportion), using slip to glue the pieces together, using a sponge to smooth edges/joints). - Adding decorative shapes/reliefs to the Gaudi house (e.g. using carving tools to create clay shapes and add to house using slip- high relief, using tools to carve away shapes- low relief).	Art and Design - Designing a surface pattern for an Acoma pot. Understanding the culture of the Acoma Pueblo and symbols used in geometric patterns (e.g. **use only traditional colours; black and orange, include symbols for rain etc, include only 2D geometric shapes**) Understanding the function of Acoma pots- seed storage, carrying water, cooking etc. Art and Design - Using the computer, pupils research the Memphis Design Movement (Italian design and architecture group 1980-87) to understand main characteristics of designs that are to be incorporated into clock design (**e.g. bold colours, asymmetric 2D shapes, abstract decoration**)	Art and Design - How to design a Mexican Talavera tile thinking about **Mexican Folk Art & Artesanía. Design must include cultural motifs such as nature and geometric designs**. Tile design to include borders, composition, motifs, and adding colour. Colours limited to the permitted colours (blue, yellow, green, orange, mauve, white, black) used in Talavera pottery. Clay techniques - high and low relief (e.g. using appropriate tools to achieve), slip (watered down clay), wedge (remove all air bubbles trapped in clay), rolling out the clay (using guides to achieve correct thickness), use of the kiln and the firing process. Carving and repeating reliefs for pattern based on design. Pupils to glaze tile based on design and chosen colours in sketchbook.
identify and solve their own design problems and understand how to reformulate problems given to them	Art and Design - Working with clay is exceptionally challenging. For example, designs may need to be altered to take into consideration the weight of the product/piece. **Problem solving based on designs is an ongoing process** while working with clay. Designs will change when pupils work with clay and consider the fragility of elements on the design. Clay pieces have to	Art and Design - Working with clay is exceptionally challenging. For example, designs may need to be altered to take into consideration the weight of the product/piece. **Problem solving based on designs is an ongoing process** while working with clay. Designs will change	Art and Design - Working with clay is exceptionally challenging. For example, designs may need to be altered to take into consideration the weight of the product/piece. **Problem solving based on designs is an ongoing process** while working with clay. Designs will change when pupils work with clay and consider the fragility of elements on the design. Clay pieces

	be fired in the kiln and certain design elements may break if not considered.	when pupils work with clay and consider the fragility of elements on the design. Clay pieces have to be fired in the kiln and certain design elements may break if not considered. Art and Design /Computing - Problems encountered when creating design for a digital clock: **spacing** on the clock needs to be accurate in order for the clock to be functional. Consideration of the design problems are completed on in computer based lessons using CAD/CAM.	have to be fired in the kiln and certain design elements may break if not considered.
develop specifications to inform the design of innovative, functional, appealing products that respond to needs in a variety of situations		Art and Design/Computing – Project goal to design and manufacture an acrylic clock project. All pupils write a design specification and consider the appeal of their designs, both in terms of functionality and popular appeal.	Computing - Digital Graphics (Unit 4) – Consideration of audience and popular appeal is considered at length. Pupils create visualisation diagrams and design of a digital media graphic in response to a given client brief. They consider the client's needs and design based on their preference/specification.
use a variety of approaches [for example, biomimicry and user-centred design], 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*	Art and Design - Annotated design for clay piece in sketchbook. Includes measurements, symmetry (if necessary to design) and aspects needed to be considered due to the medium e.g., areas to be carved, raised etc.	Art and Design - Annotated painting design for surface pattern of Acoma pot. Includes measurements, symmetry and aspects needed to be considered due to the cultural influence e.g., colours and symbols to be used etc. Art and Design/Computing - Use of **computer aided design software** to prepare a design for the laser cutter. Pupils learn how to add/change text, transform and adjust shapes, use of colours programmed for different lines of cut on the laser cutting machine (engraved lines- black, cut lines- red etc)	Art and Design - Annotated design for clay piece in sketchbook. Includes measurements, symmetry (if necessary to design) and aspects needed to be considered due to the medium e.g., areas to be carved, raised etc. Art and Design - Wire insect design annotated to include elements to be stitched, fused and yarn wrapped. All designs are considered in detail, with numerous sketches and models showing strong development over time.

develop and communicate design ideas using annotated sketches, detailed plans, 3-D and mathematical modelling, oral and digital presentations and computer-based tools		Art and Design/Computing - Acrylic clock project entails creating 2D and 3D designs using computer based tools (CAD/CAM). These are based on annotated sketches completed by the pupils.	Computing - Digital Graphics (Unit 4) – Consideration of audience and popular appeal is considered at length. Pupils create visualisation diagrams and design of a digital media graphic in response to a given client brief. They consider the client's needs and design based on their preference/specification..

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MAKE			
select from and use specialist tools, techniques, processes, equipment and machinery precisely, including computer-aided manufacture	Art and Design - Clay process and techniques. Pupils learn how to roll out the clay using **guides and rolling pins**, creating a structure and 3D form for the Gaudi house (e.g. studying clay techniques and methods- using a template to draw around the clay and using **carving tools** to carefully cut the sections needed for the structure of the house and windows (considering proportion), using **slip** to glue the pieces together, using a **sponge** to smooth edges/joints). Pupils also add decorative shapes/reliefs to the Gaudi house (e.g. using carving tools to create clay shapes and add to house using slip- high relief, using tools to carve away shapes- low relief).	Art and Design - Clay process and techniques. Pupils learn how to roll out the clay using **guides and rolling pins**, creating a base for the Acoma pot and traditional Acoma hand coils, using **slip** to glue the coils together, using a **sponge, kidney tool** to smooth edges/joints of the pot. They then add geometric shapes, symbols and patterns to the pot's surface through hand painting. Art and Design/Computing: Use of **computer aided design software** to prepare a design for the laser cutter. Pupils learn how to add/change text, transform and adjust shapes, use of colours programmed for different lines of cut on the laser cutting machine (engraved lines- black, cut lines- red etc.) Use of laser cutting machine and acrylic plastic to cut out clock surface. Use of strip heater to bend clock surface to allow clock to become more three-dimensional and stand. Art and Design/Computing - Acrylic clock project entails creating 2D and 3D designs using later cutting machine and strip heater.	Art and Design - Clay techniques- high and low relief (e.g. using appropriate tools to achieve), slip (watered down clay), **wedge** (remove all air bubbles trapped in clay), rolling out the clay (using guides to achieve correct thickness), use of the **kiln and the firing process**. **Carving** and repeating reliefs for pattern based on design. Pupils to **glaze** tile based on design and chosen colours in sketchbook. When glazing pupils need to wait Art and Design - Art textiles – pupils enjoy fusing bubble wrap with an iron. Including Angelina fibres and shavings of wax. Pupils attach bubble wrap onto wire using stitching techniques.

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select from and use a wider, more complex range of materials, components and ingredients, taking into account their properties	Art and Design - Use of clay and considering clay properties.	Art and Design - Use of clay and considering clay properties. Art and Design/Computing - Use of acrylic plastic and mechanical clock components.	Art and design - Use of clay and considering clay properties. Introduction to glazes and why they are used for ceramics e.g., glazes contain Silica and when heated to high temperatures in the kiln turn into glass. This acts as a finishing layer to the ceramic and can be waterproof. Properties include: Melting temperatures; colours; different types of glazes. Art and Design - Fusing bubble wrap with an iron. Including the use of Angelina Fibres and wax.

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EVALUATE			
analyse the work of past and present professionals and others to develop and broaden their understanding	Art and Design - Gaudí architecture e.g., Casa Mila, Casa Batlló, Parque Guell	Art and Design - The Acoma pueblo. Memphis Design Movement.	Art and Design - Mexican Talavera developed in Puebla: Alexander Calder, Ruth Asawa, Anna Van Bohemen.
investigate new and emerging technologies		Art and Design/Computing - Discuss Laser cutting machine and use in manufacturing.	Computing – Understanding Computers (Unit 5) – AI and Machine Learning.
test, evaluate and refine their ideas and products against a specification, taking into account the views of intended users and other interested groups		Art and Design/Computing: acrylic clock project. Evaluation of completed project: strengths, weaknesses and improvements.	Computing – Game Design (Unit 6) – Testing and evaluation of completed computer game from a given design brief.
understand developments in design and technology, its impact on individuals, society and the environment, and the responsibilities of designers, engineers and technologists		Art and Design - Memphis Design Movement.	Computing – Cyber Security (Unit 1) – effect of computing on the environment (hazardous waste & disposal of materials)

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TECHNICAL KNOWLEDGE			
understand and use the properties of materials and the performance of structural elements to achieve functioning solutions	Art and Design - Clay: High/ low relief, slip, wedge, kiln, firing process, greenware, bisqueware	Art and Design - Clay: Coils, slip, wedge, kiln, firing process, greenware, bisqueware Art and Design/Computing Acrylic plastic	Art and Design - Clay: High/ low relief, slip, wedge, kiln, firing process, glaze, greenware, bisqueware, earthernware, majolica Art and Design - textiles: Fusing, yarn wrapping Computing – physical computing topic in Y9 Computing Unit 5. Interfacing devices the real word using a microcontroller (BBC microbit)
understand how more advanced mechanical systems used in their products enable changes in movement and force			Computing – physical computing topic in Y9 Computing Unit 5. Interfacing devices the real word using a microcontroller (BBC microbit)
understand how more advanced electrical and electronic systems can be powered and used in their products [for example, circuits with heat, light, sound and movement as inputs and outputs]	Art and Design - Unit 1 & 2 pupils learn about textile designer William Morris. They understand the difference between Art and design/artist V designer and what it means to be a textile designer and the products that it includes.		Computing – physical computing topic in Y9 Computing Unit 5. Interfacing devices the real word using a microcontroller (BBC microbit)
understand developments in design and technology, its impact on individuals, society and the environment, and the responsibilities of designers, engineers and technologists			Computing – health and safety topic in Y9 Computing Unit 1. Knowledge of the effects on the environment on disposal of waste electronic products.
apply computing and use electronics to embed intelligence in products that respond to inputs [for example, sensors], and control outputs [for example, actuators], using programmable components [for example, microcontrollers].			Computing – physical computing topic in Y9 Computing Unit 5. Interfacing devices the real word using a microcontroller (BBC microbit)

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COOKING AND NUTRITION			
understand and apply the principles of nutrition and health	Compulsory Enrichment Health and Nutrition – a compulsory enrichment delivered by the Science Department.		
cook a repertoire of predominantly savoury dishes so that they are able to feed themselves and others a healthy and varied diet	Compulsory Enrichment Pupils learn to cook 4 recipes, including risotto and spaghetti Bolognese.	Compulsory Enrichment Pupils learn to cook 4 recipes, including risotto and spaghetti Bolognese.	
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 own recipes]	Compulsory Enrichment Through their cooking of savoury recipes, they prepare their ingredients in school using appropriate utensils. Pupils work with the school's chef over a 4 programme.	Compulsory Enrichment Through their cooking of savoury recipes, they prepare their ingredients in school using appropriate utensils. Pupils work with the school's chef over a 4 programme.	
apply computing and use electronics to embed intelligence in products that respond to inputs [for example, sensors], and control outputs [for example, actuators], using programmable components [for example, microcontrollers].			
understand the source, seasonality and characteristics of a broad range of ingredients.			

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The impact of the pandemic has inevitably curtailed our enrichment offer and therefore limited the coverage of Design and Food Technology. They were not offerable due to public health limitations. However, the table below summarises what pupils have been offered so far at Mercia School in this curriculum area:

2023 Leavers

Year	Enrichment	Pupils
Year 7	Arts & Crafts	24
Year 7	Catering	All
Year 7	Ceramics	All
Year 8	Automatic Drawing	32
Year 8	Big Challenge	40
Year 8	Street Art	24
Year 8	Design & Technology	24
Year 9	Computing	42
Year 10	Web Design	29

2024 Leavers

Year	Enrichment	Pupils
Year 7	Print Technology	21
Year 7	Big Challenge	38
Year 7	Design & Technology	All
Year 8	Nutrition	All
Year 8	Catering	All
Year 9	Textiles	23

2025 Leavers

Year	Enrichment	Pupils
Year 7	Nutrition	All
Year 7	Print Making	29
Year 7	Cross Stitch	30
Year 8	Arts & Crafts	32
Year 8	Python Programming	29
Year 8	Computing	All
Year 8	Catering	All (by the end of this academic year)

2026 Leavers

Year	Enrichment	Pupils
Year 7	Nutrition	All
Year 7	Computing	All
Year 7	Arts & Crafts	32
Year 7	Catering	All (by the end of this academic year)
Year 7	Design & Technology	All (by the end of this academic year)

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