

Curriculum overview: Design and technology

<p>Key Stage 2</p> <p>Design</p> <ul style="list-style-type: none"> use research and develop design criteria to inform the design of products generate, develop, model and communicate their ideas <p>Make</p> <ul style="list-style-type: none"> select from and use tools and equipment to perform practical tasks select from and use range of materials and components <p>Evaluate</p> <ul style="list-style-type: none"> investigate and analyse products understand how key events and individuals in design and technology have helped shape the world <p>Technical knowledge</p> <ul style="list-style-type: none"> apply their understanding of how to strengthen, stiffen and reinforce more complex structures

Key skills/content requirements at GCSE

Students will acquire subject knowledge in design and technology that builds on Key Stage 3, incorporating knowledge and understanding of different materials and manufacturing processes in order to design and make, with confidence, prototypes in response to issues, needs, problems and opportunities. Students learn how to take design risks, helping them to become resourceful, innovative and enterprising citizens. They should develop an awareness of practices from the creative, engineering and manufacturing industries. Through the critique of the outcomes of design and technology activity, both historic and present day, students should develop an understanding of its impact on daily life and the wider world and understand that high-quality design and technology is important to the creativity, culture, sustainability, wealth and wellbeing of the nation and the global community.

Year 7	Year 8	Year 9	Year 10	Year 11
<p>Design</p> <ul style="list-style-type: none"> use research and develop design criteria to inform the design of innovative, functional, appealing products that are fit for purpose, aimed at particular individuals or groups generate, develop, model and communicate their ideas through discussion, annotated sketches, cross-sectional and exploded diagrams, prototypes, pattern pieces and computer-aided design <p>Make</p> <ul style="list-style-type: none"> select from and use a wider range of tools and equipment to perform practical tasks [for example, cutting, shaping, joining and finishing], accurately select from and use a wider range of materials and components, including construction materials, textiles and ingredients, according to their functional properties and 	<p>Design</p> <ul style="list-style-type: none"> 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 [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 <p>Make</p> <ul style="list-style-type: none"> select from and use specialist 	<ul style="list-style-type: none"> Use of wood working tools e.g. bench hook; tenon saw; marking gauge etc. Measuring, marking; cutting and assembly of 4 common wood joints. The categorisation of the types, properties and structure of ferrous and non-ferrous metals Use of metal working tools such as marking blue; scribes; centre punch, hacksaw; files; case hardening; riveting. How to mark, cut, join and shape metals. How energy is generated and stored How the critical evaluation of new and emerging technologies informs design decisions The impact of new and emerging technologies The functions of mechanical devices 	<ul style="list-style-type: none"> Use of all three main material groups: wood; metal & plastic. Creative design with their first introduction to main design eras of the last 150 years. Researching and selection of design eras and designing a product based on one of them. Developing knowledge and skills in areas of: research; design; development; modelling; evaluation; making; adhesives; finishes and materials. Use of all three main material groups: wood; metal & plastic. Creative design with their first introduction to main design eras of the last 150 years. Researching and selection of design eras and designing a product based on one of them. Developing knowledge and skills in areas of: research; design; development; modelling; evaluation; making; adhesives; finishes and 	<p>Non-Examination Assessment</p> <p>Using given design brief identify:</p> <ul style="list-style-type: none"> Key skills User issues Analysing the design context Researching and analysing skills Creating design criteria's Idea generations Development modelling through a variety of practical tasks Quality assurance issues, Evaluation and testing, <p>Exam preparation based on specification requirements</p>

<p>aesthetic qualities</p> <p>Evaluate</p> <ul style="list-style-type: none"> investigate and analyse a range of existing products evaluate their ideas and products against their own design criteria and consider the views of others to improve their work understand how key events and individuals in design and technology have helped shape the world <p>Technical knowledge</p> <ul style="list-style-type: none"> apply their understanding of how to strengthen, stiffen and reinforce more complex structures understand and use mechanical systems in their products [for example, gears, pulleys, cams, levers and linkages] understand and use electrical systems in their products [for example, series circuits incorporating switches, bulbs, buzzers and motors] 	<p>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</p> <p>Evaluate</p> <ul style="list-style-type: none"> 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 <p>Technical knowledge</p> <ul style="list-style-type: none"> 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 [for example, circuits with heat, light, sound and 	<ul style="list-style-type: none"> How electronic systems provide functionality to products and processes The categorisation of the types, properties and structure of papers and boards The categorisation of the types, properties and structure of thermoforming and thermosetting polymers Investigate environmental, social and economic challenges 	<p>materials.</p> <ul style="list-style-type: none"> Clock Project- Use of all three main material groups: wood; metal & plastic. 2D Design- Google Sketch up design - Developing CAD skills and 3D Modelling and 2D design for automated production Using given design brief identify Key skills , User issues, Analysing the design context, Researching and analysing skills, Creating design criteria's, Idea generations Development modelling through a variety of practical tasks Quality assurance issues, Evaluation and testing, Y10 Exam preparation based on specification requirements 	
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GCSE External assessment:

External examination (50% of the qualification):

Assessing core technical principles, specialist technical principles and designing and making principles.

Non-examination assessment (50% of the qualification):

- Substantial design and make task
- Assessment criteria:
 - Identifying and investigating design possibilities
 - Producing a design brief and specification
 - Generating design ideas
 - Developing design ideas
 - Realising design ideas
 - Analysing & evaluating

SMSC in design and technology

In design technology social, moral, spiritual and cultural is developed in a number of ways. We teach our students to think about the impact of their designing and making on the environment, people and the wider world. We teach our students about the importance of the 3 R's and sustainability to encourage them to think about their responsibility as part of the future generation. Students are expected to demonstrate high standards of behaviour and encourage their peers to do the same to develop a sense of social responsibility and respect. Respect and positivity is encouraged through the process of peer evaluation of each other's work. Within lessons we encourage students to take and give criticism positively and to verbally explain their thoughts in a respectful and positive way. We encourage students to take chances within their work taking inspiration from the wider world and enjoying the process of developing and manufacturing functioning products which reflect the personality and style of each individual student.

Spiritual development in design and technology

Spiritual development and self-belief is of high importance in design and technology. The creative designing and making process inspires students to bring out their hidden talents, which helps all students with self-confidence and belief in their own abilities. Our students are taught how to investigate products, aesthetic and functional, past and present and examine how they affect the quality of our daily lives. They are encouraged to develop their thinking skills and explore the wider world and use this inspiration when developing their own design ideas

Moral development in design and technology

In design and technology we try to develop a sense of 'moral conscience in our students. We teach students to consider the wider impacts on the environment when designing and making new products, and encourage them to think about their chosen materials and components and whether they are taking into account sustainability and the environmental impact of their design choices. The 3 R's are frequently discussed throughout the designing and making process. Within the lessons pupils are expected to show respect to others and take responsibility for their own actions and encourage others to do the same.

Social development in design and technology

As part of the student's social development within design technology we encourage students to accept responsibility for their behaviour and the safety of others by enforcing clear expectations which in turn provides our students with a safe, secure and structured learning environment. We encourage team and pair work to help build mutual respect and to be accepting of each other's strengths and weaknesses. We encourage our students to take part in self and peer evaluation, which allows students to give their opinions and to give and accept constructive criticism as a way to improve their outcomes.

Cultural development in design and technology

Within design technology students are taught to consider that all their design work should be sensitive to needs and beliefs of different cultural backgrounds or groups of people, ensuring all imagery, text and products produced will not be deemed as being offensive. Students are given opportunities to use the work of artists, designers and inspiration from the wider world and from a wide range of cultures and historical contexts to influence and help develop their own work.

