

# Year 11

## Topics

Element	Week 1	Week 2	Week 3	Week 4	Week 5	Week 6
<b>Term 1</b>	<b>Theory</b>	Design Briefs	Design Specification	Wave 1 speciifc exam skills	Wave 1 speciifc exam skills	Wave 1 speciifc exam skills
	<b>NEA</b>	Section B: Producing a design brief and specification (10 marks)	Section B: Producing a design brief and specification (10 marks)	Section A and B Deadline and improvements	Section A and B improvements	Section C: Generating design ideas (20 marks)
	<b>Home learning (booklet provided)</b>					Section C: Generating design ideas (20 marks)
<b>Term 2</b>	<b>Theory</b>	Wave 1	Wave 1 Therapy	Design communication	Design communication	Design Development
	<b>NEA</b>	NA	Section C: Generating design ideas (20 marks)	Section C: deadline and improvements	Section D: Developing design ideas (20 marks)	Section D: Developing design ideas (20 marks)
	<b>Home learning</b>					Section D: deadline and improvements
<b>Term 3</b>	<b>Theory</b>	H&S	Tools/processes	Tools/processes	Quality control	Wave 2
	<b>Practical</b>	Section E: Realising design ideas (20 marks)	Section E: Realising design ideas (20 marks)	Section E: Realising design ideas (20 marks)	Section E: Realising design ideas (20 marks)	
	<b>Home learning</b>		Wave 2 Revision	Wave 2 Revision	Wave 2 Revision	Wave 2 Revision
<b>Term 4</b>	<b>Theory</b>	Wave 2 Therapy	Project specific	Project specific		NA
	<b>NEA</b>	Section E: Deadline and improvements	Section E: Deadline and improvements	Section F: Analysing and evaluating (20 marks)	Section F: Analysing and evaluating (20 marks)	NEA Deadline
	<b>Home learning</b>	Wave 2 Revision	Wave 2 Revision			Revision Launch
<b>Term 5</b>	<b>Theory</b>	Exam Questions (all topics)	Exam Questions and revision (all topics)	Exam Questions and revision (all topics)	Exam Questions and revision (all topics)	Exam Questions and revision (all topics)
	<b>NEA</b>	NA	NA	NA	NA	NA
	<b>Home learning</b>	Revision	Revision	Revision	Revision	Revision











# NEA- Section B



At Malbank we will develop Technologists who are creative, skilful and confident practically, socially and intellectually giving students the opportunity to impress leaders of industry so that they can make a smooth transition from education into the workplace.

Prior Knowledge	Current	Future
<p><b>Pupils should have:</b></p> <ul style="list-style-type: none"> <li>- By analysing the contextual challenge students will identify design possibilities, investigate client needs and wants and factors including economic and social challenges. Students should also use the work of others (past and/or present) to help them form ideas. Research should be concise and relate to their contextual challenge. Students are also advised to use a range of research techniques (primary/secondary) in order to draw accurate conclusions. Students should be encouraged to investigate throughout their project to help inform decisions.</li> </ul>	<p><b>HEAD - Knowledge</b></p>	<p><b>Pupils should go on to:</b></p> <ul style="list-style-type: none"> <li>- Students should explore a range of possible ideas linking to the contextual challenge selected.</li> <li>These design ideas should demonstrate flair and originality and students are encouraged to take risks with their designs. Students may wish to use a variety of techniques to communicate.</li> <li>Students will not be awarded for the quantity of design ideas but how well their ideas address the contextual challenge selected. Students are encouraged to be imaginative in their approach by experimenting with different ideas and possibilities that avoid design fixation.</li> <li>In the highest band students are expected to show some innovation by generating ideas that are different to the work of the majority of their peers or demonstrate new ways of improving existing solutions.</li> </ul>
	 <ul style="list-style-type: none"> <li>- Based on conclusions from their investigation's students will outline design possibilities by producing a design brief and design specification. Students should review both throughout the project</li> </ul>	
	<p><b>HEART - Personal Development</b></p>	
	 <ul style="list-style-type: none"> <li>- I can use my initiative to form my own primary research</li> </ul>	
<p><b>HAND - Skills</b></p>	 <ul style="list-style-type: none"> <li>- Comprehensive design brief which clearly justifies how they have considered their user/client's needs and wants and links directly to the context selected.</li> <li>- Comprehensive design specification with very high level of justification linking to the needs and wants of the client/user. Fully informs subsequent design stages.</li> </ul>	

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	 <ul style="list-style-type: none"> <li>- Students should explore a range of possible ideas linking to the contextual challenge selected.</li> <li>- These design ideas should demonstrate flair and originality and students are encouraged to take risks with their designs. Students may wish to use a variety of techniques to communicate.</li> <li>- Students will not be awarded for the quantity of design ideas but how well their ideas address the contextual challenge selected. Students are encouraged to be imaginative in their approach by experimenting with different ideas and possibilities that avoid design fixation.</li> <li>- In the highest band students are expected to show some innovation by generating ideas that are different to the work of the majority of their peers or demonstrate new ways of improving existing solutions.</li> </ul>	
	<p><b>HEART - Personal Development</b></p>	
 <ul style="list-style-type: none"> <li>- I can use my knowledge of SMSC and environmental issues to come up with suitable design ideas. I can communicate and explain my ideas to my teacher and peers.</li> </ul>		
<p><b>HAND - Skills</b></p>	 <ul style="list-style-type: none"> <li>- Imaginative, creative and innovative ideas have been generated, fully avoiding design fixation and with full consideration of functionality, aesthetics and innovation.</li> <li>- Ideas have been generated, that take full account of on-going investigation that is both fully relevant and focused.</li> <li>- Extensive experimentation and excellent communication is evident, using a wide range of techniques.</li> <li>- Imaginative use of different design strategies for different purposes and as part of a fully integrated approach to designing.</li> </ul>	



# WAVE 1



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Prior Knowledge	Current	Future
<p><b>Pupils should have:</b></p> <ul style="list-style-type: none"> <li>- You should have prior knowledge of these topics</li> </ul>	<p><b>HEAD - Knowledge</b></p>  <p><b>Section A</b>  Types of businesses  Renewable energy sources  Features of products designed for maintenance  Biodegradable materials  Cardboards suitable for hot food packaging  Input in a system that automatically switches on in dark conditions  Softwood timber  Change in motion in a crank handle mechanism  Impact of actions on global warming  Area calculation  Cost comparison of battery types for a smoke alarm  Processing and arrangement of Kevlar fibers for unique properties  Properties of manufactured boards  Two ways JIT production helps improve efficiency</p>  <p><b>Section B</b>  Identifying forces acting on parts of a high chair (legs, seat, straps)  Choosing an addition process and describing it: lamination, printing, sewing, soldering, welding  Waste material removal process and description  Purpose and method of quality control for prototypes  Choosing a material category and its source: metal based materials, paper and boards, polymers, textile based materials, timber based materials  Process used to convert a chosen material category into a workable form and description  Consumer considerations before purchasing a product regarding environmental impact</p> <p><b>Section C</b>  Suitability and safety feature analysis of playground equipment for users aged 4-12  Using anthropometric data for playground equipment design  Manufacturing tolerance calculation for step ladder parts  Percentage of waste material created from cutting steps  Importance of collaboration in design solutions with examples  Safety precautions when using cutting tools  Reasons for applying surface finishes to materials and fabrics (aesthetic &amp; functional) with examples  Advantages of 3D drawings over 2D drawings  Completing third angle orthographic projections (side view and isometric drawing) for a storage rack  Calculating the volume of material required for a component made by pouring into a mold  Importance of modelling for developing prototypes</p> 	<p><b>Pupils should go on to:</b></p> <ul style="list-style-type: none"> <li>- Identify knowledge gaps: Pinpoint weak areas, focus revision.</li> <li>- Understand common mistakes: Identify patterns, address group issues.</li> <li>- Develop exam strategies: Learn from errors, improve problem-solving.</li> <li>- Boost confidence: Build self-awareness, set realistic goals.</li> <li>- Provide valuable feedback: Offer personalized guidance, improve teaching methods.</li> </ul>






# NEA- Section D- Developing Design Ideas






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<p><b>Pupils should have:</b></p> <ul style="list-style-type: none"> <li>- Students should explore a range of possible ideas linking to the contextual challenge selected.</li> </ul> <p>These design ideas should demonstrate flair and originality and students are encouraged to take risks with their designs. Students may wish to use a variety of techniques to communicate.</p> <p>Students will not be awarded for the quantity of design ideas but how well their ideas address the contextual challenge selected. Students are encouraged to be imaginative in their approach by</p> <p>experimenting with different ideas and possibilities that avoid design fixation.</p> <p>In the highest band students are expected to show some innovation by generating ideas that are different to the work of the majority of their peers or demonstrate new ways of improving existing solutions.</p>	<p><b>HEAD - Knowledge</b></p>	<p><b>Pupils should go on to:</b></p> <ul style="list-style-type: none"> <li>- •Students will work with a range of appropriate materials/components to produce prototypes that</li> <li>•are accurate and within close tolerances. This will involve using specialist tools and equipment, which may include hand tools, machines or CAM/CNC. The prototypes will be constructed through</li> <li>•a range of techniques, which may involve shaping, fabrication, construction and assembly. The prototypes will have suitable finish with functional and aesthetic qualities, where appropriate.</li> <li>•Students will be awarded marks for the quality of their prototype(s) and how it addresses the design brief and design specification based on a contextual challenge.</li> </ul>
	 <ul style="list-style-type: none"> <li>- Students will develop and refine design ideas. This may include, formal and informal 2D/3D drawing including CAD, systems and schematic diagrams, models and schedules. Students will develop at least one model, however marks will be awarded for the suitability of the model(s) and not the quantity produced. Students will also select suitable materials and components communicating their decisions throughout the development process. Students are encouraged to reflect on their developed ideas by looking at their requirements; including how their designs meet the design specification. Part of this work will then feed into the development of a manufacturing specification providing sufficient accurate information for third party manufacture, using a range of appropriate methods, such as measured drawings, control programs, circuit diagrams, patterns, cutting or parts lists.</li> </ul>	
	<p><b>HEART - Personal Development</b></p>	
 <ul style="list-style-type: none"> <li>- I can show resilience in figuring out the best way for my product to work. I can keep trying if my idea does not work</li> </ul>		
<p><b>HAND - Skills</b></p>	 <ul style="list-style-type: none"> <li>- Very detailed development work is evident, using a wide range of 2D/3D techniques (including CAD where appropriate) in order to develop a prototype.</li> <li>- Excellent modelling, using a wide variety of methods to test their design ideas, fully meeting all requirements.</li> <li>- Fully appropriate materials/components selected with extensive research into their working properties and availability.</li> <li>- Fully detailed manufacturing specification is produced with comprehensive justification to inform manufacture</li> </ul>	

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	 <ul style="list-style-type: none"> <li>•Students will work with a range of appropriate materials/components to produce prototypes that</li> <li>•are accurate and within close tolerances. This will involve using specialist tools and equipment, which may include hand tools, machines or CAM/CNC. The prototypes will be constructed through</li> <li>•a range of techniques, which may involve shaping, fabrication, construction and assembly. The prototypes will have suitable finish with functional and aesthetic qualities, where appropriate.</li> <li>•Students will be awarded marks for the quality of their prototype(s) and how it addresses the design brief and design specification based on a contextual challenge.</li> </ul>	
	<p><b>HEART - Personal Development</b></p>	
 <ul style="list-style-type: none"> <li>- Organisation to be able to follow the making diary</li> </ul>		
<p><b>HAND - Skills</b></p>		
 <ul style="list-style-type: none"> <li>•The correct tools, materials and equipment (including CAM where appropriate) have been consistently used or operated safely with an exceptionally high level of skill.</li> <li>•A high level of quality control is evident to ensure the prototype is accurate by consistently applying very close tolerances.</li> <li>•Prototype shows an exceptionally high level of making/finishing skills that are fully consistent and appropriate to the desired outcome.</li> <li>•An exceptionally high-quality prototype that has the potential to be commercially viable has been produced and fully meets the needs of the client/user.</li> </ul>		

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	 <ul style="list-style-type: none"> <li>- Within this iterative design process students are expected to continuously analyse and evaluate their work, using their decisions to improve outcomes.</li> <li>- This should include defining requirements, analysing the design brief and specifications along with the testing and evaluating of ideas produced during the generation and development stages. Their final prototype(s) will also undergo a range of tests on which the final evaluation will be formulated. This should include market testing and a detailed analysis of the prototype(s).</li> </ul>	
	<p><b>HEART - Personal Development</b></p>	
 <ul style="list-style-type: none"> <li>- Reflection and initiative- I can reflect and evaluate my project and explain how to make it better</li> </ul>		
<p><b>HAND - Skills</b></p>	 <ul style="list-style-type: none"> <li>- Extensive evidence that various iterations are as a direct result of considerations linked to testing, analysis and evaluation of the prototype, including well considered feedback from third parties.</li> <li>- Comprehensive testing of all aspects of the final prototype against the design brief and specification. Fully detailed and justified reference is made to any modifications both proposed and undertaken.</li> <li>- Excellent ongoing analysis and evaluation evident throughout the project that clearly influences the design brief and the design and manufacturing specifications.</li> </ul>	

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