

Product Design@ WBS Year 12 Roadmap

Subject Aim: Students will build on their knowledge of materials and processes from GCSE and apply these to a robust and challenging NEA design and make task. Students will continue to build on theory and exam practice to prepare for their A-Level exam.

	TOPIC 1 Theory	Topic 1 NEA	ASSESSMENT IN YEAR 12
AUTUMN TERM	<p>Papers and boards: Students will build on their understanding of properties and characteristics of papers and boards and be introduced to new examples. They will apply this when learning about printing processes, printing finishes, commercial production processes, e.g. nets for packaging, as well as marking out and cutting tools.</p>	<p>Students will Explore options and begin to define the focus of their project They will identify a client and conduct an initial client interview and investigation</p>	<p>Exam board: Pearson Edexcel Syllabus: 9DT0</p> <p>Exam 50% – 2h30 min written paper, to be sat at the end of year 13. NEA 50% – one piece submitted at the end of year 13.</p> <p>Students will have End of Unit exams at the end of each half term to consolidate learning and assess progress. They will be given a grade for each. During their Mock Exam week, they will sit a full paper which will be graded.</p>
Autumn Term	<p>TOPIC 2 Students will begin learning about 'Design in Context', looking at design movements and how they have influenced design and manufacture, the first of these being Arts and Crafts and Art Nouveau. Students will consider the historical context of the period and the effect this has on the style design and material choice.</p>	<p>Further investigation will culminate in a defined design problem and Area of Focus for the project and lead to further investigations into this focus</p>	<p>HOMEWORK IN YEAR 12 Homework plays a very important role in helping students to develop links between theory and practical work. Homework tasks will be set in accordance with Edexcel guidelines for the completion of areas of the students NEA tasks at home. Work will be marked using the assessment criteria set out for the NEAs by Edexcel. Homework's will also support theory lessons and will be set in relation to topics being covered. It is vital that all deadlines set for completion of work are met.</p>
Autumn Term	<p>TOPIC 3 Textiles: Students will build and develop their understanding of properties and characteristics of natural and manmade fibres. They will apply this when learning about finished and screen printing, with the ability to put this into practice to produce their own screen printing design.</p>		<p>REVISION FOR ASSESSMENTS IN YEAR 12 Students are encouraged to produce revision materials after each topic is completed to assist with the revision for their final A level examination. To complete their revision materials students can use their exercise books and other websites e.g. Technology Student and Edexcel website to view the full specification. Students can also view past papers on here to aid their revision.</p>
	<p>TOPIC 4 Polymers:</p>	<p>Students will define the needs</p>	<p>ENRICHMENT THEMES IN YEAR 12 SMSC and British Values: Please see The Creative Designs Department's SMSC</p>

	<p>Students will build on their understanding of properties and characteristics of thermoforming and thermosetting polymers, exploring commercial moulding techniques and joining techniques. Students then apply this theory to a polymers practical design and make task.</p> <p>Further exploration of design movements; Bauhaus Modernist and Art Deco</p> <p>Smart and modern materials: Students will develop their understanding of smart materials and how they can be used in modern design.</p>	<p>of the user and produce a detailed Specification for the design solution.</p>	<p>Document. Throughout the course students will discuss various Product Design related careers and what skills are linked to real jobs in the industry. This will be driven by certain aspects of the specification content. Cultural Capital: Cultural Capital: Students will study a wide range of designers from a variety of backgrounds, and will also view and study different social, economic and cultural groups from a variety of backgrounds so that they can be encouraged to emphasise and relate to others demonstrating that they can also achieve their aspirational dreams irrespective of their own background. Extra-curricular lessons will run every week to help support students with their theory, NEA and practical work and it is essential students use these facilities to reach their potential grades.</p>
Spring Term	<p>Topic 5 Metals: Students will build on their understanding of properties and characteristics of metals, covering ferrous, non-ferrous and alloys. In relation to metals, students will study about heat treatments, casting, machining, permanent and semi-permanent joins and finishes. They will undertake a mini-practical to put some of these processes into practice.</p> <p>Further exploration of design movements; Post modernism, Streamlining and Memphis.</p>	<p>Students will start to generated design ideas for solutions to their design problem</p>	
	<p>Topic 6 Woods: Students will build on their understanding of properties and characteristics of woods and composites. They will also learn about processes and joining methods, such as lamination and wood joints. They will apply this knowledge to a mini-practical project.</p>		
Spring Term	<p>Topic 7 User centred design: Students learn about the importance of the user being at the centre of all stages of design. Students will learn about ergonomics and anthropometrics, sources of this data and how it is applied to products, considering form v function.</p>	<p>Student will critically review their range of Design ideas</p>	
	<p>Topic 8 Maths:</p>		

	A range of maths is covered over the 2 years, including trigonometry, area, volume, waste and costing, which are applied to a design and technology context.		
	Topic 9		
Summer term	Digital technologies: Students will build and develop their understanding of CAD, both 2D and 3D. They will also study CAM, including rapid prototyping, CNC machines and many more. This can include demonstrations and the use of the 3D printer and CNC lathe.	Students will start to use drawn, CAD and physical modelling to further develop their design ideas	
	Topic 10		
Summer term	Current and historical effects of technological development: This topic covers wide ranging topics, including mass production and its effect on society, built-in-obsolescence, the global market place, offshore manufacturing and the 'new' industrial age of high-technology production. Here there is room for debate and discussion around the social, moral and ethical viewpoints to do with these topics.	Further development	
	Topic 11		
Summer term	Health and safety: Students will learn about Acts and guidelines in place to protect employers and employees. They will undertake risk assessments themselves and consider PPE, signage and the control of substances hazardous to healthy (COSHH)	Further development	
	Topic 12		
Summer term	Cleaner design and technology: This is a huge area for discussion and is touched on throughout all other areas. In this section students will learn about life cycle assessments and inventories, used by manufacturers. They will consider all stages of a products life, and the sustainability issues at each stage. Within this topic students will also further develop their understanding of renewable and non-renewable energy and the pros and cons of each.	Students will develop the presentation of their Final Design Solution	

Where Next?

Students will go on to do the second year of the A level course, continuing with the theory, with a large focus on industrial production systems, and the NEA project work which sees them apply their theory.