Thomas Mills
High School & Sixth Form

# CURRICULUM OVERVIEW: Design and Technology – Resistant Materials

"*The best way to predict the future is to design it*" - Buckminster Fuller

At Thomas Mills High School and Sixth Form we teach the Edexcel GCSE Design and Technology course, including the Timbers specialism. The course is structured to develop pupils' creativity, problem-solving, and technical knowledge. The key aims of the course are:

1. Creative Problem Solving - Pupils learn how to come up with ideas and design solutions to real-world problems, thinking about what people need and want.
2. Practical Skills - They get hands-on experience using tools and machines (like saws, drills, and even laser cutters or 3D printers) to build their designs.
3. Understanding Materials - They explore the properties of different types of wood and other materials—learning which are best for different jobs and why.
4. Thinking About the Bigger Picture - Pupils consider how their designs affect the environment, society, and people's lives. They learn to make responsible and sustainable choices.
5. Using Technology - They use computer-aided design (CAD) software to bring their ideas to life digitally before making them physically.
6. Evaluating and Improving - They test their ideas, get feedback, and learn how to improve their designs—just like real designers and engineers do.

The course is assessed as 50% written exam paper (1hr 45mins) where pupils are tested on their knowledge of materials, design, and making. The other 50% comprises of their Project which is a design and make task based on a real challenge set by the exam board.

In Year 11 our focus is on the completion of the NEA coursework which is worth 50% of the final grade, this is made up of a design portfolio and the manufacture of a product. We also look at exam techniques and practice questions as well as revision for the final exam.

## Year 11

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| Term | Topic | Knowledge and Skills | Useful Links |
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| 1 | **NEA coursework**<br>Section 1.1<br>Section 1.2<br>Section 2.1<br>Section 2.2<br>Section 2.3<br>Section 2.5<br><br>**Theory**<br>Unit 7 – Timbers revision | **Knowledge:**<br>The first term of Year 11 shifts the theory focus to the NEA coursework. We finish off the investigation and research of section 1.1 and then create a design specification and brief. Section 2 of the NEA is the creation of a range of possible design solutions that get narrowed down and developed to a final product.<br>We will also revise the 'timbers' theory work that was studied in Year 9.<br>**Skills:**<br>This term involves the application of the following skills:<br>**Research/Investigating** – Pupils will investigate potential solutions for their chosen design context<br>**Presentation**– Pupils will present their investigations in section 1.1 of their design portfolio.<br>**Sketching/CAD** – Pupils will present a range of solutions for their chosen context using a combination of hand sketching and CAD work.<br>**Modelling** – Pupils will use a variety of materials to model part or all of the final product to help aid the development of the design.<br>**Reviewing/evaluating –** Research and design ideas will be reviewed/evaluated as the project progresses taking into account the views of the end user/client. | Exam board and course information<br>https://qualifications.pearson.com/en/qualifications/edexcel-gcses/design-and-technology-9-1-from-2017.html<br><br>Seneca<br>https://senecalearning.com/en-GB/<br><br>BBC Bitesize – Edexcel timbers<br>https://www.bbc.co.uk/bitesize/guides/zhyny4j/revision/1<br><br>BBC Bitesize – NEA help<br>https://www.bbc.co.uk/bitesize/guides/zmshsrd/revision/1<br><br>https://www.bbc.co.uk/bitesize/guides/zvkck2p/revision/1<br><br>NEA help guide on Teams in the files section. |
| **Assessments** | | There are four core assessments this term. One is an online timber specialism assessed through the Seneca learning platform. The second is the first section of the NEA coursework. The third assessment is a trial exam paper using past exam questions. The final assessment this term will be the second section of the NEA coursework. | |

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| | | **Autumn 1:** Online assessment using Seneca – Timbers knowledge<br>**Autumn 2:** NEA project work – Section 1.1 and 1.2 - Investigation, specification and design brief<br>**Autumn 3:** Trail exam paper – Exam board past paper<br>**Autumn 4:** NEA project work – Section 2 – initial design ideas developed to final design | |
| **2** | **NEA coursework**<br>Section 3.1<br>Section 3.2<br>Section 4.1<br><br>**Theory**<br>Unit 1 – Core revision | **Knowledge:**<br>Durning this term we complete the NEA coursework the focus moves from investigating and designing to manufacture and testing. All the skills the students have learnt over the course are put to the test with the manufacture of their product. Once built, the product will be tested and an evaluation formed that considers the views of the user group/client. We continue to prepare for the final exam with revising the core section of the theory that was covered in Year 10.<br><br>**Skills:**<br>This term involves the application of the following skills:<br>**Manufacture** – To be able to produce a prototype solution to the chosen context. Pupils will use the skills they have learnt in the workshop over the course to produce a high-quality solution to their design problem.<br>**Test** – Pupils will test their product against their design specification to ascertain its success.<br>**Evaluate** – Pupils will form an evaluation of the success of their product considering the views of the user group/client and the environmental impact their design has by completing a life cycle analysis. | Exam board and course information<br>https://qualifications.pearson.com/en/qualifications/edexcel-gcses/design-and-technology-9-1-from-2017.html<br><br>Seneca<br>https://senecalearning.com/en-GB/<br><br>BBC Bitesize – Edexcel core<br>https://www.bbc.co.uk/bitesize/examspecs/zb6h92p<br><br>BBC Bitesize – NEA help<br>https://www.bbc.co.uk/bitesize/guides/z47w7p3/revision/1<br><br>https://www.bbc.co.uk/bitesize/guides/zjhxh39/revision/1<br><br>NEA help guide on Teams in the files section. |
| **Assessments** | | There are four core assessments this term. One is an online core knowledge assessed through the Seneca learning platform. The second is section 3 of the NEA coursework the manufacture of the final product. | |

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| | | The third assessment is a trial exam paper (past paper). The final assessment is section 4 of the NEA coursework which is the evaluation of the project.<br>**Spring 1:** Seneca Knowledge assessment – Core knowledge tests<br>**Spring 2:** NEA project work – Section 3.1 and 3.2 - Manufacture and Quality and accuracy<br>**Spring 3:** Trial Exam – Past paper<br>**Spring 4:** NEA project work – Section 4.1 Testing and evaluation | |
| **3** | **Theory**<br>Unit 1- core<br>Unit 7- timbers | **Knowledge:**<br>This term will only include a few weeks teaching as pupils will be starting their GCSE exams. The primary focus for the lessons will be revision and exam technique.<br>**Skills:**<br>**Revision**– Pupils will be employing various different revision techniques to help prepare for their final exam.<br>**Exam technique**– Pupils will understand how to answer different styles of questions in the final exam paper | Exam board and course information<br>https://qualifications.pearson.com/en/qualifications/edexcel-gcses/design-and-technology-9-1-from-2017.html<br><br>Seneca<br>https://senecalearning.com/en-GB/<br><br>BBC Bitesize – Edexcel core<br>https://www.bbc.co.uk/bitesize/examspecs/zb6h92p<br><br>BBC Bitesize – Edexcel timbers<br>https://www.bbc.co.uk/bitesize/guides/zhyny4j/revision/1<br>Focus Revision materials, link on TEAMS |
| **Assessment** | | In class assessments, online tests and revision will be carried out before the pupils sit their GCSE exam. | |