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. In Design Technology, we aim to make an essential contribution to the creativity, culture, wealth and well-being of the future designers and technologists of the nation.

Departmental Overview

The Design and Technology Department comprises three specialist teachers and two high specification workshops, two food technology/catering classrooms, workshop and food preparation rooms and a state-of-the-art computer suite with access to high quality A3 printing facilities.

Departmental Staff

Ms C Carney	Head of Visual Arts and Technology
Mr P Lunt	Design and Technology Teacher
Mrs L. Williams	Head of Food Technology
Mr S Williams	Technician
Mrs C Beresford	Technician
Mrs T Swain	SLT Line Manager

Year 7/8/9 Design Technology (KS3)

Curriculum overview

The Key Stage 3 course in Design Technology is taught in a carousel with Food Technology. Each year of the course is designed to allow pupils to study the full range of designing and making principles required by the National Curriculum through a range of design processes, materials, techniques and equipment. Pupils will explore the basic skills that are required in every aspect of the subject and, by the end of KS3, they will have experienced and worked with a range of materials and disciplines. They will use research and exploration to identify and understand user needs, learn how to communicate their ideas by sketching and drawing in 2D and 3D. They will learn how to select from and use, a wide range of materials, tools and equipment. They will learn to test, evaluate and refine their ideas and the products they make. The emphasis in practical tasks is to gain confidence and develop an awareness of H&S, learning to work safely and independently. The 3-year course is designed to allow curriculum mastery to develop and extend pupils' capabilities and confidence through both practice and by extension of skills.

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. Depending upon individual need, differentiated work, personalised, appropriate support and intervention from other adults is built into all Schemes of Work and provided as needed to remove any 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 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

To be able to draw simple shapes in 3D
To be able to create a simple design specification
To be able to design and model simple products
To be able to render design ideas to look like wood
To be able to use templates
To know the main types of natural timbers & engineered woods used in DT
To be able to mark out shapes on wood & drill holes with a variety of drill bits
To be able to cut and shape wood with basic hand tools
To be able to glue and clamp parts together
To be able to apply basic finishes to wood
To know the basic components used in electronic circuits
To know about the designers and design eras of the past

Year 8

To be able to draw more than one type of shape in 3D
To be able to create a design specification
To be able to design and model products
To be able to apply tone & shading to the ideas they create
To be able to make and use templates and patterns
To know the engineered woods used in DT
To be able to measure and mark out increasingly complicated shapes on wood
To be able to cut and shape wood with a variety of tools and equipment
To be able to join parts together using simple wood joints
To be able to apply a variety of wood finishes to the products they make
To know about the designers of the present

Year 9

To be able to draw 3D shapes in a variety of ways
To be able to create a detailed design specification
To be able to design & model increasingly complex products
To be able apply rendering & tone to suggest a variety of materials when designing
To be able to measure and mark out complicated shapes on wood with increasing accuracy
To be able to select and use a variety of materials and joining methods when making products
To be able to cut and shape wood through use of a variety of tools, equipment and processes
To be able to finish materials in a wide variety of ways
To understand the uses of resistors in circuits and be able to fit variable switch PCBs to the products they make

New Skills

Sketching/designing in 3D, writing design specifications, use of tone/rendering, making & using templates, measuring and marking out wood, cutting and shaping wood, drilling holes in wood, joining wood (and other materials), working with different types of wood (and other materials), applying finishes to wood (and other materials).

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 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	Countersink	Industrial	Chisel
Template	Classify	Source	Equipment	Adhesive	Engineered	Boards	Analysis	Polystyrene	Environment	Sustainable	G Cramp
Glue	Art Deco	Try square	Art Nouveau	Fibreboard	Annotation	Axle	Acrylic	Aesthetic	Dimensions	Abrasive	Client
Steel rule	Beech	Coping saw	Tenon saw	Consumer	Construction	Function	Development	Manufacture	Thermoplastic	Biodegradable	
Mahogany	Materials	Millimetres	Centimetres	Research	Machine	Assemble	Ergonomic				

Prior Learning and Recall

Prior to year 7, each pupil's experience of the subject will have varied greatly. The KS3 course in DT is carefully designed to build on and use, the prior knowledge & skills gained in the previous year to ensure that recall is easy for pupils so that they can begin to quickly master the basic skills, then build on these to make further progress. However, by the end of the Early Years Foundation Stage, most children should be able to:

- Construct with a purpose in mind, using a variety of resources
- Use simple tools and techniques competently and appropriately
- Build and construct with a wide range of objects, selecting appropriate resources and adapting their work when necessary
- Select the tools and techniques they need to shape, assemble and join materials they are using

Examination/Key Assessment

The KS3 course is assessed through testing at the end of each course and by also assessing each pupil's design and practical capabilities, to arrive at a holistic judgement of a pupil's individual progress. Pupils 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) are marked in detail at key points in the year. 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 support 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. 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 assessments, pupils may receive an increased volume of homework or independent study work.

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
Designing (Spatula): Freehand sketching and 3D design – oblique, isometric & perspective drawing skills Designing and rendering – beech	**Designing:** Modelling ideas	**Designing (Mini LED torch):** Writing design specifications CAD – torch cover
Making:	**Making (Spatula):** Measuring and marking out on wood Cutting and shaping, drilling holes (twist drill bit) Sanding and smoothing Testing and evaluating	**Making (Mini LED torch):** Making simple electronic circuits Joining parts together Testing and evaluating
Theory: Theory – natural timber, classification/sources of wood Workshop safety 1	**Theory:**	**Theory:** The work of others – design eras/designers of the past Electronic circuits and components
Progress tasks Planning - Tools and equipment 1	**Progress tasks**	**Progress tasks** The work of others – design eras
Assessment: September - Baseline test	**Assessment:** 21st November	**Assessment:** 27th February
Year 7 Half term 4	**Year 7 Half term 5**	**Year 7 Half term 6**
Designing (Toy car): Researching and investigating Designing in 3D Annotating design ideas	**Designing:**	**Designing (Mobile phone stand):** Designing ideas Rendering – a variety of wood types
Making Toy car): Modelling ideas Measuring and cutting out manufactured boards Cutting and shaping, drilling holes with a hole saw	**Making (Toy car):** Sanding, preparing wood to receive a finish Applying finishes to man boards – acrylic paint Applying extra parts and decoration to products Cut & fit axles and wheels Testing and evaluation	**Making:** Measuring, marking out, cutting & shaping - practice Gluing and clamping parts using PVA glue Applying wood stains and varnish to hardwoods
Theory: Engineered woods/manufactured boards Workshop safety 2	**Theory:**	**Theory:**
Progress tasks: Design Specification	**Progress tasks:**	**Progress tasks:** Planning - Tools & equipment 2
Assessment:	**Assessment:**	**Assessment:** 26th June – End-of-year assessment (baseline test)

Year 8 Half term 1	Year 8 Half term 2	Year 8 Half term 3
Designing (Clock): Tone and rendering exercises – value shading, crating Writing a specification Designing and rendering ideas	**Designing (clock):** Developing ideas Modelling ideas	**Designing):**
Making:	**Making Clock):** Making and using templates Measuring and marking out on a variety of materials Drilling holes in wood – using a hole saw Cutting and shaping Joining parts with fixings, eg modesty blocks	**Making (Clock):** Sanding and smoothing Applying a variety of finishes to wood Fitting clock mechanisms and numerals Applying decoration to enhance products
Theory: The types of engineered (manmade) board - recap		**Theory:** The work of others – product analysis
Progress task: Rendering metals and plastic (Starck kettle) Writing a detailed specification	**Progress task:** Planning - tools and equipment	
Assessment: 17th October	**Assessment:** 30th January	**Assessment:** 5th June - End-of-course assessment
Year 9 Half term 1	**Year 9 Half term 2**	**Year 9 Half term 3**
Designing (Lamp): Freehand sketching – recap of 3D drawing styles Crating objects using grids Designing and a variety of ideas	**Designing:** Developing ideas Modelling ideas CAD – Lampshade design	**Designing:**
Making:	**Making (lamp):** Making and using templates Measuring and marking out on a variety of materials Drilling holes in wood – using a hole saw Cutting and shaping	**Making (lamp):** Fitting electronic parts Applying a variety of finishes Enhancing products – fit lampshade Testing & evaluation
Theory: Machines and mechanical advantage 1	**Theory:** Electronics and circuits/LEDs	**Theory:** New and emerging technologies, product evolution
Progress task: Writing a detailed specification	**Progress task:** Planning – tools & equipment	**Progress task:** Product evolution
Assessment: 31st October	**Assessment:** 6th February	**Assessment:** 19th June- End-of-course assessment

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 make products with innovation, creativity and originality, using a range of materials and 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 Coursework 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 woods, metals, plastics 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 responds to SEND needs through providing practical learning experiences and support regardless of ability. Depending upon individual need, differentiated work, personalised, appropriate support and intervention from other adults is built into all Schemes of Work and provided as needed to remove any 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:	Year 11 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.	Pupils will be able analyse the contextual challenge, 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 contextual 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 complete 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 more sophisticated joining methods (dovetail joints), more professional equipment and processes (vacuum former, strip heater, laser cutter, 3D printer), use of CAD (Google SketchUp, Techsoft 2D design), more professional 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 Coursework forms 50% of the GCSE in Design Technology and the year 11 examination, the remaining 50%. Controlled assessment tasks now form the basis of all coursework, with all work produced during lesson time and done under the supervision of subject teachers. Pupils 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) 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.

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 already 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 in basic ways.
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. More able 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. More able 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 recognize 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
Focused practical task - birdhouse 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. **Designing and making principles** 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	**Realising design ideas** 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 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	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 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.

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 & 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. **Identifying and investigating design possibilities/ Generating imaginative and creative design ideas** 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. **Developing design ideas** Pupils will learn how to model ideas in a variety of ways and understand the reasons for modelling designs.	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, 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	
Year 11 term 1	**Year 11 term 2**	**Year 11 term 3**
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 & 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.	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.	Revision: **EXAM SECTION A: CORE TECHNICAL PRINCIPLES** 3.1.1 New and emerging technologies 3.1.2 Energy generation and storage 3.1.3 Developments in new materials **3.1.4 Systems approach to designing – new topic** 3.1.5 Mechanical devices 3.1.6 Materials and their working properties **EXAM SECTION B: SPECIALIST TECHNICAL PRINCIPLES** 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 **EXAM SECTION C: DESIGNING AND MAKING PRINCIPLES** **3**.3.1: Investigation, primary and secondary data 3.3.2: Environmental, social and economic challenge: 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

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