

# DESIGN & TECHNOLOGY: PRODUCT DESIGN

## TERM BY TERM CURRICULUM

[Specification link - AQA Level Design & Technology: Product Design](#)



August 2024

### YEAR 12

TERM	Project & Skills	Theory
1	<p>Introduction to the course</p> <p>Card Modelling</p> <ul style="list-style-type: none"> <li>• Modelling skills</li> <li>• Cards and boards</li> <li>• Product evolution</li> <li>• Reverse engineered card outcome</li> </ul> <p>CAD</p> <ul style="list-style-type: none"> <li>• Development of 2D CAD skills</li> <li>• Fundamentals of 3D CAD</li> </ul>	<p>Material Properties</p> <ul style="list-style-type: none"> <li>• Physical and working properties and characteristics of materials</li> </ul> <p>Polymers</p> <ul style="list-style-type: none"> <li>• Classification, properties and characteristics of polymers</li> <li>• Polymer processes</li> </ul> <p>Timbers</p> <ul style="list-style-type: none"> <li>• Classification, properties and characteristics of timbers</li> </ul>
2	<p>Presentation Techniques</p> <ul style="list-style-type: none"> <li>• Marker rendering</li> <li>• Sketch and ideation techniques</li> </ul> <p>CAD &amp; CAM</p> <ul style="list-style-type: none"> <li>• Laser cut project</li> <li>• 3D printing project</li> </ul> <p>Focussed Metal Project</p> <ul style="list-style-type: none"> <li>• Wasting metals</li> <li>• Centre lathe</li> <li>• Joining metals</li> </ul>	<p>Timbers</p> <ul style="list-style-type: none"> <li>• Timber processes incl. commercial</li> <li>• <b>Joining and finishing</b></li> </ul> <p>Metals</p> <ul style="list-style-type: none"> <li>• Classification, properties and characteristics of metals</li> <li>• Metal processes</li> <li>• <b>Joining and heat work</b></li> </ul> <p>Finishing Materials</p> <ul style="list-style-type: none"> <li>• Selecting finishes</li> <li>• Applying finishes</li> </ul>
3	<p>Design &amp; Make Project</p> <p>Identify &amp; Investigate</p> <ul style="list-style-type: none"> <li>• Resreach plan</li> <li>• Investigation incl. context, problem analysis, target market, product analysis, design influences.</li> <li>• Design brief and specification</li> </ul> <p>Design</p>	<p>Other Materials</p> <ul style="list-style-type: none"> <li>• Smart materials classification, propertites and use</li> <li>• Modern materials classification, propertites and use</li> <li>• Composite materials classification, propertites and use</li> <li>• Papers and boards classification, propertites and use</li> </ul>

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	<ul style="list-style-type: none"> <li>• Generate design ideas, modelling and evaluation</li> </ul>	<p>Design Influences</p> <ul style="list-style-type: none"> <li>• Design movements and notable designers</li> <li>• Influences on design incl. technological and socio-economic and political factors</li> </ul>
4	<p>Design &amp; Make Project Practical Outcome</p> <ul style="list-style-type: none"> <li>• Modelling</li> <li>• Independent practical outcome using appropriate materials and processes</li> <li>• Testing and evaluation of outcome</li> </ul>	<p>Inclusive Design</p> <ul style="list-style-type: none"> <li>• Human factors incl. ergonomics and anthropometrics</li> <li>• Focussed design and model task</li> </ul> <p>Sustainability</p> <ul style="list-style-type: none"> <li>• 6Rs, use of materials, material choices incl. bio polymers</li> <li>• Lifecycle analysis, design for repair and disassembly</li> </ul>
5	<p>NEA Identify &amp; Investigate</p> <ul style="list-style-type: none"> <li>• Research plan</li> <li>• Investigation incl. context, problem analysis, target market, product analysis, design influences.</li> <li>• Design brief and specification</li> </ul> <p>Internal Examination: Revision</p>	<p>Materials Testing</p> <ul style="list-style-type: none"> <li>• Testing in industry</li> <li>• Testing in workshop</li> </ul> <p>Safety</p> <ul style="list-style-type: none"> <li>• Consumer safety</li> <li>• Safe working practice incl. HASAWA, COSHH, Risk assessment</li> </ul> <p>Internal Examination: Revision</p>
6	<p>Internal Examination: Revision &amp; Paper</p> <p>NEA Design</p> <ul style="list-style-type: none"> <li>• Generate design ideas, modelling, testing and evaluation</li> <li>• Ongoing research to support design</li> </ul>	<p>Internal Examination: Revision &amp; Paper</p> <p>Product Development</p> <ul style="list-style-type: none"> <li>• Why products change over time</li> <li>• Technological developments</li> </ul> <p>Commercial Manufacture</p> <ul style="list-style-type: none"> <li>• Scales of production</li> <li>• JIT, ICT, sub-assembly</li> <li>• CAD &amp; CAM, EDI, PPC</li> </ul> <p>Protecting designs &amp; IP</p>

## YEAR 13

TERM	Project & Skills	Theory
1	NEA Design <ul style="list-style-type: none"> <li>• Complete design</li> <li>• Develop final proposal incl. materials, components, processes and techniques</li> <li>• Planning for production</li> </ul>	Accuracy in Manufacture <ul style="list-style-type: none"> <li>• Manufacture methods incl. manufacturing aids, datums, templates etc.</li> </ul> Feasibility Studies  Enterprise & Marketing <ul style="list-style-type: none"> <li>• Customer identification</li> <li>• Labelling and packaging</li> <li>• Corporate identity and global marketing</li> <li>• Product costing and profit</li> <li>• Entrepreneurs</li> </ul>
2	NEA Final Prototype <ul style="list-style-type: none"> <li>• Manufacture final prototype</li> <li>• Record manufacturing process</li> <li>• Ongoing research, design, testing and evaluating as required</li> </ul>	Quality Control & Quality Assurance <ul style="list-style-type: none"> <li>• Manufacture to tolerances</li> <li>• QA systems incl. Total Quality Management (TQM), scrum, Six Sigma and application to industry</li> <li>• Critical path analysis</li> <li>• QC techniques incl. material checks, testing in industry, workshop tests</li> </ul> Designing for ease of manufacture  National & International Standards <ul style="list-style-type: none"> <li>• Summary of BSI and ISO standards</li> <li>• Standards applied to material labelling, environmental directives incl. WEEE etc,</li> </ul>
3	NEA Final Prototype <ul style="list-style-type: none"> <li>• Manufacture final prototype</li> <li>• Record manufacturing process</li> </ul> Evaluating Design & Prototype <ul style="list-style-type: none"> <li>• Analyse and evaluate final prototype</li> </ul> Internal Examination: Revision & Paper	Product Development & Improvement <b>Detailed product study</b> <b>Detailed product comparison</b> <b>Detailed product analysis</b>  Internal Examination: Revision & Paper
4	NEA Evaluating Design & Prototype <ul style="list-style-type: none"> <li>• Analyse and evaluate final prototype</li> <li>• Complete submission of portfolio</li> </ul>	Revision for final exams

5	Revision for final exams Final Exams
6	Final Exams Paper 1: Technical Principles – 2 hours 30 minutes Paper 2: Designing and Making Principles – 1 hour 30 minutes