



St John's Curriculum Overview – Year 12



Subject title	A2 Product Design - Edexcel
Setting arrangements	Mixed ability
Time allowance each fortnight	9 periods

Introduction
Students will build on their experiences at GCSE and develop a range of practical skills, designing skills and product design theory.
Students will be able to recognise design needs and develop an understanding of how current global issues, including integrating technology, impacts on today's world.

Topics, Skills and Assessment covered during the course

	Topics covered	Skills developed	Assessment
Term 1	<p>Product Manufacture</p> <ul style="list-style-type: none"> - Design movement-inspired lamp <p>Theory</p> <ul style="list-style-type: none"> - Introduction to materials and properties <p>Designer skills</p> <ul style="list-style-type: none"> - Drawing and communications skills - Enhancement techniques - CAD 	<ul style="list-style-type: none"> • Wood joints • Routing • Laminating • Chiselling • Morticing • Steam bending • Shaping and drilling aluminium • Woods • Metals • Isometric projection • Crating • 2pt Perspective • Thick and thin lines • Colour frames • Human interaction • Intro to 3D CAD Modelling (Solidworks) 	<p>Accuracy and quality of components throughout manufacture</p> <p>Formal drawings of lamp product</p>

<p>Term 2</p>	<p>Product Manufacture</p> <p>Theory - Materials</p> <p>Product Investigation</p> <p>Designer skills - Drawing and communications skills - CAD</p>	<ul style="list-style-type: none">• Bending• Brazing• Wood turning• Metal Turning• 2D CAD (2D Design Tools)• Laser engraving <ul style="list-style-type: none">• Alloys• Papers & Boards• Manufactured boards• Laminates• Risk Assessments / H&S <ul style="list-style-type: none">• Materials Analysis• Process identification• Scale of manufacture <ul style="list-style-type: none">• Orthographic Projection• Sectional views• Exploded views• Development of 3D CAD skills• Rendering & assembly• Exploded views & orthographic	<p>Accuracy of assembly and quality of finish.</p> <p>Practice exam questions Student led and researched presentations and handouts assessed.</p> <p>Assessment of product investigation – analysis and investigation skills demonstrated.</p> <p>Rendered views and fully assembled working CAD model of finished lamp. Dimensioned Orthographic, sectional and exploded views generated from CAD model.</p>
<p>Term 3</p>	<p>Product Manufacture</p> <p>Product Investigation</p> <p>Theory</p>	<ul style="list-style-type: none">• CNC Turning• Soldering• Finishing <ul style="list-style-type: none">• Sustainability• Quality & standards <ul style="list-style-type: none">• Polymers	<p>Accuracy and quality of components throughout manufacture</p> <p>Practice exam questions</p>

		<ul style="list-style-type: none"> • Smart & Modern Materials • Composites • Textiles 	Student led and researched presentations and handouts assessed.
Term 4	Product Design – Blue-sky thinking Theory	<ul style="list-style-type: none"> • Context & Specification • Design Realisation • Modelling skills • Components • Finishes • CAD / CAM / CNC • Systems & Control 	<p>Communication of design ideas assessed</p> <p>Practice exam questions Student led and researched presentations and handouts assessed.</p>
Term 5	Product Design – Blue-sky thinking Theory	<ul style="list-style-type: none"> • Development • Final Design rendering • Orthographic Projection • Levers • Mechanisms • Motion 	<p>Accuracy and quality of components throughout manufacture</p> <p>Practice exam questions Student led and researched presentations and handouts assessed</p>
Term 6	Major NEA Project Theory	<ul style="list-style-type: none"> • Identification of design context & problem • Contacting potential clients. • Research • Design Movements & designers 	<p>Practice exam questions Student led and researched presentations and handouts assessed.</p>

Resources Recommended for Revision and where they are available:

Edexcel A Level Design & Technology – Product Design – Resistant Materials Technology Textbook by Pearson/ Jon Attwood

Students to download **Solidworks** professional CAD software available to students with license (available from Mr England).

Homework:

Students expected to continue to make (supervised) practical progress during study periods.

Additional support and help for the course

Technician support
Solidworks 3D CAD support from Mr England