

**Year 11****Theory lessons**

- Autumn term: One hour per week
- Summer term: Two hours per week

<b>Timing</b>	<b>Unit Title</b>	<b>Overview</b>	<b>Knowledge</b>	<b>Assessing Understanding</b>
Autumn 1 (Theory)	Section A: 1.5 Mechanical Devices	To develop an understanding of the function and application of a range of mechanical devices.	<ul style="list-style-type: none"> <li>● Levers</li> <li>● Linkages</li> <li>● Cams</li> <li>● Followers</li> <li>● Gears</li> <li>● Pulleys and Belts</li> </ul>	End of unit test
Autumn 2 (Theory)	Section C: 3.4 Design Strategies 3.5 Communication of design ideas 3.6 Prototype Development	<p>To develop a deeper understanding of a range of design strategies and their application in the NEA.</p> <p>To continue to develop communication skills and use them effectively in the NEA.</p> <p>To understand the importance of prototyping.</p>	<p>How different design strategies can be applied, including:</p> <ul style="list-style-type: none"> <li>• collaboration</li> <li>• user centred design</li> <li>• iterative design</li> <li>• avoiding design fixation.</li> </ul> <p>Iteratively explore and develop ideas, using the following techniques:</p> <ul style="list-style-type: none"> <li>• sketching</li> <li>• modelling</li> <li>• testing</li> <li>• evaluation to improve outcomes.</li> </ul> <p>Develop, communicate, record and justify design ideas using a range of appropriate techniques such as:</p> <ul style="list-style-type: none"> <li>● Freehand sketching, isometric and perspective drawing</li> <li>● 2D and 3D drawing</li> <li>● Card and computer modelling</li> <li>● Annotation</li> </ul>	Practice questions

			<ul style="list-style-type: none"> <li>● Exploded diagrams to show constructional detail or assembly</li> <li>● Working drawings: 3rd angle orthographic, using conventions, dimensions and drawn to scale</li> <li>● Computer based tools.</li> </ul> <p>Design and develop prototypes in response to client wants and needs.</p>	
Spring 1 1 (Theory)				Mock exam
Spring 2 (Theory)	Section A: 1.4 Systems approach to design	Develop an understanding of the systems approach to design.	<ul style="list-style-type: none"> <li>● A systems approach</li> <li>● Inputs</li> <li>● Processes</li> <li>● Outputs</li> <li>● Systems diagrams</li> </ul>	Practice questions
Summer 1 (Theory)	Section A: 1.3 Developments in new materials  Paper 1 Revision	Develop an understanding of materials created in the last 100 years and their impact on design.  Focus on areas of weakness identified in assessments throughout the year.	<ul style="list-style-type: none"> <li>● Modern materials</li> <li>● Smart materials</li> <li>● Technical textiles</li> <li>● Composite materials</li> </ul>	Practice questions Revision exercises Past papers

**NEA lessons**

- Autumn term: One hour per week
- Spring term: Two hours per week

**Details of Non-exam assessment (NEA)**

- 50% of the overall GCSE.
- Consists of: A working prototype and a concise A3 portfolio of approximately 20 pages.
- 30-35 hours of work.

Timing	Unit Title	Overview	Knowledge and skills	Assessing Understanding
Autumn 1 (NEA)	Section C: Generating design ideas	Generate a range of design ideas which meet with the design brief and specification.	<ul style="list-style-type: none"> <li>● Communicating ideas using a range of techniques including 2D and 3D annotated sketching.</li> <li>● Iterative design.</li> <li>● User centred design.</li> <li>● Avoiding design fixation.</li> <li>● Use of research to inform design thinking.</li> <li>● Use of client feedback.</li> <li>● Evaluation of design ideas against the design specification.</li> </ul>	Formative feedback in line with the AQA NEA Assessment criteria.
Autumn 2 (NEA)	Section D: Developing design ideas	Develop and refine design ideas.	<ul style="list-style-type: none"> <li>● Development: Use of formal and informal 2D/3D drawing including CAD.</li> <li>● Development: Use of cardboard and CAD models.</li> <li>● Development: Testing/trialling and experimentation with tools and processes.</li> <li>● Development: Research into and experimentation with materials.</li> <li>● Communication of design decisions informed by the development, design brief and design specification.</li> </ul>	Formative feedback in line with the AQA NEA Assessment criteria.

			<ul style="list-style-type: none"> <li>● Generating a manufacturing specification which includes an: <ul style="list-style-type: none"> <li>○ Orthographic projection</li> <li>○ Cutting list</li> <li>○ Final presentation drawing.</li> </ul> </li> </ul>	
Spring 1 (NEA)	Section E: Realising design ideas	Manufacture of the final prototype.	<ul style="list-style-type: none"> <li>● Production of an accurate prototype, which meets with the design specification using appropriate materials/tools equipment with accuracy and care.</li> <li>● Use of specialist tools, equipment and techniques which include: <ul style="list-style-type: none"> <li>○ shaping</li> <li>○ fabrication</li> <li>○ construction and assembly.</li> <li>○ CAM/CNC</li> </ul> </li> <li>● Working with skill and accuracy</li> <li>● Application of a suitable finish</li> </ul>	Formative feedback in line with the AQA NEA Assessment criteria.
Spring 2 (NEA)	Section F: Analysing & evaluating	Analysis and evaluation throughout the design process, including final product testing and evaluation.	<ul style="list-style-type: none"> <li>● Continuously analysing and evaluating iterative designs, considering the user and design specification. Use decisions to improve outcomes.</li> <li>● Testing designs as they developed.</li> <li>● Using test results to inform future design decisions.</li> <li>● Testing the final prototype, including market testing.</li> <li>● Analysing and evaluating the final product.</li> </ul>	Formative feedback in line with the AQA NEA Assessment criteria.