



| YEAR | TOPICS   | TERMLY INDEPENDENT WORK  |
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| 7    | <p>The Year 7 scheme of work has been developed to enable students to further their capability in Design and Technology. Students are taught to recognize and explore user needs and wants (that can be met through D&amp;T activity) develop ideas about how this might be achieved and develop designs/product that meet those needs.</p> <p>They will develop a repertoire of skills and knowledge including:</p> <ul style="list-style-type: none"> <li>• Design.</li> <li>• Knowledge of materials and basic electronic components.</li> <li>• Practical work</li> <li>• Knowledge of workshop Health and Safety.</li> </ul> <p>Teaching is based around three different focus areas in year 7...</p> <p><b><u>Focus 1. Graphic presentation.</u></b></p> <p>The following skills are introduced and practiced:</p> <ul style="list-style-type: none"> <li>• 2D sketching and Orthographic drawing presentation.</li> <li>• Introduction of rendering to enhance presentation skills.</li> <li>• Meeting simple design constraints.</li> <li>• Communicating math measurements to British Standards.</li> <li>• Introduction to isometric drawing presentation.</li> <li>• Computer Aided Design.</li> </ul> <p><b><u>Focus 2. Key fob torch.</u></b></p> <p>Through this design and make project, the following are developed:</p> <ul style="list-style-type: none"> <li>• Working to a manufacturing specification.</li> </ul> | <ul style="list-style-type: none"> <li>- Communication of own design proposals.</li> <li>- Investigating existing products.</li> <li>- Investigation of material properties.</li> <li>- Analysis of customer needs.</li> <li>- Practical outcome where permitted.</li> <li>- Computer aided outcomes.</li> <li>- Revision resources compiled.</li> <li>- Ongoing homework via online TEAM facility.</li> </ul> |



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|   | <ul style="list-style-type: none"> <li>• Prototyping outcomes.</li> <li>• Demonstrating safe working practices in the workshop.</li> <li>• Use of simple manufacturing aids (Templates).</li> <li>• Adopting a methodical approach to problem solving.</li> <li>• Self and peer assessments.</li> <li>• Understanding of simple electronic circuits, components and variables.</li> <li>• Ongoing evaluation of outcome.</li> </ul> <p><b><u>Focus 3. Knowledge theory.</u></b></p> <p>Throughout year 7, theory is learnt and revised in order to introduce GCSE style questioning with an understanding of the following topics throughout the year:</p> <ul style="list-style-type: none"> <li>• Material properties (Plastic, Styrofoam, electronic components).</li> <li>• Budgeting for customer need practice.</li> <li>• Identifying workshop hand tools and their purpose.</li> <li>• Electronic components and their function.</li> <li>• Ergonomics.</li> <li>• Recognising the benefits of CAD and CAM (Computer Aided Design/Manufacture).</li> <li>• Iterative research and investigation.</li> <li>• Investigation into historical movements.</li> <li>• 1 hour exam during whole school assessment week.</li> </ul> <p><b><u>Year 7. Competitions to support curriculum.</u></b></p> <ul style="list-style-type: none"> <li>- Remembrance poppy design competition (Whole year group).</li> </ul> |  |
| 8 | <p>The Year 8 scheme of work has been developed to enable students to further their capability in Design and Technology. Students are introduced to experimenting with mock coursework style pages in order</p>   | <ul style="list-style-type: none"> <li>- A3 Mock GCSE coursework page layout practice introduced.</li> <li>- Investigation and analysis of existing products.</li> </ul> |



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| 8 | <p>to test their aptitude and interest for potential GCSE studies.<br/>Pupils choose to continue with D&amp;T at the end of year 8 (this is not a firm commitment to GCSE).</p> <ul style="list-style-type: none"><li>• Designing and Making.</li><li>• Working knowledge of materials and components.</li><li>• Knowledge of product quality checks and Health and Safety.</li><li>• Developing designs and prototypes.</li><li>• 1 hour D&amp;T exam during whole school internal assessment week.</li></ul> <p>Teaching is based around the following areas...</p> <p><b>Focus 1. Graphics presentation.</b></p> <p>The following skills are revisited from the previous year:</p> <ul style="list-style-type: none"><li>• 2D sketching and Orthographic drawing presentation.</li><li>• Enhanced rendering to communicate higher design detail.</li><li>• Meeting simple constraints, to meet user needs.</li></ul> <p>The following skills are introduced and practiced:</p> <ul style="list-style-type: none"><li>• Communicating using isometric drawing .</li><li>• Use of mathematical angles for drawing techniques.</li><li>• Begin A3 Mock GCSE coursework pages.</li><li>• Testing design skills for commercial brands.</li></ul> | <ul style="list-style-type: none"><li>- Rendered design proposals suited to GCSE standards.</li><li>- Development of practical prototypes, where permitted.</li><li>- Upcycling materials.</li><li>- Computer aided outcomes.</li><li>- Own revision resources compiled.</li><li>- Ongoing homework via online TEAM facility.</li></ul> |
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|          | <p><b><u>Focus 2. Decorative Picture frame.</u></b><br/>         Through this project, the following are developed:</p> <ul style="list-style-type: none"> <li>• Rendering different materials.</li> <li>• Understanding the properties of a range of plastics.</li> <li>• Identifying the uses of plastics and environmental concern (6R's).</li> <li>• Appreciating the work of others.</li> <li>• Computer Aided Design.</li> <li>• Manipulation of the plastic form, where practical work is permitted.</li> <li>• Safe working practices.</li> <li>• Finishing plastic using hand techniques (Comparison against CAM) where permitted.</li> <li>• Isometric drawing.</li> <li>• Evaluation skills.</li> </ul> <p><b><u>Year 8. Competitions to support curriculum.</u></b></p> <ul style="list-style-type: none"> <li>- Recycling plastic competition (Whole year group).</li> <li>- Selected pupils form teams &amp; attend the local BAE Rotary competition.</li> <br/> <li>- Architecture club available to support career ambitions.</li> </ul> |   |
| <p>9</p> | <p>In year 9, smaller D&amp;T class sizes allow for enhanced practice and complex practical explorations, with a view to promoting continuing into year 10 and 11 GCSE studies.</p> <p>The Year 9 scheme of work has been developed with guidance from the exam board AQA SOW model, designed to allow pupils to broaden their knowledge and practice of theory required for GCSE.</p> <ul style="list-style-type: none"> <li>• Designing.</li> </ul>  | <ul style="list-style-type: none"> <li>- Develop A3 Mock coursework portfolio.</li> <li>- Enhanced presentation of design proposals.</li> <li>- Understanding some commercial application of manufacturing techniques.</li> </ul> |



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| 9 | <ul style="list-style-type: none"><li>• Making with increased workshop use.</li><li>• Building working knowledge of an array of materials and their properties.</li><li>• Understanding of commercial production.</li><li>• Knowledge of assessing quality and Health and Safety.</li><li>• Knowledge of smart and modern materials.</li></ul> <p>Teaching is based around three focus needs as follows...</p> <p><b><u>Focus 1. Mechanical structure / Desk lamp</u></b></p> <p>This project produces a 3D outcome where permitted, combining theory and practical activity as follows:</p> <ul style="list-style-type: none"><li>• Understanding of market forces and assessing client needs.</li><li>• Investigation into mechanical toys and motions.</li><li>• Written design and manufacturing specification practice.</li><li>• Recognising some timbers, plastics tools and finishes.</li><li>• Understanding man-made board and stock forms.</li><li>• Levers and linkages.</li><li>• Use of CAD/CAM techniques.</li><li>• Designing when considering forces applied to material/products.</li></ul> <p><b><u>Focus 2. Mock coursework</u></b></p> <p>Ongoing practice of suitable coursework content throughout year 9, in order for pupils to determine coursework assessment criteria, which accumulates 50% of GCSE in higher years:</p> <ul style="list-style-type: none"><li>• Working in large scale format through iterative process where permitted.</li><li>• Enhanced development into isometric sketching and render.</li></ul> | <ul style="list-style-type: none"><li>- Development and modelling of design proposals where permitted, in a variety of materials.</li><li>- Ongoing modifications and improvements to theory.</li><li>- Formal evaluation to support reasons for adaptations.</li><li>- CAD &amp; CAM.</li><li>- Own revision resources compiled.</li><li>- Ongoing homework via online TEAM facility.</li></ul> |
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|                  | <ul style="list-style-type: none"> <li>• Understanding of commercial use of production aids - jigs and formers to give repeated accuracy and save time.</li> <li>• Third party testing and collecting primary research/data.</li> <li>• Computer Aided Design and manufacturing.</li> </ul> <p><b><u>Focus 3. Knowledge theory</u></b><br/>Ongoing knowledge throughout year 9, consolidating 3 year KS3 course:</p> <ul style="list-style-type: none"> <li>• Timbers and Plastics.</li> <li>• Forces and stresses.</li> <li>• Smart and Modern materials.</li> <li>• Commercial processes &amp; viability.</li> <li>• Mechanisms.</li> <li>• The work of others continued.</li> <li>• Scales of Production.</li> <li>• 1 hour exam during whole school assessment week.</li> </ul> <p><b><u>Year 9. Competitions to support curriculum</u></b></p> <ul style="list-style-type: none"> <li>- Participation in year 10 hosted competition.</li> <li>- Selected pupils form teams &amp; attend the local BAE Rotary competition.</li> <li>- Architecture club available to support career ambitions.</li> </ul> |   |
| <p><b>10</b></p> | <p>The scheme of work has been developed to allow students to demonstrate fully their Design and Technology capability, using the AQA guidance SOW module designed for a 2 year course. Year 10 pupils should master their mock coursework/NEA and commence final NEA in June this year.</p> <ul style="list-style-type: none"> <li>• Analysing and evaluating products and processes.</li> <li>• Engaging in focused tasks to develop and demonstrate tasks.</li> </ul>  | <ul style="list-style-type: none"> <li>- Develop working knowledge of materials and their uses.</li> <li>- Investigating commercial production techniques.</li> <li>- Evaluation and analysis of existing products.</li> <li>- Modelling and presentation of design ideas.</li> <li>- Project planning.</li> <li>- Development of design proposals with regard to consumer requirements and suitability for volume production.</li> </ul> |



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| <p>10</p> | <ul style="list-style-type: none"><li>Engage in strategies for developing ideas, planning and producing products.</li></ul> <p><b><u>Four broad areas are studied throughout year 10 D&amp;T.</u></b></p> <ul style="list-style-type: none"><li>Materials and components.</li><li>Designing and making skills.</li><li>Design and market influences.</li><li>Processes and manufacture, where practical is permitted.</li><li>Consolidated in 2 hour exam during whole school assessment week.</li></ul> <p><b><u>Materials and components.</u></b></p> <p>Classification and working properties of materials.</p> <ul style="list-style-type: none"><li>Paper and card.</li><li>Identify common papers including layout, sugar, tracing, corrugated and foam centred board.</li><li>Understand many papers are composites and composition can be adjusted to alter properties.</li></ul> <ul style="list-style-type: none"><li>Timber based material.</li><li>Identify common timbers such as pine, mahogany, oak etc.</li><li>Identify common manufactured boards i.e. MDF, plywood, chipboard and hardboard.</li></ul> <ul style="list-style-type: none"><li>Ferrous and non-ferrous metals.</li><li>Identify common metals i.e. mild steel, brass, copper and aluminium.</li><li>Understand many metals are alloys and their composition can be adjusted.</li></ul> <ul style="list-style-type: none"><li>Plastics.</li><li>Identify common thermoplastics i.e. polystyrene, acrylic and PVC.</li></ul> | <ul style="list-style-type: none"><li>Evaluation of outcome taking into consideration user group opinion and modifications.</li><li>Reviewing of theory topics.</li><li>Mastered coursework practice pages with array of personal examples to use as aids to benefit live NEA and year 11.</li><li>Ongoing homework via online TEAM facility.</li></ul> |
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| 10 | <ul style="list-style-type: none"><li>• Identify common thermosetting plastics i.e. GRP and epoxy resin.</li></ul> <p><b><u>Designing and Making Skills.</u></b></p> <p>Through this area of study, the following are developed: through mock coursework:</p> <ul style="list-style-type: none"><li>• Consolidate design principles of line, form and colour.</li><li>• Develop and use design briefs, detailed specifications in relation to product development and testing.</li><li>• Design for product maintenance.</li><li>• Self-assess and seek the opinion of others during the iterative process.</li><li>• Match materials and components with tools, equipment and processes.</li><li>• Product disassembly.</li><li>• Make decisions when deciding how to manufacture a product.</li><li>• Produce and use detailed working schedules and set realistic deadlines.</li><li>• Ensure the quality of design solutions is suitable for consumer.</li><li>• Use tools and equipment safely, accurately and efficiently to achieve reliable functioning of product, where permitted.</li><li>• Use computer aided manufacture (CAM) in single and batch production.</li><li>• Tolerance and quality control.</li><li>• Surface treatments and finishes.</li></ul> <p><b><u>Design and Market Influences.</u></b></p> <ul style="list-style-type: none"><li>• Consider the evolution of product design.</li><li>• Recognise that products evolve over time and the reasons.</li><li>• Understand market pull and technology push.</li><li>• New and emerging technologies.</li><li>• Discuss and analyse situations / problems.</li></ul> |  |
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| <p>10</p> | <ul style="list-style-type: none"><li>Analyses trends and form predictions / conclusions.</li><li>Consider safety with regards to themselves and the product user/s</li><li>Costings and financial implications.</li><li>Be aware that designs are protected by patents.</li><li>Communicate ideas, using a range of graphical techniques (including orthographic and isometric).</li></ul> <p><b><u>Processes and Manufacture.</u></b></p> <ul style="list-style-type: none"><li>Practice manufacture, where permitted.</li><li>Understand how a range of materials are cut, shaped and formed.</li><li>Understand different scales i.e. one-off, batch and mass production.</li><li>Analyse what effects manufacturing (ie organisation of people, tools and materials).</li><li>Forces and stresses.</li><li>Energy generation and storage.</li><li>Use a range of procedures including CAD/CAM to ensure consistency in production.</li><li>Use hand and machine methods of cutting and shaping materials.</li></ul> <p><b>Please note, theory learnt in years 7-9 to be revisited and consolidated to benefit KS4 GCSE.</b></p> <p><b><u>Year 10 Projects</u></b></p> <p>The main projects used during Year 10 to deliver the above knowledge and skills are:</p> <ul style="list-style-type: none"><li>Charity graphics and mathematical net development.</li><li>Themed board game of pupil choice.</li></ul> | <p>- Live NEA outcomes year 10<br/>Focus on section A and B and commence work on section C (Design communications) ahead of the summer break.</p> |
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|    | <ul style="list-style-type: none"><li>• Live NEA – Begin 1<sup>st</sup> June (View to completing 20% before summer)</li></ul> <p><b><u>Live NEA</u></b><br/>AQA release the NEA coursework choices every year 1<sup>st</sup> June for pupil to choose from.<br/>In line with the changes to the GCSE specification, pupils must choose their option and self-manage their NEA worth 50% of their grade. Therefore, early distribution of AQA options essential to maximise time at the end of year 10 (Taking into account school early closure in July).</p> <p>The project consists of a three-dimensional product and a concise design folder. Coursework lessons should run alongside theory lessons in order to benefit entries/content made to NEA.</p> <p>Plan to complete 20% of live NEA before end of year 10.</p> <p><b><u>Year 10. Competitions to support curriculum</u></b></p> <ul style="list-style-type: none"><li>- Year 10 host design and host a competition designed to encourage year 9.</li><li>- Year 10 design challenge, winners outcome displayed in department.</li><li>- Trip to view industry technology (LIPA Liverpool), if permitted, otherwise online.</li><li>- Selected pupils form teams &amp; attend the local BAE Rotary competition.</li></ul> |  |
| 11 | <p>During Year 11, students will complete their NEA project marked by the school and externally moderated, amounting to 50% of the total mark for the GCSE.</p> <p>Operating 3 lessons a week, 2 are usually denoted to NEA and the third for ongoing theory.</p>  | <ul style="list-style-type: none"><li>- Consolidation of all paper-based tasks in controlled assessment.</li><li>- approximate 20 x A3 NEA coursework pages</li><li>- Review and revision of theory topics.</li><li>- Ongoing homework via online TEAM facility.</li></ul> |



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|  | <p>NEA to be completed by February (Both then internally &amp; externally marked). Thus allows ample time for final theory revision.</p> <p>Important significant time is denoted to theory and revision lessons to engage in robust new GCSE specification content set by the examination board, AQA.</p> <p>2 x year 11 mock exams, one in December (Internal department time totaling 1 hour exam) and the second during whole school assessment week in February, totaling 2 hours.</p> <p><b><u>Year 11. Competitions to support curriculum</u></b></p> <ul style="list-style-type: none"><li>- Participation in year 11 revision competition (Weekly tally across 2 month) designed to motivate and engage pupils in independent revision.</li></ul> |  |
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**PLEASE NOTE:**

- This broad curriculum is designed with the AQA D&T new specification in mind (First examination year 2019 for new AQA course).
- This overview sets out a general summary of the basic curriculum taught. It is not an exhaustive list of what may be taught and subject teachers may follow the above in a different order taking account of resources and facilities available, changes due to pandemic routines and the unique cohort must be reflected upon.
- KS3 year 7-9 are taught a single lesson per week therefore overlaps in learning do apply to allow for mastery of learning across years.
- The Independent work indicated represents core, headline tasks per term; weekly/fortnightly independent/home work is set in all subject areas and details are noted in pupil planners and will be loaded onto homework TEAM online facility for all year groups.