

# **KS5 Long Term Plan 2021-2022**

## **Subject: Design and Technology**

### **Exam Board: Edexcel**



#### **Statement of Intent**

The Design and Technology Department aims to allow students to exercise their creativity through designing and making. Skills are taught and underpinned with theoretical knowledge of the subject to allow students to problem solve and take on design challenges. Skills are taught, revisited and built on as students move through the school. This approach is integral to both Product Design and Food Technology.

Problem solving, Research, Analysis, resilience, planning and innovation are all vital parts of the design and make process and key skills students can bring with them to all aspects of their lives. Giving students the opportunity to apply knowledge and skills learnt across the curriculum helps to instil a love of the subject and bring their learning to life.

#### **Statement of Implementation**

KS3 Projects are designed to introduce students to the workshops and kitchen. Students are able to develop key skills and knowledge which will become the foundation for further study of the subject and prepare students for studying Design Technology and Food to GCSE. Students are taught in a three part rotation with 2 50 minute lessons per week.

KS4 projects build on the skills and knowledge established at KS3 these projects are taught alongside 1 theory lesson a week. The initial focus KS4 projects is to prepare students for the NEA.

KS5 students are set their NEA which brings in all of the key elements of Design and Technology; Problem solving, Research, Analysis, resilience, planning and innovation. Once again this project based work is underpinned with theory lessons which take place two lessons a week for the entirety of the course

To allow students to access all elements of Design and technology we have specific equipment over five classrooms including; two workshops, two computer rooms and a food room. Students are able to experience a range of workshop equipment alongside CAD software, laser cutting and 3D printing. The food rooms are equipped with all of the items needed for delivery of the subject.

All teaching of DT should follow the design, make and evaluate cycle. Each stage should be rooted in technical knowledge. The design process should be rooted in real life, relevant contexts to give meaning to learning. While making, children should be given choice and a range of tools to choose freely from.

Term	Topics Covered (Date completed by and number of lessons)	Skills/AOs/interleaved content	Assessment (date and nature of assessment)
Yr 12 Autumn 1	<p>Initial analysis – product analysis – 6marks</p> <p>Primary similar products/inspiration / comparison -</p> <p>Summary of transition work on materials - 6 marks</p> <p>Spec / brief – 3 marks</p> <p>Initial thoughts x 2 - 12 marks</p> <p>Development and testing x 2 – 24 marks</p> <p>Final design (CAD) - 9 marks</p> <p><u>Theory</u> Performance Characteristics Polymers Papers and boards Smart and modern materials Textiles Lamination</p>		<p>Test on materials knowledge (first 4 weeks) (50 marks)</p> <p><b>Introduction project</b> Hand in week before half term – (40 marks)</p>
Yr 12 Autumn 2	<p><u>NEA</u> Identification and investigation of a design possibility (9) Investigation of needs and research (15) Brief / Specification (9)</p> <p><u>Theory</u> Polymer forming Adhesives Form over function Art nouveau Art deco Bauhaus</p>	<ul style="list-style-type: none"> <li>• Investigate client/user needs</li> <li>• Identify and investigate a design possibility</li> <li>• Justify a design possibility</li> <li>• Assess the client and user needs</li> <li>• Research existing products</li> <li>• Ergonomic information</li> <li>• Design standards</li> <li>• User centered design – needs, wants and values of client</li> <li>• Levels of production</li> <li>• Sustainability</li> <li>• Design brief</li> <li>• • Specification (client influence/justification/ scale of manufacture/cost)</li> </ul>	<p><b>NEA</b></p> <p><b>End of term Theory Test</b></p>
Yr 12 Spring 1	<p><u>NEA</u> Design Ideas (9) Development of design ideas (9)</p> <p><u>Theory</u> Post modernism Streamlining Memphis Production Quantities Mass Production</p>	<ul style="list-style-type: none"> <li>• Range of design ideas (annotations including materials, components, processes, aesthetics, cultural and historical influences, details of design thinking or decisions)</li> <li>• Ideas evaluated with client</li> <li>• Iterative approach - planning, experimenting, designing, modelling, testing and reviewing</li> <li>• Ongoing client input</li> <li>• 2D and 3D models</li> <li>• Models to test - appropriate features including</li> <li>• Proportions, scale, function, subsystems.</li> <li>• Reference to specification</li> </ul>	<p><b>NEA</b></p> <p><b>End of half term Theory Test</b></p>
Yr 12 Spring 2	<p><u>NEA</u> Final design solution (9)</p>	<ul style="list-style-type: none"> <li>• Fin all requirements for fitness for purpose, including technical details of all materials and/or component parts, processes and techniques.</li> </ul>	<p><b>NEA</b></p>

	<p>Review of development and final idea (12)</p> <p>Communication of design ideas (6)</p> <p><u>Theory</u></p> <p>Manufacturing systems</p> <p>Legislation</p> <p>Sustainability /life cycle</p> <p>Manufacturing methods</p>	<ul style="list-style-type: none"> <li>• <b>Materials, components, processes and techniques to be outlined.</b></li> <li>• <b>Consideration of sustainability</b></li> <li>• <b>Calculation of material cost</b></li> <li>• <b>Manufacturing specification</b></li> <li>• <b>Cutting list</b></li> <li>• <b>Technical/working drawing</b></li> <li>• <b>Critical analysis and evaluation of own ideas</b></li> <li>• <b>Iterative design process shown</b></li> <li>• <b>Analysis and evaluation of ideas and prototypes from client</b></li> <li>• <b>Consideration of – materials/components and manufacturing techniques/aesthetics/ cultural and historical influences</b></li> <li>• <b>Evaluation about appropriateness of final design in meeting needs of specification</b></li> <li>• <b>A selection of communication skills apparent throughout including the use of traditional/manual graphical, digital techniques (CAD), written techniques to communicate designs</b></li> </ul>	<p><b>End of term Theory test</b></p>
<p>Yr 12 Summer 1</p>	<p><u>NEA</u></p> <p>Tools and equipment (12)</p> <p>Quality and accuracy (18)</p> <p>Testing and evaluation (12)</p> <p><u>Theory</u></p> <p>Elastomers</p> <p>Printing</p> <p>user centered design</p> <p>Anthropometrics/ergonomics</p>	<ul style="list-style-type: none"> <li>• <b>High quality prototype</b></li> <li>• <b>Advanced level of demand</b></li> <li>• <b>Meets requirements of the design specification</b></li> <li>• <b>Select and apply materials/skills/techniques/fixtures/components/finishes</b></li> <li>• <b>Demonstrate safe working practice including risk assessments</b></li> <li>• <b>High standard of accuracy throughout</b></li> <li>• <b>Produce a fully functional prototype</b></li> <li>• <b>Record of progress</b></li> <li>• <b>Amendments made in consultation with client</b></li> <li>• <b>Analysis of the prototype against the specification</b></li> <li>• <b>Evaluation of prototype in meeting the needs, wants and values of the client and specification.</b></li> <li>• <b>Analysis and evaluation of the impact on the environment, including an LCA.</b></li> </ul>	<p><b>NEA</b></p> <p><b>End of half term Theory test</b></p>
<p>Yr 12 Summer 2</p>	<p><u>NEA</u></p> <p>Tools and equipment (12)</p> <p>Quality and accuracy (18)</p> <p>Testing and evaluation (12)</p> <p><u>Theory</u></p> <p>Design decisions</p> <p>Design evaluation</p> <p>costings</p> <p>Project management</p> <p>Digital Technologies</p>	<ul style="list-style-type: none"> <li>• <b>High quality prototype</b></li> <li>• <b>Advanced level of demand</b></li> <li>• <b>Meets requirements of the design specification</b></li> <li>• <b>Select and apply materials/skills/techniques/fixtures/components/finishes</b></li> <li>• <b>Demonstrate safe working practice including risk assessments</b></li> <li>• <b>High standard of accuracy throughout</b></li> <li>• <b>Produce a fully functional prototype</b></li> <li>• <b>Record of progress</b></li> <li>• <b>Amendments made in consultation with client</b></li> <li>• <b>Analysis of the prototype against the specification</b></li> <li>• <b>Evaluation of prototype in meeting the needs, wants and values of the client and specification.</b></li> <li>• <b>Analysis and evaluation of the impact on the environment, including an LCA.</b></li> </ul>	<p><b>NEA</b></p> <p><b>End of term Theory test</b></p>
<p>Yr 13 Autumn 1</p>	<p><u>NEA</u></p> <p>Any improvements and final tweaks or changes needed to be done.</p> <p><u>Theory</u></p> <p>Materials and properties</p>		<p><b>NEA</b></p> <p><b>Theory Test</b></p>
<p>Yr 13</p>	<p><u>Theory</u></p>		<p><b>Theory Test</b></p>

Autumn 2	Processes, treatments and machining		
Yr 13 Spring 1	Revision		<b>Theory test</b>
Yr 13 Spring 2	Revision		
Yr 13 Summer 1	Revision		