

RESISTANT MATERIALS

YEAR 10

AUTUMN 1

<p>Garden Project This is taught as a Mini GCSE project, focusing on the skills of writing a brief, effective research, drawing design ideas, presentation skills, model making, planning, making and evaluating. Students will use a range of hand drawing and ICT skills, hand making and machine production and computer aided manufacture with the laser cutter and 3D printer.</p>	<p>Materials Theory For those students who studied RM in year 9 this will be revision and building more depth of knowledge, for those who didn't this will be building on knowledge from years 7 and 8 in preparation for annotating coursework and the exam unit.</p>	<p>Theory Topic-Identifying requirements This topic is designed to build awareness of a range of user's needs and how to make usable products that are inclusive while considering social, cultural, moral and economic considerations in design.</p>	<p>Prior Learning Improving making skills, developing planning, technical drawing and CAD skills. All areas are touched on in KS3 but need more depth.</p>
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CAREERS LINKS

Anthropometrics, ergonomics, design, market research, user profiling, computer aided design and in the environmental industry.

AUTUMN 2

<p>Garden Project This is taught as a Mini GCSE project, focusing on the skills of writing a brief, effective research, drawing design ideas, presentation skills, model making, planning, making and evaluating. Students will use a range of hand drawing and ICT skills, hand making and machine production and computer aided manufacture with the laser cutter and 3D printer.</p>	<p>Theory Topic- Energy and electronics, Students learn about different types of energy, how they can be converted into electricity and the environmental impact of each. Students also build on their key stage 3 knowledge of electronics including the use of microprocessors.</p>	<p>Theory Topic- Learning from existing products A study of different design styles and how they influence designers today, the impact of fashion and trends on design, marketing of products and the wider issue of ethics in design.</p>	<p>Prior Learning Energy and Electronics is taught at a basic level in years 7 and 8, this needs reinforcing in year 10. Presenting ideas is part of the Garden project, further skills are practiced here.</p>
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CHARACTER LINKS

Performance virtues of determination, motivation and perseverance are harnessed when completing long-term projects and assignments that are ongoing. Intellectual virtues of critical thinking, judgement and reflection are fostered when students are critiquing design ideas and presentation skills.

SPRING 1

<p>Theory Topic, Mechanisms A study of how mechanisms can be used to give mechanical advantage, how each works and some practical applications for each. Maths skills such as gear ratios are included in this topic.</p>	<p>Theory topic, New and Emerging technology A range of new technologies such as the use of drones to deliver packages, Artificial intelligence to drive cars, the use of biometrics in securing devices, and virtual reality in training and teaching. These all have moral implications that need understanding.</p>	<p>Prior Learning Mechanisms are taught in year 8 but need more depth and knowledge reinforcement.</p>
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SPRING 2

<p>Slot together lighting This project is designed to build up skills on core draw to make an accurate drawing that can be cut out on the laser cutter and slot together without the use of glue. This is then packaged.</p>	<p>Theory Topic, implications and wider issues. Looking more deeply into sustainability; planned obsolescence and a life cycle analysis looking at a product from its raw materials, through transport and manufacture to use and end of life and the impact this has on the environment.</p>	<p>Theory Topic, Core knowledge, Students revisit and build on key stage 3 knowledge in metals, polymers, paper and board, composite materials and textiles.</p>	<p>Prior Learning Building on skills in CAD learned in years 7, 8 and 9. Core knowledge is all materials covered in key stage 3. Much of the implications is new knowledge, building on some science knowledge from KS3.</p>
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KEY ASSESSMENT DATES

Continual assessment of coursework is ongoing. Practice exam questions are fortnightly and formal practice papers during whole school assessment weeks.

SUMMER 1

<p>Prep for NEA (Coursework) This topic mops up any areas of the NEA that have not been covered so far so that students are fully prepared when the context is released on the 1st of June.</p>	<p>Prior Learning Building on presentation skills throughout all year groups, investigating, designing, making and evaluating.</p>
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SUMMER 2

<p>NEA Investigating the context. The exam board releases 3 contexts, students study each one, investigates problems that need a design solution and choose one to follow through their coursework.</p>	<p>Prior Learning Building on research done throughout all years.</p>
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