

<u>Timeline</u>	<u>Topic</u>	<u>Key concepts and knowledge</u>	<u>Skills development</u>	<u>Rationale</u>
YEAR 10 OCR Design Technology				
Half Term 1	Wooden box project	<p>Students will investigate analyse the work of designers/ companies</p> <p>Students will understand how the Changes in fashion and Trends Other issues, beliefs, diversity Understanding how products can be designed for other people with a disability, religion</p> <p>Types of wood, plastics, tools and equipment identification and safe use. To use a wider range of tools and equipment, Components Wood joints: Finger, dovetail, lap, butt joint, mortise and Tenon joint Accuracy: tolerance, material management/tessellation, accurate marking out, Industrial links, Construction techniques Numeracy, Accuracy Develop CAD/CAM skills in 3D Develop and learn new software (solid works) , Produce box handle on 3D printer, drawing in Techsoft 2D design To develop practical skills Recap and revisit existing knowledge taught in KS3</p>	<p>Organising and planning in depth. Focus on Primary and secondary research</p> <p>Exploring designers and their work Evaluating and comparing outcomes</p> <p>Exam style questions for GCSE</p> <p>Shaping and forming materials with tools/equip Feedback and outcome Confidence Independence Understand questions Respond to questions Structure answers Literacy (technical vocabulary) Numeracy Problem solving Self-management Accuracy working with timbers</p>	<p>This mini module recaps knowledge taught in KS3, it introduces students to a wider choice and diverse designers. It enhances student’s knowledge further with essay style questions to prepare them for Their NEA project</p> <p>This section recaps learning from KS3 and deepens student understanding of planning and carrying out practical work by shaping timber to make a product. Students will have discrete lessons to strengthen theory knowledge throughout and practice exam questions</p> <p>Practice mini NEA project. Supports students with organisation, planning, designing and practical skills required in yr11 NEA task. A time to practice in a low stakes scenario whilst gaining more knowledge and skills.</p>

		<p>Students will investigate analyse the work of designers/ companies</p> <p>Students will understand how the Changes in fashion and Trends Other issues, beliefs, diversity Understanding how products can be designed for other people with a disability, religion</p> <p>Types of wood, plastics Wood, plastic finishes Tools and equipment identification and safe use. Components Wood joints: Finger, dovetail, lap, butt joint, mortise and Tenon joint Accuracy: tolerance, material management/tessellation, accurate marking out Industrial links Construction techniques Numeracy Accuracy CAD/ CAM orthographical layout exploded views , showing detailed view and assembly To use a wider range of tools and equipment To develop practical skills Recap and revisit existing knowledge taught in KS3 Develop CAD/CAM skills in 3D</p>		
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		Develop and learn new software (solid works) Produce box handle on 3D printer		
Half term 2	Sustainability and Textiles mini project	Sustainable design Designing for a circular economy 6Rs Textiles construction techniques Planning and pattern cutting E-textiles (including construction techniques) smart materials modern materials e.g. technical textiles, composite materials, Nano textiles, Properties and use of a range of materials	Exam skills Literacy (technical vocabulary) Application and use of a wide range of materials Assembly methods Problem solving Accuracy – pattern template Sewing machine skills	Skills and knowledge required in exam and NEA element in year 11. Skills and knowledge taught in a holistic manner and interleaved throughout the course This mini module re-caps knowledge taught at KS3. Introducing new e-textiles skills whilst building on existing sustainability knowledge. Understanding modern and smart materials across all material areas to reinforce knowledge at GCSE

<p>Half term 3</p>	<p>Core theory knowledge</p> <p>Shelf manufacturing project using a variety of timbers</p>	<p>Systems approach to designing Inputs, process, outputs and programmable systems, mechanisms and motion, material properties, origins of timber and environmental impact, how timbers are converted into a workable form, anthropometrics, ergonomics, smart, modern and composite materials</p> <p>Delivered through/alongside practical task (shelf) Scales of production (practical batch production activity), JIT, using jigs and templates, QC, application of veneers, Working with timbers (marking out, cutting, drilling, working to tolerance, interpreting given technical drawing</p>	<p>Literacy (technical vocabulary)</p> <p>Awareness of factors impacting on product design</p> <p>Awareness of environmental impact affecting product design</p> <p>Specialist knowledge of timbers and pulling all previous knowledge of timber together.</p> <p>Practical skills working with timber</p> <p>Accuracy, tolerance, QC during practical activities.</p> <p>Planning manufacturing sequences (flow charts)</p> <p>Understand exam questions Respond to exam questions Structure exam answers</p>	<p>This module recaps knowledge taught at KS3 and covers new topics to enhance students' knowledge of the wider impact of product design and manufacture.</p> <p>The practical activity provides opportunity to deliver practical skills directly alongside theory to show how the work hand in hand in industry to product products.</p>
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<p>Half term 4</p>	<p>Theory knowledge</p> <p>Shelf manufacturing project using a variety of timbers</p>	<p>Stock forms of timbers, calculating cost and quality of materials, types of adhesives, types of surface finish, LEAN production, tessellation and material waste, standard components, Timber properties and justifications, veneers Theory, industrial manufacturing methods for timber.</p> <p>Practical skills: dry and final assembly techniques, using jigs for manufacture and QC, using power hand tools and fixed machines, joining timber using different methods, working with hard/soft wood and manufactured boards, applying a surface finish</p>	<p>Application of surface finish</p> <p>Assembly skills,</p> <p>Using powered tools and equipment</p> <p>Working with accuracy and within tolerance</p> <p>Understand exam questions Respond to exam questions Structure exam answers</p>	<p>This module recaps knowledge taught at KS3 and covers new topics to enhance students' knowledge of the wider impact of product design and manufacture.</p> <p>The practical activity provides opportunity to deliver practical skills directly alongside theory to show how the work hand in hand in industry to product products.</p>
<p>Half term 5</p>	<p>CAD design (2D and 3D modelling)</p>	<p>Modelling shelf parts in solidworks, knowing about "mates" to for assembly models, assembling the shelf in Solidworks, creating orthographic drawings in solidworks from 3D models, computer simulation of forces that affect products using Solidworks. Techsoft 2D design with output to CAM Stika machine (vinyl stickers),</p> <p>Critical evaluation of shelf unit and own progress, testing shelf</p>	<p>Literacy (technical vocabulary)</p> <p>CAD (Solidworks) designing skills</p> <p>CAD (solidworks) assembly skills</p> <p>CAD (solidworks (computer simulations)</p> <p>CAD (solidworks) Engineering drawings</p> <p>CAD/CAM (Stika machine)</p> <p>Critical evaluation</p> <p>Product testing</p>	<p>This module recaps some CAD CAM knowledge from KS3 but further builds a more technical knowledge of 3D CAD modelling and the powerful software to create orthographic drawings and loading simulations.</p>

<p>Half term 6</p>	<p>NEA released 1st June Exam board set task.</p> <p>Students working independently on their own project. Through the various stages</p> <p>Revision of skills and knowledge and application of these into exam board set task</p> <p>**NEA work will be continued in year 11</p>	<p>Investigate the context Identify the user Identify the problems Carry out a range of research specific to their design context Produce a design brief and Identify and investigate design possibilities Follow the design process independently.</p>	<p>Using a range of design strategies Use a range of research techniques (primary and secondary) Analyse existing products (critical analysis skills Evaluation of information and create design brief and specification Problem solving and experimentation Digital skills and communication techniques Self-management: organisation & meeting deadlines Resilience</p>	<p>NEA is worth 50% of the overall qualification grade. Each year the exam board set the task and students need to respond by identifying their own problem, user and design brief from the given context. Students work at their own pace and manage their own time while following the iterative design cycle.</p> <p>This half term is focused on completing the initial research into the design context and researching the problem and user needs. As this is an iterative process it is likely to be revisited during the project. The initial research is started as soon as possible and the research will continue at the start of yr11 before moving onto the designing and product realisation phases.</p>
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