

## Product Design Year 11 Knowledge Organiser

| Theory and Exam Prep Topics: Identical to PLC  | NEA Coursework  | Key Terms and Important Information  |
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| <p>DESIGN STRATEGIES</p> <p>ELECTRONIC SYSTEM</p> <p>WORK OF OTHER DESIGNERS</p> <p>WORK OF OTHER COMPANIES</p> <p>ECO, ENVIROMENTAL, SOCIAL RESEARCH AND INVESTIGATION</p> <p>BRIEF AND SPECIFICATION</p> <p>EXPLORING IDEAS</p> <p>COMMUNICATION OF IDEAS 1</p> <p>COMMUNICATION OF IDEAS 2</p> <p>COMPUTER BASED TOOLS</p> <p>PROTOTYPE DEVELOPMENT</p> <p>ENERGY GENERATION</p> <p>MECH SYSTEMS 1</p> <p>MECH SYSTEMS 2</p> <p>PROPERTIES OF MATERIALS</p> <p>PAPER AND BOARD</p> <p>TIMBER</p> <p>METALS</p> <p>POLYMERS</p> <p>TEXTILES</p> <p>NEW MATERIALS</p> <p>STANDARD COMPONENTS</p> <p>FINISHING MATERIALS</p> <p>SELECTION OF MATERIALS</p> <p>WORKING WITH MATERIALS</p> <p>SCALES OF MANUFACTURE</p> <p>MANUFACTURING</p> <p>PAPER AND BOARD</p> <p>TIMBER BASED MATERIALS</p> <p>METALS AND ALLOYS</p> | <p>Collage 1</p> <p>Bubble diagram1</p> <p>Collage 2</p> <p>Bubble diagram 2</p> <p>Collage 3</p> <p>Bubble diagram 3</p> <p>Design brief</p> <p>Target market and client information</p> <p>Existing products1</p> <p>Existing products2</p> <p>Existing products3</p> <p>Ergonomics and Anthropometrics</p> <p>Social and Moral</p> <p>Materials Research</p> <p>Ideas 1</p> <p>Ideas 2</p> <p>Ideas 3</p> <p>Development 1</p> <p>Development 2</p> <p>CAD</p> <p>Photo's of models and mock ups</p> <p>Final idea drawing</p> <p>Manufacturing specification</p> <p>Plan for making</p> <p>Photo diary</p> <p>Final product</p> <p>Testing</p> <p>Evaluation</p> <p>Modifications</p> <p>Photo's of final model</p> | <p><b>Automation</b></p> <p>The use of control systems for operating equipment such as machinery and processes in factories; this reduces human input.</p> <p><b>Client</b></p> <p>The person/people/audience being designed for and whose needs are being met.</p> <p><b>Commercial process</b></p> <p>Manufacturing method used to produce products in quantity.</p> <p><b>Commercial product</b></p> <p>A product intended to make money.</p> <p><b>Conceptual stages (of design)</b></p> <p>Use of models, sketches and computer aided design (CAD) to show the design of a product as it develops.</p> <p><b>Continuous improvement</b></p> <p>The identification of improvements and subsequent evolution of products.</p> <p><b>Co-operative</b></p> <p>A group of people united to meet common social, economic or cultural need through a jointly-owned business.</p> <p><b>Crowd funding</b></p> <p>A large number of people who raise money for a project or venture.</p> <p><b>Ecological</b></p> <p>The consideration of the environment and the impact that design can have on it.</p> |

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| <p>POLYMERS</p> <p>TEXTILES</p> <p>MEASUREMENT+PRODUCTION</p> <p>ENSURING ACCURACY</p> <p>IMPACT ON INDUSTRY</p> <p>IMPACT ON PRODUCTION</p> <p>IMPACT ON SOCIETY+ENVIRO</p> |  | <p><b>Ethics</b><br/>Moral decisions when designing and manufacturing.</p> <p><b>Fabricate</b><br/>Using processes such as cutting, bending, joining and assembly to produce products.</p> <p><b>Finite</b><br/>A material or source which will one day run out.</p> <p><b>Functionality</b><br/>How well a product carries out its purpose.</p> <p><b>Fusibility</b><br/>How well a material is converted by heat into a molten or liquid state dependent on its melting point.</p> <p><b>Iterative design</b><br/>Design methodology based on a cyclical process of analysing, prototyping and testing to refine a product. Each iteration and result starts the process again.</p> <p><b>Lean manufacturing</b><br/>Reducing and eliminating waste in a manufacturing process.</p> <p><b>Life cycle assessment</b><br/>A technique used to assess the environmental impact of a product at all stages of its manufacture, use and disposal.</p> <p><b>Market pull</b><br/>Products developed to meet the needs of society or a specific section of the market.</p> |
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| <p><b>What's assessed for you Exam</b></p> <p>1 Core technical principles<br/>2 Specialist technical principles<br/>3 Designing and making principles</p> <p>How it's assessed<br/>Written exam: 2 hours<br/>100 marks<br/>50% of GCSE</p> <p>Questions<br/>Section A – Core technical principles (20 marks)</p> <p>A mixture of multiple choice and short answer questions assessing a breadth of technical knowledge and understanding.</p> <p>Section B – Specialist technical principles (30 marks)</p> <p>Several short answer questions (2–5 marks) and one extended response to assess a more in depth knowledge of technical principles.</p> <p>Section C – Designing and making principles (50 marks)</p> <p>A mixture of short answer and extended response questions</p> | <p><b>What's assessed for your NEA</b></p> <p>Practical application of:<br/>1.Core technical principles<br/>2 Specialist technical principles<br/>3 Designing and making principles</p> <p>How it's assessed<br/>Non-exam assessment (NEA): 30–35 hours approx<br/>100 marks<br/>50% of GCSE</p> <p>Task(s)<br/>Substantial design and make task<br/>Assessment criteria:<br/>Identifying and investigating design possibilities<br/>Producing a design brief and specification<br/>Generating design ideas<br/>Developing design ideas<br/>Realising design ideas<br/>Analysing &amp; evaluating</p> <p>In the spirit of the iterative design process, the above should be awarded holistically where they take place and not in a linear manner</p> <p>Contextual challenges to be released annually by AQA on 1 June in the year prior to the submission of the NEA</p> <p>Students will produce a prototype and a portfolio of evidence<br/>Work will be marked by teachers and moderated by AQA</p> | <p><b>Mechanical device</b><br/>Mechanism which produces and/or changes movement.</p> <p><b>Nesting</b><br/>The tessellation of shapes or nets on a material to minimise the amount of waste during manufacture.</p> <p><b>Physical properties</b><br/>Properties that refer to the actual matter that forms the material (eg insulation, conductivity, fusibility).</p> <p><b>Planned obsolescence</b><br/>Deliberately designing the lifecycle of a product to be short, forcing the user to update their products quickly.</p> <p><b>Primary source</b><br/>Research collected first-hand by a designer to develop a product or idea.</p> <p><b>Primary source (of materials)</b><br/>Where materials originate (polymers from oil etc) and the raw material that needs to be converted into a workable form.</p> <p><b>Product</b><br/>Item or artefact developed for an intended audience to solve a problem or meet a need.</p> <p><b>Prototype</b><br/>An early model or sample of a product used to test a concept.</p> <p><b>Schematic diagram</b><br/>Graphic symbols or simplistic diagrams used to convey a system (eg an underground map).</p> |
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|  | <p><b>NEA Timeline</b><br/> <u>NEA tasks are set by AQA on June 1<sup>st</sup> each year.</u><br/> <u>NEA tasks are started immediately</u><br/> Collage 1<br/> Bubble diagram1<br/> Collage 2<br/> Bubble diagram 2<br/> Collage 3<br/> Bubble diagram 3<br/> Design brief<br/> Target market and client information<br/> Existing products1<br/> Existing products2<br/> Existing products3<br/> Ergonomics andAnthropometrics<br/> Social and Moral<br/> Materials Research<br/> <b>DEADLINE FOR THE ABOVE SECTION IS WINTER HALF TERM(OCT)</b><br/> Ideas 1<br/> Ideas 2<br/> Ideas 3<br/> Development 1<br/> Development 2<br/> CAD<br/> Photo's of models and mock ups<br/> <b>DEADLINE FOR THE ABOVE SECTION IS END OF WINTER TERM(DEC)</b><br/> Final idea drawing<br/> Manufacturing specification<br/> Plan for making<br/> Photo diary<br/> Final product<br/> <b>DEADLINE FOR THE ABOVE SECTION IS SPRING HALF TERM(FEB)</b><br/> Testing<br/> Evaluation<br/> Modifications</p> | <p><b>Social footprint</b><br/> The impact a product or individual has on society.</p> <p><b>Social responsibility</b><br/> The idea that a designer needs to evaluate the impact their product could have on society and take action to make this better.</p> <p><b>Stock form</b><br/> The standard shape and size of materials as they are bought.</p> <p><b>Technology push</b><br/> Technological discoveries used to drive the development of a product.</p> <p><b>Tolerance</b><br/> The minimum and maximum measurements that can be accepted when manufacturing.</p> <p><b>User</b><br/> The person/people who make use of the product that has been developed by a designer.</p> <p><b>User centered design</b><br/> Design development with the user at the centre of the focus. The designer tries to envisage how the product will actually be used, as opposed to focusing on other areas such as cost.</p> <p><b>Working properties</b><br/> How a material reacts to external forces.</p> |
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|  | Photo's of final model<br><b>OVERALL DEADLINE FOR NEA IS END OF SPRING<br/>TERM(MAR)</b> |  |
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