

## Year 12

## Lesson 1&amp;2

Timing	Unit	Knowledge	Assessing Understanding
Autumn Term 1	Practice non-exam assessment (NEA)	<b>First two weeks will be dedicated to H&amp;S (see below)</b> Analysis of Context (completed for holiday work) Research Plan Existing Products Research User Research Practical investigation First concepts Disassembly Design brief and specification	Formative and summative assessment against AQA AS marking criteria
Autumn Term 2		Design proposals Development through Modelling Development through sketching Development through materials experimentation Evaluation/analysis throughout against the specification	
Spring Term 1		Development: all areas (continued) Manufacturing specification Manufacturing Prototype development as a result of user testing Prototype development as a result of testing and evaluation	
Spring Term 2		Manufacturing Prototype development as a result of user testing Prototype development as a result of testing and evaluation Final Testing and Evaluation	

Summer Term 2	A-Level non-exam assessment (NEA)	Analysis of Context Research Plan User Research Existing products research Practical investigation First concepts Disassembly Design brief and specification	Formative and summative assessment against AQA A-Level marking criteria
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**Lesson 3&4**

Autumn Term 1	Health & Safety in the Workshop (8 lessons over two weeks)	<p>Students will be developing their skills in the workshop and ensure they can be independent using the machinery.</p> <p>Students will complete a range of tasks on machinery in the workshop logging their skills in a H&amp;S folio, including:</p> <ul style="list-style-type: none"> <li>- Drills (pillar and hand)</li> <li>- Bandfacer/Abrasion</li> <li>- Sawing (scroll saws, tenon, coping)</li> <li>- Routing</li> <li>- Use of glues</li> <li>- Use of screws and nails</li> </ul> <p>This will be taught alongside unit 1.9 Health &amp; safety. From this, students will:</p> <ul style="list-style-type: none"> <li>- Understand the H&amp;S legislation</li> <li>- Be able to write a risk assessment</li> <li>- Use relevant PPE for machinery.</li> </ul>	Students complete H&S Folio by demonstrating skills
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	Technical principles 1	<b>Metals</b> Theory: <ul style="list-style-type: none"> <li>● Mechanical and Physical Properties</li> <li>● Classification of metals</li> <li>● Workshop and industrial testing</li> <li>● Performance characteristics of metals (+ types)</li> <li>● Stock forms</li> <li>● Finishing</li> <li>● Permanent and temporary joining</li> <li>● Heat treatment</li> <li>● Wasting processes</li> <li>● Forming processes</li> <li>● Quality Assurance &amp; Quality Control (Overview)</li> <li>● Aluminium Composite Board, Tungsten Carbide</li> </ul> Practical skills: <ul style="list-style-type: none"> <li>● Make a metal bottle opener by turning, brazing, dip coating, drilling, threading, cutting, filing</li> </ul>	<b>Polymers</b> Theory: <ul style="list-style-type: none"> <li>● Classification of polymers</li> <li>● Performance characteristics of polymers (+ types)</li> <li>● Stock forms</li> <li>● Finishing and adhesives</li> <li>● Property Enhancement</li> <li>● Forming processes</li> <li>● Biodegradable polymers</li> <li>● Elastomers</li> <li>● Polymer based sheet and film</li> </ul> Practical skills: <ul style="list-style-type: none"> <li>● Make a piece of jewellery from polymers using laser cutting, blow moulding, line bending, thermoforming, shredding and making own recycled plastic</li> </ul>	End of unit tests Polymers Metal Papers and boards Woods
Autumn Term 2				
Spring Term 1		<b>Papers and Boards</b> Theory: <ul style="list-style-type: none"> <li>● Classification of papers and boards</li> <li>● Performance characteristics of papers and boards</li> <li>● Stock forms</li> <li>● Finishing and printing</li> <li>● Property Enhancement</li> <li>● Forming processes</li> </ul> <b>Other materials</b> Theory:	<b>Woods</b> Theory: <ul style="list-style-type: none"> <li>● Classification of woods</li> <li>● Performance characteristics of woods (+ types)</li> <li>● Stock forms</li> <li>● Finishing</li> <li>● The use of adhesives and fixings</li> <li>● Permanent and temporary joining</li> <li>● Property Enhancement</li> <li>● Wasting processes</li> <li>● Forming processes</li> </ul>	
Spring Term 2				

		<ul style="list-style-type: none"> <li>● Smart materials</li> <li>● Modern materials</li> <li>● Composites including: GRP, CFRP, Glulam, concrete and fibre cement</li> </ul> <p>Practical skills:</p> <ul style="list-style-type: none"> <li>● Experiments with smart and modern materials</li> </ul>	<ul style="list-style-type: none"> <li>● Jigs and fixtures</li> </ul> <p>Practical skills:</p> <ul style="list-style-type: none"> <li>● Manufacture of a range of test pieces -steam bending, CAM Router, Router, lathe, bag press, finishes, joints. Present these pieces as an educational display for the workshop.</li> </ul>	
Summer Terms 1 & 2	Design and making principles 1	<p><b>Design Theory</b></p> <ul style="list-style-type: none"> <li>● Design styles and movements</li> <li>● Designers and their work</li> </ul>	<p><b>Design Theory</b></p> <ul style="list-style-type: none"> <li>● Responsible design</li> <li>● Social, moral and ethical issues.</li> </ul> <p><b>Other</b> Introduction to Onshape: 3D CAD software</p>	