



## DESIGN TECHNOLOGY DEPARTMENT

### Curriculum Overview



The curriculum at West Derby School reflects the aspirations we have for all students. It is designed to be as ambitious as the National Curriculum, offering a first-class education that is rich in knowledge and skills, whilst being broad and balanced throughout the key stages. The Design Technology department ensures all students; through a curriculum that is engaging, challenging and exciting, achieve to the best of their ability and develop the knowledge and skills required to become resourceful young adults, equipped to solve real life design problems through innovative design and excellent practical application”.

## Faculty Overview

The Design and Technology Faculty comprises of three specialist subject teachers; with industry experience and backgrounds. There are two high specification workshops, one high specification kitchen, two dedicated teaching classrooms and a state-of-the-art CAD computer suite.

## Departmental Staff

Mr A Laidlow	Faculty Leader & Subject Lead for Design Technology
Mr P Lunt	Subject Lead for Engineering
Mr S Hampton	Subject Lead for Hospitality & Catering
Mr S Williams	Technician
Mrs C Beresford	Technician
Mrs T Swain	SLT Line Manager

# Year 7/8/9 Design Technology (KS3)

## Curriculum overview

At the core of all lessons is knowledge and understanding. Coinciding with this is practical knowledge and application which provides a tangible learning experience which deepens students' understanding and further builds schema.

The sequence of content delivered in Design and Technology aids progression and allows for the accumulation of sufficient knowledge and skills needed for future learning.

Following on from the Key Stage 2 programme of study, our schemes of learning are designed to expose students to the relevant subject content and provides opportunities for students to learn above and beyond the prescribed Key Stage 3 programme of study. This is achieved through investigating wider subject contexts via engaging and creative teaching and learning and using real world examples.

Key Stage 4 builds on the learning from Key Stage 3, delivering the knowledge and understanding and skills sets required for external examinations and Non-Exam Assessment throughout the second year. Schemes of Learning content reflects the subject specifications (including substantial scientific and mathematical content), but also allows students to learn by exploring the content in a diverse manner through a holistic approach.

Design and Technology continues at Key Stage 5, building on students experiences during Key Stage 4, Schemes of Learning reflect the combination of theory and practical application unique to Design and Technology while focusing on analysis, design development, synthesis and evaluation. Students are required to work independently in order to become inquisitive thinkers and problem solvers.

## How the DT department supports SEND pupils

Design Technology is accessible for students of all abilities. Curriculums 'teach to the top' and scaffold down. All students are exposed to the same content and have the same high expectations of attainment and progress. The department maintains an inclusive learning environment which provides learning opportunities for pupils of all abilities through tailored teaching resources that support the individual's needs. We pride ourselves on knowing our students so we can best support their learning across Design Technology.

## How the DT department supports more able pupils

High ability pupils are supported in Design Technology through opportunities for meaningful extension work, 'stretch and challenge' tasks and questions in pre-printed booklets and through recognising, then supporting exceptional ability in aspects of DT such as sketching, drawing, designing, CAD and making

## New Knowledge (what we want students to know and understand by the end of each year)

Year 7	Year 8	Year 9
Hazards & Precautions in the workshop	Understanding a Design Brief	Understanding a Design Specification
Ferrous and Non-Ferrous Metals	Electronic Components & Equipment	Design Movements (Alessi)
Softwoods & Hardwoods Timbers	Electronic Series Circuits	Electronic Components & Equipment
Thermoforming & Thermosetting Polymers	Templates & Jigs	Electronic Parallel Circuits
Marking Out	Manufactured Boards	Design Concept Generation
Timber Fabrication (Natural Timbers)	Timber Fabrication (Manufactured Boards)	Design Development
Adhesives	Design Strategies (Biomimicry)	3D Visualisation and Presentation (Orthographic)
3D Visualisation and Presentation (Isometric)	CAD & CAM	Polymer Fabrication
Design Movements (Memphis)	Alloys & Non-Alloys	Prototype modelling
Surface Preparation	Metal Fabrication	Manufacturing Specification
Material Finishes	Product Assembly	Manufacturing with CAM

3D Visualisation and Presentation (Obliqui and Orthographic) CAD & CAM Electronics and Circuits Evaluation		
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### New Skills

Metals, Polymers and Timber fabrication. Measuring and marking out accurately and precisely. Bonding Timbers. Sketching/designing in 3D. Preparing materials for finishing. Soldering and component selection. Using formers and jigs accurately. Advanced timber fabrication. Design strategies and generation. 3D visualisation and presentation. CAD and CAM design and manufacturing.

### Disciplinary Vocabulary

Expected technical vocabulary is shared with pupils through use of keywords in teaching PowerPoints and pre-printed pupil booklets. Frayer model is utilised in order to deepen students' knowledge and understanding of key Tier 2 and 3 vocabulary.

Year 7 expected technical vocabulary/spellings				Year 8 expected technical vocabulary/spellings				Year 9 expected technical vocabulary/spellings			
Oblique	Freehand	Rendering	Measure	Evaluate	Design	Isometric	Specification	Perspective	Parallel	Industrial	Prototype
Template	Classify	Source	Equipment	Adhesive	Engineered	Boards	Circuit	Polystyrene	Environment	Sustainable	Specification
Adhesive	Electronics	Try square	Orthographic	Alloy	Annotation	Jig	Acrylic	Aesthetic	Dimensions	Abrasive	Client
Steel rule	Beech	Coping saw	Tenon saw	Consumer	Construction	Function	Development	Manufacture	Thermoplastic	Biodegradable	
Mahogany	Materials	Millimetres	Centimetres	Research	Component	Assemble	Ergonomic				

### Prior Learning and Recall

Knowledge, understanding and skills at Key Stage 2 varies for each student. Our Key Stage 3 curriculum is carefully designed to incorporate and build on the Key Stage 2 national curriculum intent to ensure that students have the opportunity to recall knowledge and then deepen their understanding and skill sets. Specifically, our curriculum builds upon:

- Design – generate, develop, model and communicate ideas through discussion, annotated sketches, prototypes and CAD designs.
- Make – select from and use a wide range of tools and equipment to fabricate practical outcomes. Select from and use a wide range of materials and components.
- Evaluate – evaluate their ideas and products against design criteria.
- Technical knowledge – understand and use electronic systems to develop products.

### Examination/Key Assessment

Teacher assessment and feedback takes place each and every lesson. Lessons start with an On The Bell task (OTB) to recap prior learning and interrupt the forgetting curve. Students up level their OTB tasks at the time of completion so that they can build on their understanding. New concepts are assessed through different formative assessment task such as mini white boards, I do we do you do, messy mark books and exit tickets. Feedback in instant and students up level their work in green pen. Verbal feedback is also utilised in design technology as a quick and direct method of providing students with ways to improve; this is often using during practical activities. Summative test at key points in the curriculum delivery are used to assess students' knowledge and understanding of the design technology curriculum. Feedback is provided to all students. Students are encouraged to peer-assess their own work and that of others during lessons. Several key pieces of learning identified with progress tasks are marked in depth by the teacher. These highlight strengths and weaknesses and suggest ways in which improvements can be made.

### Homework

This is set once every other week and is designed to recap the work done during lessons. Homework booklets are issued at the start of each course and pupils are guided towards completion of each task. The task will also be detailed on *Satchel One* so that pupils and their parents can easily access the work and deadlines for submission.

### How parents can help

- Check **Satchel One** regularly and ensure all work is completed to a good standard.
- Ensure that basic equipment is brought to each lesson. A pen, pencil and ruler are the minimum requirements.
- Encourage the use of the Internet for homework completion and assessment revision. Ensure that your child revises for assessment tests.
- Talk about the DT topics that your child is studying and in the world around them. Encourage the use of the correct DT terms and spellings
- Check that homework tasks are completed to a good standard. Help with any research homework tasks to ensure a good outcome
- Ensure that homework booklets are checked for completion of tasks and returned to school promptly

Year 7 Half term 1	Year 7 Half term 2	Year 7 Half term 3
<b>Technical Knowledge:</b> Health & Safety Alloy and Non-Alloy Metals Hardwood and Softwood Timbers <b>Manufacturing:</b> Aluminium keyring (templates, cutting, shaping, drilling, stamping, finishing). Pine Fridge Magnet (templates, cutting, shaping, drilling, stamping, finishing).	<b>Technical Knowledge:</b> Thermoforming and Thermosetting Polymers Design Brief Health & Safety Fabrication Timber Fabrication <b>Manufacturing:</b> Acrylic Stationary stand (forming, shaping) Measuring & marking out Cutting timber joints	<b>Technical Knowledge:</b> Wastage techniques Wastage tools & equipment Adhesives Presentation techniques: Isometric Design Movements: Memphis <b>Manufacturing:</b> Cutting rebates Bonding timber with adhesives Cutting timber joints
<b>Progress tasks:</b> <b>Health &amp; Safety, Tools, Equipment</b>	<b>Progress tasks:</b> <b>Materials, Measuring &amp; marking out, Fabrication</b>	<b>Progress tasks:</b> <b>Adhesives, 3D drawing Isometric, Design Movements</b>
<b>Assessment:</b> W/C 2.9.24	<b>Assessment:</b> W/C 11.11.24	<b>Assessment:</b> N/A
Year 7 Half term 4	Year 7 Half term 5	Year 7 Half term 6
<b>Technical Knowledge:</b> 3D drawing Oblique Tone and rendering Polymer physical properties Metals physical properties <b>Manufacturing:</b> Polymer surface preparation Metal surface preparation	<b>Technical Knowledge:</b> Material finishing processes Marking out Evaluation <b>Manufacturing:</b> Applying varnish Dip coating mild steel	<b>Technical Knowledge:</b> Understanding a Design Brief CAD and CAM Electronic components <b>Manufacturing:</b> Electronics 2D design (CAD) Laser cutter (CAM)
<b>Progress tasks:</b> 3D drawing Oblique, Rendering	<b>Progress tasks:</b> Material Finishes	<b>Progress tasks:</b> Electronic components, CAD and CAM
<b>Assessment:</b> W/C 24.02.25	<b>Assessment:</b> N/A	<b>Assessment:</b> W/C 9.6.25

Year 8 Half term 1	Year 8 Half term 2	Year 8 Half term 3
<b>Technical Knowledge:</b> Design Specification Electronic Components Manufactured Boards Jointing methods <b>Manufacturing:</b> Electronics Timber fabrication	<b>Technical Knowledge:</b> Biomimicry Design layout & presentations Computer Aided Design (CAD) Computer Aided Manufacture (CAM) <b>Manufacturing:</b> Timber Fabrication CAM	<b>Technical Knowledge:</b> Natural Timbers Metals: Alloys & Non-Alloys Metals physical properties Design Evaluations <b>Manufacturing:</b> Softwood fabrication Lathe Practical
<b>Progress task:</b> Electronic, Manufactured boards, Jointing methods	<b>Progress task:</b> CAD and CAM	<b>Progress task:</b> <b>Natural timbers, Metals Alloys &amp; Non-Alloys</b>
<b>Assessment:</b> W/C 14.10.24	<b>Assessment:</b> N/A	<b>Assessment:</b> 27.01.25
Year 9 Half term 1	Year 9 Half term 2	Year 9 Half term 3
<b>Technical Knowledge:</b> Design Companies: Alessi Advanced Electronics and systems Smart & Modern Materials <b>Manufacturing:</b> Advanced Timber fabrication Electronics practical	<b>Technical Knowledge:</b> Design presentation and communication Design Development Orthographic Views <b>Manufacturing:</b> Advanced Timber fabrication	<b>Technical Knowledge:</b> Material Finishes Manufacturing Flow charts and considers <b>Manufacturing:</b> Polymer surface preparation Metal surface preparation Prototype and modelling Design, Development and Manufacturing
<b>Progress task:</b> Alessi, Smart & Modern Materials, Systems	<b>Progress task:</b> Presentation techniques	<b>Progress task:</b> Manufacturing processes and equipment
<b>Assessment:</b> W/C 21.10.24	<b>Assessment:</b> N/A	<b>Assessment:</b> W/C 3.2.25

# Year 10/11 Design Technology (KS4)

## Examination/Specification Board

AQA GCSE Design Technology

## Curriculum Overview

As a GCSE option, the subject of Design and Technology helps students develop their ability to design and manufacture products with innovation, creativity and originality, using a range of materials, process and manufacturing techniques. The use of new technologies to manufacture products is also encouraged. Pupils are also taught to recognise the contribution they can make to the environment through careful consideration and selection of sustainable resources. GCSE Non Exam Assessment (NEA) is delivered through a variety of projects which are designed to develop the skills necessary for completing both the course and final examination. Through working with timbers, metals, polymers and composite materials, pupils learn valuable organisational and planning skills. Through learning about the work of other designers and past design eras, they gain confidence in their ability to develop and present their own designs and concepts.

The GCSE Design Technology course will appeal to pupils who:

- Have an interest in how products are designed and how they work
- Enjoy using machinery and hand tools to work with materials
- Want to follow a course that develops knowledge and understanding through both theory and practical work
- Like to work independently on their own designs
- Are able to organise themselves, manage their time effectively and keep to deadlines
- Want to develop good craft/manufacturing skills and produce high quality products

## How the DT department supports SEND pupils

The department maintains an inclusive learning environment which provides learning opportunities for pupils of all abilities. The department teaches to the top and scaffolds down, providing personalised learning for our SEND students. Differentiated work, personalised support; and where necessary tailored intervention is built into all Schemes of Work to remove barriers to learning.

## How the DT department supports more able pupils

High ability pupils are supported in Design Technology through opportunities for meaningful extension work, 'stretch and challenge' tasks and questions and also through recognising, then supporting exceptional ability in aspects of DT such as sketching, drawing, designing, modelling, CAD and making

## New Knowledge (what we want students to know and understand by the end of each year)

### Year 10 Progress to be made:

Pupils will have a knowledge of designers and design work from the past and will be able to use this to help them design. They will be able to research in greater depth, analyse in more detail and design/develop ideas confidently in a variety of ways. They will understand the design strategies used in industry and how to design for end-users. They will now be able to make sophisticated models and using past experience of CAD, they will be able to refine their ideas whilst developing, using the variety of techniques and skills from previous tasks to work independently & competently. They will create card models which helps to further-develop their design ideas.

### Year 11 Progress to be made:

Pupils will analyse real world design challenges, identify design possibilities, investigate client needs and wants and factors including economic and social challenges. They will be able to use the work of others, past and present, to help them form ideas. They will be able to use a range of research techniques (primary/secondary) in order to draw accurate conclusions. They will be able to explore a range of possible ideas linked to the design challenge selected and will be able to create design ideas which demonstrate flair and originality, using a variety of techniques to communicate these.

Pupils will manufacture a prototype which is made from several materials and using a variety of tools, equipment and processes. They will test and evaluate the completed outcome, suggest improvements and modifications and gathered the opinion of others on the outcome. More able pupils will be able to carry out the modifications and also understand the commercial viability of products.

Pupils will learn that materials are chosen based on many factors including their working properties, aesthetics, environmental impact, function and manufacturing processes available. They should know and understand the impact of forces and stresses and the way in which materials can be reinforced. They will have a knowledge and understanding of the ecological and social footprint left by designers, the sources and origins of materials, the different stock forms types and sizes in order to calculate and determine the quantity of materials required. They will be able to select materials and components considering the available scales of production.

**New Skills**

Use of advanced fabrication methods, utilising advanced equipment and processes (vacuum former, strip heater, laser cutter, 3D printer), use of CAD (Google SketchUp, Techsoft 2D design), advanced material finishes (oils and waxes such as Danish oil).

**Disciplinary Vocabulary**

Expected technical vocabulary is shared with pupils through use of keywords in teaching PowerPoints and pre-printed pupil booklets. The school literacy policy is followed when marking/assessing pupil work and subject-specific spellings are corrected on the front of booklets for future reference/use.

**Year 10 expected technical vocabulary/spellings**

Stock form	Planned obsolescence	Finite	Investigating
Generating	Criteria	Functionality	Prototype
Iterative design	Ecological	Ethical	Responsibility
Moral choices			

**Year 11 expected technical vocabulary/spellings**

Schematic	Fabricate	Commercial viability	Tessellation
Triangulation	Automation	Mechanical advantage	Tolerance
Life Cycle Assessment		Social footprint	Carbon offsetting
Continuous improvement		Tolerances	Conceptual

**Examinations/Key Assessments**

GCSE Non-exam assessment forms 50% of the GCSE in Design Technology and the year 11 examination, the remaining 50%. Non exam assessment work is produced during lesson time and under the supervision of the subject teachers. Pupils are encouraged to self and peer-assess their work to help them become more aware of the progress they are making and the requirements of the different section of NEA. Additionally, several key pieces of work (progress tasks) are marked in detail at key points in the year. These highlight strengths and weaknesses and also suggest ways in which improvements can be made. These progress tasks are design to recap knowledge, understanding and skills.

**Homework**

This is set once a week and is designed to support the work done during lessons. The task will be detailed on *Satchel One* so that pupils and their parents can easily access the work. As it is school policy to set homework, a detention will be issued and/or a letter sent home if they are not completed regularly. Prior to assessment periods, pupils may receive an increased volume of homework or independent study work. This will help them to prepare for exam revision in the future.



## How Parents can Help

- Check **Satchel One** regularly and ensure all work is completed to a good standard.
- Ensure that basic equipment is brought to each lesson. A pen, pencil and ruler are the minimum requirements.
- Encourage the use of the Internet for homework completion and assessment revision. Ensure that your child revises for assessment tests.
- Talk about the DT topics that your child is studying and in the world around them. Encourage the use of the correct DT terms and spellings
- Check that homework tasks are completed to a good standard. Help with any research homework tasks to ensure a good outcome

## Prior learning and recall

Pupils will have completed basic marking out, cutting, shaping and drilling tasks and will have been set simple research and analysis tasks throughout KS3 and are already able to design ideas effectively. They have explored the work of others and have also practiced the variety of sketching and drawing techniques that are available to communicate ideas effectively. They have practiced development techniques and can develop ideas.

Pupils will have learned the basics of CAD in year 9. They have practiced development techniques and can develop ideas in basic ways including the making of simple models. Pupils will have used another form of CAD (2D design) to create a working drawing. They will have made products using a variety of increasingly demanding skills and a wide range of joining methods in projects where they have been taught to use tools and equipment competently and safely.

Pupils have experienced the testing, evaluating and analysis of products made throughout KS3, building skills and knowledge each year to become more proficient at this through increasingly detailed evaluations. They will learn to gather the opinion of others, starting with their peers. Pupils will consider the commercial viability of products. Pupils will then be introduced to the concept of new and emerging technologies and explore the ways in which they have an impact on our planet through the products we design and use. Finally, they will have studied materials and properties, sources and origins, surface treatments and finishes throughout each design and make project.

In year 9, the work of designers is taught as a topic and pupils learn to recognise the work and styles of key designers and design eras. They also undertake a sketching and drawing course in year 9 to introduce them to the variety of ways that they can communicate ideas. In years 8 and 9, they focus mainly on 2D drawings and views. In year 8, a unit on biomimicry is taught so they are already familiar with this approach to design inspiration.

The concepts taught in the NEA unit (coursework) have all been taught in past projects with pupils mastering techniques in increasingly confident ways. Through earlier opportunities to develop and embed knowledge & understanding from previous topics, they will now be confident at designing, developing and modelling ideas. In year 7, pupils learn to draw, render, annotate and model in simple 2D ways. In year 8, they are introduced to 3D drawing and in year 9 where they undertake a specific topic on sketching and drawing building skills and learn to model in 3D and also undertake some simple CAD work. In year 10, the work undertaken in the half term prior to this one is spent focusing on becoming as capable and confident as possible in preparation for the NEA task. Pupils create increasingly detailed design specifications for the products that they make from year 7 onwards.

Year 10 term 1	Year 10 term 2	Year 10 term 3
<p><b>Focused practical task - birdhouse</b></p> <p>The GCSE course begins with a FPT on basic making skills to introduce pupils to the skills required, foster an enjoyment of the subject and give them a practical skills baseline to underpin later theory knowledge. They learn to measure, mark out, cut, shape, drill, chisel and finish wood as well as all the basing joining methods needed to create products from wood. Extension activities allow them to work with metals.</p>	<p><b>Realising design ideas</b></p> <p>Pupils are required to make the product that they have designed, working independently to create the final outcome. The manufacturing aspect is divided into 3 main stages – obtaining materials and components, then measuring and marking out all parts; cutting, shaping and assembly; and finishing the product. They will select and work with a range of appropriate materials, tools, equipment, components and finishes to produce their</p>	<p>Pupils will explore a range of possible ideas linking to a variety of set topics in order to prepare for the NEA task. By analysing the contextual challenge, pupils will identify design possibilities, investigate client needs and wants and factors including economic and social challenges. Students should also use the work of others (past and present) to help them form ideas. Pupils are also advised to use a range of research techniques (primary/secondary) in order to draw accurate conclusions. They should explore a range</p>

<p><b>Designing and making principles</b> The second topic of this half term involves a recap of work taught in KS3 on 'the work of others' - how designers and design movements of the past have been influential in the design of products that we use today and how they can be a source of inspiration. The concepts of freehand sketching are revisited to remind pupils of the different ways of using imagination and creativity in the design process. The variety of strategies &amp; techniques that can be used to communicate ideas are then explored in detail and a topic on how research is collected and used to help produce a successful end-product.</p> <p><b>Identifying and investigating design possibilities/ Generating imaginative and creative design ideas</b> Pupils learn how to investigate, then generate a range of design ideas using a variety of strategies then carry out appropriate development work using a variety of 2D/3D techniques including CAD.</p> <p><b>Developing design ideas</b> Pupils will learn how to model ideas in a variety of ways and understand the reasons for modelling designs.</p>	<p>prototype which is made from several materials and using a variety of tools, equipment and processes. They will have tested and evaluated a completed outcome, then suggested improvements and modifications/gathered the opinion of others on the outcome. More able pupils will be able to carry out the modifications and also understand the commercial viability of products.</p> <p>Pupils will learn that materials are chosen based on many factors including their working properties, aesthetics, environmental impact, function, manufacturing processes available. They will understand the impact of forces and stresses and the way in which materials can be reinforced. They will gain a knowledge and understanding of the ecological and social footprint left by designers, the sources and origins of materials, the different stock forms types and sizes in order to calculate and determine the quantity of materials required. They will be able to select materials and components considering the available scales of production</p>	<p>of possible ideas linking to the contextual challenge selected. In the highest band students are expected to show some innovation by generating ideas that are different to the work of the majority of their peers or demonstrate new ways of improving existing solutions.</p>
Year 11 term 1	Year 11 term 2	Year 11 term 3
<p>Pupils will have modelled their design in a variety of ways and media. Using past experience of CAD and their portfolio of evidence, they will be able to refine their ideas whilst designing and developing, using the variety of techniques and skills from previous CAD tasks to work independently &amp; competently. They will have created at least one card model which has been refined or re-developed in some way and at least 2 pages of CAD/card modelling evidence.</p>	<p>Pupils will have completed the manufacturing section of the project, producing a prototype which is complete and which demonstrates a high level of skill (which has been demonstrated consistently throughout the project), which is highly innovative and creative and which has the potential to be commercially viable. They will have tested and evaluated the completed outcome, then suggested improvements and modifications and gathered the opinion of others on the outcome. More able pupils will be able to carry out the modifications and also understand the commercial viability of products.</p>	<p>Revision:</p> <p><b>EXAM SECTION A: CORE TECHNICAL PRINCIPLES</b></p> <p>3.1.1 New and emerging technologies 3.1.2 Energy generation and storage 3.1.3 Developments in new materials <b>3.1.4 Systems approach to designing – new topic</b> 3.1.5 Mechanical devices 3.1.6 Materials and their working properties</p> <p><b>EXAM SECTION B: SPECIALIST TECHNICAL PRINCIPLES</b></p> <p>3.2.1: Selection of materials and components 3.2.2: Forces and stresses 3.2.3: Ecological and social footprint 3.2.4: Sources and origins 3.2.5: Using and working with timber-based materials 3.2.6: Stock forms, types and sizes 3.2.7: Scales of production 3.2.8: Specialist techniques and processes 3.2.9: Surface treatments and finishes</p> <p><b>EXAM SECTION C: DESIGNING AND MAKING PRINCIPLES</b></p> <p>3.3.1: Investigation, primary and secondary data 3.3.2: Environmental, social and economic challenge:</p>

		3.3.3: The work of others 3.3.4: Design strategies 3.3.5: Communication of ideas 3.2.8 Specialist techniques and processes - Tolerances 3.3.9: Materials management in quantity production
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# Year 12/13 Product Design (KS5)

## Examination/Specification Board

AQA Product Design

## Curriculum Overview

This creative and thought-provoking qualification gives students the practical skills, theoretical knowledge and confidence to succeed in a number of careers. Especially those in the creative industries. They will investigate historical, social, cultural, environmental and economic influences on design and technology, whilst enjoying opportunities to put their learning in to practice by producing prototypes of their choice. Students will gain a real understanding of what it means to be a designer, alongside the knowledge and skills sought by higher education and employers.

The design and appearance of a product can massively influence our decisions. In this course, you will be encouraged to take a broad view of Product Design, develop your capacity to design and make products to appreciate the complex relations between design, materials, manufacture and marketing. Students with an interest in product design will possess an enquiring mind, be able to think creatively and be prepared to challenge expectations. A qualification in Product Design could lead to a range of further education or career opportunities. You may wish to consider exploring a career path in Interior Design, Set Design, Product Design, Architecture, Motor Sport and Engineering.

The A Level Product Design course will appeal to students who:

- Have an interest in how products are designed, manufactured and how they work
- Enjoy designing and sketching both freehand and also when using CAD software packages.
- Want to follow a course that develops knowledge and understanding through both theory and practical work
- Like to work independently on their own designs
- Are able to organise themselves, manage their time effectively and keep to deadlines
- To be able to problem solve and have a keen interest in design and manufacture.

## How the DT department supports SEND pupils

The department maintains an inclusive learning environment which provides learning opportunities for pupils of all abilities. The department responds to SEND needs through providing practical learning experiences and support regardless of ability. Due to smaller class sizes Product Design creates more one to one teaching and support opportunities during the lessons.

## How the DT department supports more able pupils

High ability pupils are supported in Product Design through opportunities to compete open ended products. The students decide on how complex and challenging their designs are. This requires individual learning and experimental work which will be supported by their teacher.

### New Knowledge (what we want students to know and understand by the end of each year)

#### End of Year 12:

The use of SketchUp, Techsoft (CAD software) To produce quality 3D freehand design sketches To know how to use every machine in the workshop correctly and safely To able to problem solve To know how to write detailed and critical evaluations To be able to write design and manufacturing specifications To produce mood boards that inspire the designer To design and manufacture products to a finish To understand material properties, classification of materials and to continue to investigate new and modern materials To understand the characteristics of paper and boards, polymer based products, woods, metals and polymers To gain knowledge on Biodegradable polymers, composite materials, smart materials, polymer and metal processes

#### End of year 13:

To have completed a 45 page design folder complete with client feedback and photographic evidence of their product To design and manufacture a working prototype for a selected client To gain knowledge of wood process, adhesives, finishing methods, modern industry and commercial practises, digital design, design development, health and safety, intellectual property, the 6 r's of sustainability, design communication and modern design systems.

#### This will then lead onto the second part of the theory work, this will include:

The Design process, design styles and influences, designers and their work, socio-economic influences, major developments in technology, social, moral and ethical issues, product life cycle, critical analysis and evaluation, accuracy in design and manufacture, responsible design and project management.

### Examinations/Key Assessments

Assessment of A level Product Design combines traditional exams and practical coursework. Students will design a product for a client, which will aid their lives in some way. Coursework forms 50% of the in A Level and the year 13 examinations the remaining 50%. Controlled assessment tasks now form the basis of all coursework, and this will be completed under the supervision of subject teachers. Students are encouraged to self and peer-assess their own work and that of others to help them become more aware of the progress they are making. Additionally, several key pieces of work (progress tasks) will be marked in detail at key points during the year. These highlight strengths and weaknesses and also suggest ways in which improvements can be made.

The students will sit two exams.

Paper 1:

- Written exam, 2 hours and 30 minutes
- 120 marks
- 30% of the A-Level
- The questions are comprised of a mixture of short and extended responses

Paper 2:

- Written exam 1 hour and 30 minutes
- 80 marks
- 20% of the A-Level

- Mixture of short and extended response questions

### Homework

Each student will be set one homework task per week. The majority of homework is set online via SatchelOne.

### How Parents can Help

- Check **Satchel One** regularly and ensure all work is completed to a good standard.
- Encourage the use of the Internet for homework completion and assessment revision. Ensure that your child revises for assessment tests.
- Talk about the DT topics that your child is studying and in the world around them. Encourage the use of the correct DT terms and spellings
- Check that homework tasks are completed to a good standard. Help with any research homework tasks to ensure a good outcome