

YEAR GROUP: A-level COURSE: Product Design THEORY (*Theory will be taught on a 2 year rolling programme*)

		AUTUMN 1							AUTUMN 2								SPRING 1 (Jan – Feb)						SPRING 2 (Feb – Easter)						SUMMER 1 (Easter – June)						SUMMER 2						
		1	2	3	4	5	6	7	1	2	3	4	5	6	7	8	1	2	3	4	5	6	1	2	3	4	5	6	1	2	3	4	5	6	1	2	3	4	5	6	7
Year 12 - Theory	Unit description	Week 1 - Materials and their applications Pt1 Week 2 – Materials and their applications Pt2 Week 3 - Performance Characteristics – Paper, Boards & Wood Week 4 – Performance Characteristics – Metals, Composites and Smart Materials Week 5 – Enhancement of Materials <b>Week 6– EOU Test</b> <i>Formally marked with written feedback</i> Week 7– Test Feedback and Review Folder Review with written feedback							Week 1 – Forming, Redistribution and Addition Processes Pt1 (Paper & Board, Polymers) Week 2 – Forming, Redistribution and Addition Processes Pt2 (Metals) Week 3 – Forming, Redistribution and Addition Processes Pt3 (Timbers) Week 4 – Forming, Redistribution and Addition Processes Pt4 (Adhesives and Fixings) Week 5 – The use of Finishes <b>Week 6 – EOU Test</b> <i>Formally marked with written feedback</i> Week 7 – Test Feedback and Review Folder Review with written feedback								Week 1 - Modern and Industrial Scales of Practice Pt1 - Week 2 – Modern and Industrial Scales of Practice Pt2 <b>Week 3 – EOU Test</b> <i>Formally marked with written feedback</i> Week 4 – Test Feedback and Review Week 5 – Requirements for Product Design Pt 1 Week 6 - Requirements for Product Design Pt 2 Week 7 - Health and Safety Folder Review with written feedback						Week 1 - Protecting Designs Week 2 – Design for Manufacturing, Maintenance, Repair and Disposal Pt1 Week 3 – Design for Manufacturing, Maintenance, Repair and Disposal Pt2 Week 4– Feasibility Studies Week 5– Enterprise and Marketing in the Development of Products <b>Week 6- EOU Test</b> <i>Formally marked with written feedback</i> Week 7 – Test Feedback and Review						NEA						Mock Exam Prep / NEA						
	Assessment	Students notes are reviewed after each full unit and written feedback is provided to allow students to make improvements. Each weekly task is ended with exam style questions that test a student’s ability to put into context the knowledge they have gained from a particular topic and begin to prepare themselves for the final written assessment in Y13. All end of unit tests (EOU) are formally marked with written, instructional feedback that allows students to identify where and how they have succeeded or require further learning. This work will be fed back during a dedicated lesson where whole class discussion can be facilitated to ensure a collective understanding and a focus on misconception.												Students will stop dedicated theory lessons for a short period while they begin their NEA. Complete focus is essential in the early stages of this unit of work as a detailed and secure start will result in a more thorough and complete project in the end. Revision lessons will take place during the ‘summer 2’ half term to prepare students for their mock examinations.																											

Assessment types

- Formative Assessment
- Summative Assessment – Written feedback provided
- Homework – Teacher assessed

YEAR GROUP: A-level COURSE: Product Design PROJECTS / NEA

		AUTUMN 1 <i>"Intent – This project is designed to introduce students to the rigours of A-Level projects. Drawing and idea generation are often areas GCSE students find challenging, hence the need to focus on this early on the A-Level course".</i>							AUTUMN 2 <i>"Intent – This project is designed to build skills and confidence in practical tasks. The selection of a simple, everyday item to improve is designed to remove any other concerns/worries students may have and allow them to focus on practical skills".</i>								SPRING 1 <i>"Intent – This project is designed to give students a final chance to receive written feedback on project based work. During the NEA they will not have this option. This project follows the NEA structure and will prepare students for the upcoming unit".</i>						SPRING 2 <i>"Intent – This project is designed to give students a final chance to receive written feedback on project based work. During the NEA they will not have this option. This project follows the NEA structure and will prepare students for the upcoming unit".</i>						SUMMER 1						SUMMER 2						
		1	2	3	4	5	6	7	1	2	3	4	5	6	7	8	1	2	3	4	5	6	1	2	3	4	5	6	1	2	3	4	5	6	1	2	3	4	5	6	7
Year 12 - Projects	Unit description	<p><b>IDEA GENERATION &amp; PROTOTYPING</b>                      Week 1 – Project Intro &amp; Brainstorm                      Students are issued with a short design brief that prompts thought and consideration through brainstorming.</p> <p>Week 2 – Designer Research                      Students select from the designers listed in the specification to develop a familiarity in preparation for their exam as well as acting as inspiration for design ideas.</p> <p>Week 3 – Designing (3D drawing and concept creation, parallel technologies)                      How to draw in 3D:</p> <ul style="list-style-type: none"> <li>• Oblique</li> <li>• Isometric</li> <li>• 1 &amp; 2 point perspective</li> </ul> <p>Techniques for generating ideas:</p> <ul style="list-style-type: none"> <li>• Combining inspiration</li> <li>• Starting small</li> </ul> <p>Parallel technologies – Getting inspiration from unassociated locations.</p> <p>Week 4 – Rendering Techniques and Annotation</p> <ul style="list-style-type: none"> <li>• Shading (3 tone)</li> <li>• Marker rendering</li> <li>• Basic biro work (hatching etc)</li> </ul> <p>What to include in annotation</p> <p>Week 5 – Cardboard Modelling                      Cutting and assembly techniques.                      Focus on manufacturing testable prototypes.</p> <p>Week 6 – Laser Cutting                      How to use 2D design (fundamental features).                      How to set up the laser cutter for different materials.</p> <p>Week 7 – Testing and Evaluating                      Focus on functional testing and including the user throughout the process.</p>							<p><b>EVERDAY ITEMS</b>                      Week 1 – Selecting an appropriate item and researching existing products, focussing on themes and similarities across the market.</p> <p>Week 2 – Brief and Specification                      The brief should include:                      A description of the problem to be solved including who it is for.                      Key areas to focus on (size, materials, function etc).                      Success criteria.</p> <p>The student should formulate a fully detailed design specification that is informed by their investigations and makes full use of the material collated. Statements in the specification need to be clear and unambiguous.</p> <p>Week 3 – Design Ideas                      Refer back to project 1 and the focus on 3D drawing, rendering and annotation. Recap SCAMPER from KS4 as an appropriate technique to develop ideas.</p> <p>Week 4 – Prototyping                      Recap H&amp;S training on all tools/equipment</p> <p>Week 5 – Prototyping cont.</p> <p>Week 6– Prototyping cont.</p> <p>Week 7– Testing and Evaluating                      Focus on functional testing and including the user throughout the process.</p> <p>Week 8 - Testing and Evaluating                      Comparison against the brief and specification.</p>								<p><b>ALL BEING WELL (Mock NEA)</b>                      Week 1 – Brainstorm and initial problem research</p> <p>Week 2 – Existing Products                      Focussing on themes and similarities across the market.</p> <p>Week 3 – Designer/ Style                      Students select from the designers listed in the specification to develop a familiarity in preparation for their exam as well as acting as inspiration for design ideas (avoid repetition from project 1).</p> <p>Week 4 – Brief &amp; Specification                      The brief should include:                      A description of the problem to be solved including who it is for.                      Key areas to focus on (size, materials, function etc).                      Success criteria.</p> <p>The student should formulate a fully detailed design specification that is informed by their investigations and makes full use of the material collated. Statements in the specification need to be clear and unambiguous.</p> <p>Week 5 – Design Ideas                      Refer back to project 1 and the focus on 3D drawing, rendering and annotation. Recap SCAMPER from KS4 as an appropriate technique to develop ideas.</p> <p>Week 6– Design Development</p>						<p><b>ALL BEING WELL (Mock NEA)</b>                      Week 1 – Prototyping                      Recap H&amp;S. A focus on neatness and consistency is usually required at this point in the course. Students are keen to challenge themselves with complex outcomes but can forget the basics of assembly and finishing techniques.</p> <p>Week 2 – Prototyping cont.</p> <p>Week 3 – Prototyping cont.</p> <p>Week 4 – Prototyping cont.</p> <p>Week 5 – Testing and Evaluating                      Comparison against the brief and specification.</p> <p>Week 6 – Testing and Evaluating                      Focus on functional testing and including the user throughout the process.</p>						<p><b>NEA – Research</b>                      Week 1 - <b>Context Investigation:</b></p> <ul style="list-style-type: none"> <li>• Problem description</li> <li>• Client description</li> <li>• Client interview #1</li> </ul> <p><b>Brainstorm</b></p> <p>Week 2 – <b>Research Plan:</b>                      Table containing:</p> <ul style="list-style-type: none"> <li>• Research area</li> <li>• Intended discovery</li> <li>• Importance</li> <li>• Method</li> <li>• Dates</li> <li>• Summary / Conclusion</li> </ul> <p><b>Site Visit:</b></p> <ul style="list-style-type: none"> <li>• Photographs of current issues.</li> <li>• Detailed written descriptions of issues.</li> <li>• Specific information – dimensions, materials etc.</li> </ul> <p>Week 3 - <b>Client interview #2:</b>                      Specific and detailed open questions designed to establish the validity and focus of your project.</p> <p style="text-align: center;"><b>DEADLINE</b></p> <p>Week 4 – <b>Product Analysis:</b>                      Personal examination or disassembly of existing and similar products.                      Include information on accessfm points and refer to 1.8 for more specific "A-Level" areas.</p> <p>Week 5 – <b>Existing Products:</b>                      Wide ranging <u>secondary</u> investigation into existing products.</p> <p>Week 6– <b>Specific research from individual research plans:</b>                      For higher achieving projects this could also include:</p> <ul style="list-style-type: none"> <li>• Consideration of the relevant social, moral, environmental, cultural, and sustainability issues.</li> <li>• Investigation into the work of other designers.</li> </ul> <p>Reference to regulatory bodies</p> <p style="text-align: center;"><b>DEADLINE</b></p>						<p><b>NEA – Brief and Specification / Designing</b>                      Week 1 - <b>Design Brief:</b>                      The student is required to produce a clearly stated and challenging design brief that addresses the context and meets the needs of the intended user(s).</p> <p>The brief should include:                      A description of the problem to be solved including who it is for.                      Key areas to focus on (size, materials, function etc).                      Success criteria.</p> <p>Week 2 – <b>Specification:</b>                      The student should formulate a fully detailed design specification that is informed by their investigations and makes full use of the material collated. Statements in the specification need to be clear and unambiguous.</p> <p style="text-align: center;"><b>DEADLINE</b></p> <p>Week 3 – 6  <b>At least</b> 3 A3 pages of design ideas are produced included multiple views, detailed annotation and shading.                      The rationale for design decisions is clearly documented and fully justified with <b>constant reference being made to the design brief, specification</b> and research throughout.                      Originality, creativity and innovation are present with a willingness to take design risks.                      The use of drawings, sketches, annotations and notes showing clear evidence of design thinking are present.</p> <p style="text-align: center;"><b>DEADLINE</b></p> <p>Week 7 – EOY Review</p>						

**Design & Technology**

**Curriculum**

Assessment	<p><i>Each section of project work will be graded and written feedback provided. This will be presented using the whole school WWW, EBI format and will focus on how students can improve their work, attempting to build routines in preparation for their NEA. Work will be marked again once resubmitted and new feedback will be provided if necessary.</i></p> <p><i>Written work will be expected to be completed outside of the lesson as homework throughout the course (practical work must be completed under supervision).</i></p>	<p><i>Due to the restrictions around feedback during an NEA, students will receive generic, whole class feedback, that they can record themselves. Feedback sheets that contain the sections required, indicative content and deadlines will be provided and copies will be retained by the class teacher. A 'working grade' will be provided at strategic points to allow students to assess their progress however it must be made clear that this is in no way a guarantee of success.</i></p> <p><i>NEA written work will be expected to be completed outside of the lesson as homework throughout the course (practical work must be completed under supervision).</i></p>
------------	---	---

**Assessment types**

- Formative Assessment
- Summative Assessment – Written feedback provided
- Homework – Teacher assessed

Design & Technology

Curriculum

YEAR GROUP: A-level COURSE: Product Design THEORY (Theory will be taught on a 2 year rolling program)

		AUTUMN 1							AUTUMN 2								SPRING 1						SPRING 2						SUMMER 1						SUMMER 2						
		1	2	3	4	5	6	7	1	2	3	4	5	6	7	8	1	2	3	4	5	6	1	2	3	4	5	6	1	2	3	4	5	6	1	2	3	4	5	6	7
Year 13 - Theory	Unit description	Week 1 – Design Methods and Processes Week 2 – Design Theory Pt 1 Week 3 - Design Theory Pt 2 Week 4 – Technology and Cultural Changes Pt 1 Week 5 – Technology and Cultural Changes Pt 2 Week 6 – Design Processes Week 7 – Critical Analysis and Evaluation Folder Review with written feedback							Week 1 - EOU Test Formally marked with written feedback Week 2 – Selecting Appropriate tools, equipment and processes. Week 3 – Accuracy in Design and Manufacture Week 4 – Responsible Design Week 5 – Design for Manufacture and Project Management Pt 1 Week 6 - Design for Manufacture and Project Management Pt 2 Week 7 – National and International Standards Folder Review with written feedback								Week 1 – EOU Test Formally marked with written feedback Week 2 – 6 Mock Preparation, completion, marking and feedback.						Exam Prep The following approaches will be taken based on data from previous work (class work, mocks etc). This data will highlight any regular errors or gaps in student’s knowledge. <ul style="list-style-type: none"> <li>• Past paper questions</li> <li>• Short, low stakes quizzes</li> <li>• Group work</li> <li>• Structuring longer answers</li> <li>• Practical experimentation to reinforce theory knowledge</li> </ul>						Exam Prep The following approaches will be taken based on data from previous work (class work, mocks etc). This data will highlight any regular errors or gaps in student’s knowledge. <ul style="list-style-type: none"> <li>• Past paper questions</li> <li>• Short, low stakes quizzes</li> <li>• Group work</li> <li>• Structuring longer answers</li> <li>• Practical experimentation to reinforce theory knowledge</li> </ul>						EXAM SEASON						
	Assessment	Each weekly task is ended with exam style questions that test a student’s ability to put into context the knowledge they have gained from a particular topic and begin to prepare themselves for the final written assessment in Y13. Every topic is concluded with a piece of consolidation-based work that takes the form of exam style questions to test students have learnt the content and can recall/apply it appropriately. All end of unit tests (EOU) are formally marked with written, instructional feedback that allows students to identify where and how they have succeeded or require further learning. This work will be fed back during a dedicated lesson where whole class discussion can be facilitated to ensure a collective understanding and a focus on misconception.															All written work will be marked/graded as appropriate with written feedback provided. Whole class feedback for consistent misconceptions will also be provided where necessary.																								

Assessment types

- Formative Assessment
- Summative Assessment – Written feedback provided
- Homework – Teacher assessed

Design & Technology

Curriculum

YEAR GROUP: A-level COURSE: Product Design PROJECTS / NEA

		AUTUMN 1							AUTUMN 2								SPRING 1						SPRING 2						SUMMER 1						SUMMER 2						
		1	2	3	4	5	6	7	1	2	3	4	5	6	7	8	1	2	3	4	5	6	1	2	3	4	5	6	1	2	3	4	5	6	1	2	3	4	5	6	7
Year 13 - Projects	Unit description	<p>NEA – Design &amp; Development</p> <p><b>Week 1 – Design Development</b> Students should select their most appropriate design as a result of analysis including comparison against their specification and client feedback.</p> <p>This design should then be developed further to produce a more functional and rounded idea.</p> <p><b>Week 2 - 7 – Design Development</b> In developing their proposals the student will be expected to make constant reference to their design brief and design specification, to identify if further investigations are required and to carry these out. Modelling is seen as a key element of this assessment criteria, whether this be part modelling, practicing of manufacturing and finishing techniques, the production of scale models or material experimentation. There is also the expectation that students will produce working drawings, plans and patterns to enable successful prototype manufacturing to take place. The use of CAD is encouraged, but this should not be the only form of design communication that is used.</p>							<p><i>Practical</i></p> <p>Week 1 – 8 Design prototypes are just that, they need to be directly related to the design proposals and show consideration, at all stages, of how the design thinking continues to be developed and the prototype(s) refined.</p> <p>Given the level of this qualification it is expected that the student will demonstrate their practical skills to a high level using all of the potential resources, tools, machines and equipment at their disposal. During the development of their design prototype(s) the student should be encouraged to continue to experiment and adapt their design proposals as they progress. Constant testing and evaluation is expected to form part of this process. The use of CAM is encouraged, but this should not be the only form of manufacturing that is used.</p>								<p><i>Practical / Evaluation</i></p> <p>In awarding marks for this section it is vital to remember that evidence for analysing and evaluating can take place in any part of the NEA. Students should be encouraged to be constantly analysing their work and recording their thoughts in order to explain their thinking.</p> <p><b>Section 1 – Comparison against the specification:</b> Students should compare their final product against their initial specification, justifying all areas.</p> <p><b>Section 2 – Client interview and second site visit:</b> Students should seek the opinion of their client through open questioning and preferably return to their original site visit to facilitate testing.</p> <p><b>Section 3 – Product Testing:</b> Full and detailed testing should be carried out with the product being used by the intended user and in the intended location/environment.</p> <p><b>Section 4 – Modifications:</b> Changes to improve the design and function of the product should be recorded as well as modifications needed for industrial manufacture.</p>						<p>NEA WORK SUBMITTED TO EXAM BOARD BY 15<sup>th</sup> MAY.</p>						<p>REVISION</p>						<p>EXAM SEASON</p>						
	Assessment	<p>Due to the restrictions around feedback during an NEA, students will receive generic, whole class feedback, that they can record themselves. Feedback sheets that contain the sections required, indicative content and deadlines will be provided and copies will be retained by the class teacher. A 'working grade' will be provided at strategic points to allow students to assess their progress however it must be made clear that this is in no way a guarantee of success.</p> <p>NEA written work will be expected to be completed outside of the lesson as homework throughout the course (practical work must be completed under supervision).</p>																																							

Assessment types

- Formative Assessment
- Summative Assessment – Written feedback provided
- Homework – Teacher assessed

## >Something More?

**Curriculums at BSS are designed to nurture not only intellectual and physical development but also the spiritual growth of students. This will be through:**

Encouraging students to reflect on their experiences, beliefs and purpose and to contemplate the big Questions of Who am I? Why am I here? What is my purpose?

Highlighting extraordinary people, events, and discoveries that inspire awe or investigating how a sense of awe has led to breakthroughs and creativity.

Using art, music, literature, and nature to inspire awe, wonder, and spiritual insight.

Encouraging creative expression to connect with the inner self and the transcendent.

Fostering a sense of belonging and interconnectedness with others, nature, and the universe.

Encouraging self-awareness, emotional intelligence, and moral reasoning.

Promoting open-ended investigations rather than just seeking right answers.

Using hands-on activities, field trips and experiments to immerse students in learning and evoke wonder.

### How does our curriculum do >Something More?

#### KS5 Design & Technology

- Highlighting extraordinary people, events, and discoveries that inspire awe or investigating how a sense of awe has led to **breakthroughs and creativity:**
  - ✓ **Product Analysis: In our KS5 D&T curriculum, we highlight extraordinary people, events, and discoveries by analysing a range of existing products. Pupils explore how these products are designed and made, uncovering the creativity, problem-solving, and ingenuity behind them, benefiting society and improving lives.**
  - ✓ **Design Theory: Students explore a diverse range of influential designers to gain inspiration for their own work. By examining both modern inventions in materials and technological advancements, they come to appreciate how creativity, curiosity, and a sense of awe have driven progress and innovation. This is taken further during KS5 as the wider range of manufacturing processes and how/why we use them in global economy aims to build a more mature and thorough understanding.**
- Encouraging creative expression to connect with the inner self and the transcendent:
  - ✓ **Design Ideas: Our KS5 D&T curriculum encourages creative expression by providing students with opportunities to develop their own individual design ideas. Through open-ended tasks and personal responses to design briefs, pupils are able to express their thoughts, values, and interests. This creative process allows them to connect with their inner selves, imagining how their designs can have an impact on individuals or society.**
- Fostering a sense of belonging and interconnectedness with others, nature, and the universe:
  - ✓ **Target Markets: In our KS5 D&T curriculum, we foster a sense of belonging and interconnectedness by encouraging students to consider the needs and perspectives of others through identifying and designing for specific target markets. Collaborative activities such as peer feedback sessions further support this by helping students understand how their work affects and is received by others.**
  - ✓ **Design Theory: Our curriculum requires students to consider the impact of design on the environment and society. Through exploring environmental issues and the ethical responsibilities of both designers and consumers, pupils begin to understand how interconnected our choices are with the natural world. They learn how thoughtful design and responsible manufacturing can contribute to a more sustainable world.**
- Encouraging self-awareness, emotional intelligence, and moral reasoning:

## Design & Technology

### Curriculum

- ✓ **Evaluation:** Through regular analysis and evaluation of their own design work and prototypes, students develop self-awareness and the ability to critically reflect on their decisions. This process fosters emotional intelligence as they learn to respond to feedback constructively and consider how their designs affect others. It also supports moral reasoning, as they adapt and improve their work with a focus on usability, ethics, and real-world impact.
  
- Promoting open-ended investigations rather than just seeking right answers:
  - ✓ **KS5 Product Design Projects:** Our KS5 D&T curriculum promotes open-ended investigation by giving students the freedom to explore a range of possible solutions within each design brief. Rather than working towards a single 'right' answer, pupils are encouraged to think creatively, justify their design choices, and develop unique responses that reflect their understanding and interpretation of the task.
  
- Using hands-on activities, field trips and experiments to immerse students in learning and evoke wonder:
  - ✓ **KS5 Product Design, Practical Work:** In our KS5 D&T curriculum, hands-on learning is central to the student experience. Pupils are taught a wide range of practical skills and are encouraged to work independently with tools, equipment, and machinery. This active engagement not only builds confidence and competence but also sparks a sense of wonder as students bring their ideas to life through making.
  - ✓ **Visits:** We enrich students' understanding of design through a variety of hands-on activities, as well as trips to galleries and exhibitions where possible. These experiences expose pupils to real-world examples of creativity and craftsmanship, broadening their understanding and inspiring their own design thinking.