

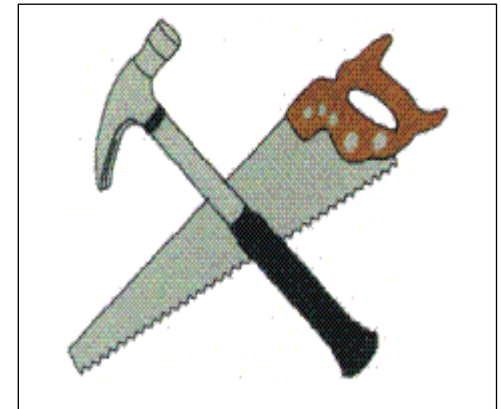
Subject:-

Resistant Materials

Head of Department: -

Mr Larigo

Teachers in this department: - **Mr Larigo, Mr Childs**



General overview

GCSE Design and Technology will prepare students to participate confidently and successfully in an increasingly technological world. Students will gain awareness and learn from wider influences on Design and Technology including historical, social, cultural, environmental and economic factors. Students will get the opportunity to work creatively when designing and making and apply technical and practical expertise.

Our GCSE allows students to study core technical and designing and making principles, including a broad range of design processes, materials techniques and equipment. They will also have the opportunity to study specialist technical principles in greater depth.

The course is available to students from year 9 to year 11

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Year 9 Overview

Students start their GCSE course in Year 9 and focus on developing practical skills and knowledge in preparation for starting their Design and Making Controlled Assessment in Year 10. This piece of work is worth 60% of the GCSE mark and is an exam-set project that is chosen and developed by the student with guidance from the teacher. Students need to produce a design portfolio and a completed piece of quality practical work. An end of course examination accounts for the remaining 40% of the marks.

Year 9 Overview

Term 1	Term 2	Term 3	Term 4	Term 5	Term 6
<p><u>Practical introduction project</u></p> <p><u>Wooden Box project</u></p> <p>Students will manufacture a wooden box using a variety of joining methods including using different types of joints and fixtures including Dovetail and Comb joints.</p> <p>Skills that students will learn include: Marking out Cutting/sawing Assembly Finishing Evaluation</p> <p>Tools and equipment that students will learn how to use include: Try Square Ruler Pencil Tenon Saw Coping saw Files</p>	<p><u>Researching and Designing</u></p> <p><u>Design Eras and Themes</u></p> <p>Students will look into design eras and themes from the last 100 years. This links to their GCSE coursework project, and enables students to become familiar with the work from The Memphis Design Era, The Bauhaus Movement, and The Art Deco Era, as well as some famous designers and artists including Charles Rennie Mackintosh and Phillipe Stark.</p> <p>In preparation for their GCSE students will produce a series of models of small storage units that are influenced by the different design eras.</p> <p>Materials used for modelling include: MDF Plywood Card/paper</p>	<p><u>CAD/CAM</u></p> <p><u>Design Project</u></p> <p>Students will use Computer Aided Design and Computer Aided Manufacture, (CAD/CAM) to design and make several small products including keyrings and clocks.</p> <p>They will use software such as 2D Design V2 and Sketchup, and setup and use hardware including a Techsoft A2 Laser cutter, and 3D printing.</p> <p>These skills are necessary requirements for the GCSE qualification, but are also transferable to many industry sectors.</p>	<p><u>Materials</u></p> <p>Students learn about a wide range of materials, including wood, metal and plastic, finding out about their uses and properties, and incorporate this information into various practical projects. They will also be taught about, and how to use specific tools that are required to work with these materials.</p> <p>Projects include Balancing Toys which use different materials such as Steel for the weight, and Acrylic for the decorative parts of the toy.</p>	<p><u>Mini GCSE Project</u></p> <p>Utilising the knowledge and skills learned since year 7, students will undertake a mini GCSE project where they will be required to research a given design task using a variety of methods, produce a range of designs, a developed final design, a finished practical piece and an evaluation of the project.</p> <p>Students are encouraged to be creative with their designs and also to make full use of the skills and knowledge they have gained in producing a finished item.</p>	<p><u>Controlled Assessment</u></p> <p>Students will start their GCSE controlled assessment task which is set by the exam board AQA. This project consists of many elements including detailed research, development and planning of designs, and the manufacture of a finished piece.</p> <p>This will count as 60% of their final mark, with a two hour externally set exam making up the remaining 40%.</p>

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Year 10 Overview

Students will have developed their knowledge and skills throughout Year 9, and will have started their controlled assessment. This piece of work is worth 60% of the GCSE mark and is an exam-set project that is chosen and developed by the student with guidance from the teacher. Students need to produce a design portfolio and a completed piece of quality practical work. An end of course examination accounts for the remaining 40% of the marks. Students will be given the opportunity to express their creativity, and demonstrate a wide range of skills in their work including Laser cutting and MIG Welding, which as well as deepening their knowledge, will also transfer into many manufacturing industries.

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Year 10 Overview

Term 1	Term 2	Term 3	Term 4	Term 5	Term 6
<p><u>Assessment Objective 1</u></p> <p><u>Research</u></p> <p>Students will research the chosen design task set out by AQA. This involves the planning of the project, looking at existing products and finding out about the intended target market.</p> <p>Theory Revision</p> <p>Health and Safety in the workshop – students will revise all areas of H&S in the workshop, including correct use of equipment, and also how to prevent accidents in the workplace.</p>	<p><u>Assessment Objectives 1 and 2</u></p> <p>Students will use their research to inform their design choices. They will produce a range of initial design ideas that are influenced by their chosen design eras including Art Deco and Memphis.</p> <p>Theory Revision.</p> <p>Tools and equipment – students will investigate different types of tools and their uses, including how to use and maintain them correctly.</p>	<p><u>Assessment objective 2</u></p> <p><u>Designing and modelling</u></p> <p>Students will develop and model their range of initial designs, ensuring that a range of skills can be demonstrated in the making of the final product.</p> <p>Modelling can be done using a variety of methods and materials including CAD/CAM, and also more traditional materials including card and paper.</p> <p>Theory Revision.</p> <p>Techniques and processes – students will learn more about joining materials, and methods of shaping and processing them into products.</p>	<p><u>Assessment objective 2</u></p> <p><u>Designing and modelling</u> <u>Design development</u></p> <p>Students will continue to develop their design ideas and models further until they are satisfied that it will meet the assessment criteria and fulfil the design brief.</p> <p>Theory Revision.</p> <p>Systems and control – students will learn about mechanical systems and electrical systems that are used in the manufacturing industry.</p>	<p><u>Assessment objectives 2 and 3</u></p> <p><u>Designing and making</u></p> <p>Students will have finalised their design ideas and will be planning the making of it. They will need to ensure that all aspects of the design are thought through, and individual parts modelled or tested beforehand. This section of the coursework will extend into year 11.</p> <p>Exam revision</p> <p>Students will practice exam questions from previous years.</p>	<p><u>Assessment objective 3</u></p> <p><u>Making</u></p> <p>Students will be partway through their final practical piece. They will have to ensure that they make quality control checks throughout to make sure their product is accurate, solidly constructed, and fully meets specification requirements.</p> <p>Exam revision</p> <p>Full mock exam paper to be set as homework over the summer holidays.</p>

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Year 11 Overview

For the final year of Resistant Materials students will be refining and finishing their controlled assessment for submission in May, and will also be preparing for the written examination in June. The controlled assessment is worth 60% and the externally set 2 hour exam makes up the following 40%. The examination covers a wide range of topics including materials, tools and equipment, and manufacturing processes, and also includes a designing section for a product, the theme of which is released to the students in February.

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Year 11 Overview

Term 1	Term 2	Term 3	Term 4	Term 5	Term 6
<p><u>Assessment objectives 2 and 3</u></p> <p><u>Designing and Making</u></p> <p>Students will be partway through their final practical piece. As they progress with the making of the final piece, students are encouraged to develop and modify their products, and document and evidence this in their portfolio.</p> <p>Exam revision</p> <p>Re-visit revision topics - Health and Safety in the workshop – students will revise all areas of H&S in the workshop, including correct use of equipment, and also how to prevent accidents in the workplace.</p>	<p><u>Assessment objectives 3 and 4</u></p> <p><u>Making</u></p> <p>Students will be completing the making of their final product, ensuring it meets the design specification, and demonstrates a wide range of skills.</p> <p>The finished product must also be tested and evaluated, using a variety of methods including questionnaires and testing of the product in use.</p> <p>Exam revision</p> <p>Re-visit topics - Tools and equipment – students will investigate different types of tools and their uses, including how to use and maintain them correctly.</p>	<p><u>Reviewing and completing controlled assessment</u></p> <p>Students will have completed their controlled assessment and will be in the process of refining it to ensure that they achieve as higher grade as possible. The deadline for this to be submitted to AQA is the 7th May.</p> <p>Exam Revision</p> <p>Re-visit topics - Techniques and processes – students will learn more about joining materials, and methods of shaping and processing them into products.</p>	<p><u>Exam Preparation</u></p> <p>Students will be preparing for the external written exam which is worth 40% of the total marks.</p> <p>The paper is 2 hours long and comprises a range of questions including a designing section, and various questions relating to materials, tools and processes.</p>	<p><u>Exam Preparation continued.</u></p> <p>Students will be preparing for the external written exam which is worth 40% of the total marks.</p> <p>The paper is 2 hours long and comprises a range of questions including a designing section, and various questions relating to materials, tools and processes.</p> <p>The exam is usually set in the first week of June</p>	

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