

Title: GCSE Design Technology: Timber			
For more information, please consult: S. Cook			
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Examination Board: Pearson Edexcel			
Qualification: Pearson Edexcel Level 1/Level 2 GCSE (9-1) in Design and Technology (1DT0)			
Tiers: n/a			
Grades: GCSE grades 9-1			
Why study Pearson Edexcel Level 1/Level 2 GCSE (9-1) in Design and Technology (1DT0)			
Learning Aims / Learning Objectives			
<p>The aims and objectives of this qualification are to enable students to:</p> <ul style="list-style-type: none"> ● demonstrate their understanding that all design and technological activity takes place in contexts that influence the outcomes of design practice ● develop realistic design proposals as a result of the exploration of design opportunities and users' needs, wants and values ● use imagination, experimentation and combine ideas when designing ● develop the skills to critique and refine their own ideas while designing and making ● communicate their design ideas and decisions using different media and techniques, as appropriate for different audiences at key points in their designing ● develop decision-making skills, including the planning and organisation of time and resources when managing their own project work ● develop a broad knowledge of materials, components and technologies and practical skills to develop high-quality, imaginative and functional prototypes ● be ambitious and open to explore and take design risks in order to stretch the development of design proposals, avoiding clichéd or stereotypical responses ● consider the costs, commercial viability and marketing of products ● demonstrate safe working practices in design and technology ● use key design and technology terminology, including those related to: designing, innovation and communication; materials and technologies; making, manufacture and production; critiquing, values and ethics. 			
What will I be learning and progressing to each year?			
Year	Key Knowledge	Key Skills	Key Vocabulary
9	<p>Core theory: New Technology, Wood, Metals, Paper and board, Plastics, Textiles, Energy, Electronics, Smart materials, Mechanical devices, Designers and their work, Environmental issues.</p> <p>Core Practical: Practical work will include making a range of products in chosen materials.</p>	<p>Improving making skills, analysing information, evaluating work, knowledge of machinery and tools in chosen DT area</p> <p>Practical Making skills: Wooden CAM toy project</p>	See key vocabulary list for Year 10 below
	Link to knowledge organiser here	Link to homework here	Link to full Y9 vocabulary here
The content of your curriculum in this academic year for your subject			
<p>1.1 The impact of new and emerging technologies</p> <p>1.2 How the critical evaluation of new and emerging technologies informs design decisions; considering contemporary and potential future scenarios from different perspectives, such as ethics and the environment</p> <p>1.3 How energy is generated and stored in order to choose and use appropriate sources to make products and power systems</p> <p>1.4 Developments in modern and smart materials, composite materials and technical textiles</p> <p>1.5 The functions of mechanical devices used to produce different sorts of movements, including the changing of magnitude and the direction of forces</p> <p>1.6 How electronic systems provide functionality to products and processes, including sensors and control devices to respond to a variety of inputs, and devices to produce a range of outputs</p> <p>1.7 The use of programmable components to embed functionality into products in order to enhance and customise their operation</p>			

	<p>1.8 The categorisation of the types, properties and structure of ferrous and non-ferrous metals</p> <p>1.9 The categorisation of the types, properties and structure of papers and boards</p> <p>1.10 The categorisation of the types, properties and structure of thermoforming and thermosetting polymers</p> <p>1.11 The categorisation of the types, properties and structure of natural, synthetic, blended and mixed fibres, and woven, non-woven and knitted textiles</p> <p>1.12 The categorisation of the types, properties and structure of natural and manufactured timbers</p> <p>1.13 All design and technological practice takes place within contexts which inform outcomes</p> <p>1.14 Investigate environmental, social and economic challenges when identifying opportunities and constraints that influence the processes of designing and making</p> <p>1.15 Investigate and analyse the work of past and present professionals and companies in order to inform design</p> <p>1.16 Use different design strategies to generate initial ideas and avoid design fixation</p> <p>1.17 Develop, communicate, record and justify design ideas, applying suitable techniques</p>		
Year	Key Knowledge	Key Skills	Key Vocabulary
10	<p>Timbers:</p> <p>7.1 Design contexts</p> <p>7.2 The sources, origins, physical and working properties of each natural and manufactured timber and their social and ecological footprint</p> <p>7.3 The way in which the selection of each natural and manufactured timber is influenced</p> <p>7.4 The impact of forces and stresses on each natural and manufactured timber and how they can be reinforced and stiffened</p> <p>7.5 Typical stock forms, types and sizes used in order to calculate and determine the</p>	<p>7.1.1 When designing or modifying a product, students should be able to apply their knowledge and understanding of timbers, components and manufacturing processes.</p> <p>7.2.1 Natural timbers – hardwoods: a oak (in topic 1) b mahogany (in topic 1) c beech (in topic 1) d balsa (in topic 1) e jelutong f birch g ash. 7.2.2 Natural timbers – softwoods: a pine (in topic 1) b cedar (in topic 1) c larch. 7.2.3 Manufactured timber: a plywood (in topic 1) b medium density fibreboard (MDF) (in topic 1) c chipboard. 7.2.4 Sources and origins – where natural and manufactured timbers are resourced/manufactured and their geographical origin: a Alpine forests – pine, cedar, larch b European forests – oak, beech, ash, birch c Amazonian forests – mahogany. 7.2.5 The physical characteristics of each timber: a knots b colour c grain structure d density. 7.2.6 Working properties – the way in which each material behaves or responds to external sources: a hardness (in topic 1) b toughness (in topic 1) c durability (in topic 1) d elasticity e tensile strength f compressive strength. 7.2.7 Social footprint: a trend forecasting b impact of logging on communities' c ease and difficulty of recycling and disposal. 7.2.8 Ecological footprint: a sustainability b deforestation c habitat destruction and loss d processing e transportation f wastage g pollution. 7.3.1 Aesthetic factors: a form b colour c texture. 7.3.2 Environmental factors: a sustainability b genetic engineering c seasoning d upcycling. 7.3.3 Availability factors: a use of stock materials b use of specialist materials c environmental impact of hurricanes, storms and disease. 7.3.4 Cost factors: a quality of material b manufacturing processes necessary c treatments: fire proofing, tanilized. 7.3.5 Social factors: a use for different social groups b trends/fashion c popularity. 7.3.6 Cultural and ethical factors: a avoiding offence b suitability for intended market c the consumer society d the effects of mass production e built-in product obsolescence. 7.4.1 Forces and stresses: a compression b tension c shear d natural forces within the timber as it grows e pre-stressed construction beams. 7.4.2 Reinforcement/stiffening techniques: a frame structures b suitable fabrication/assembly/construction processes c lamination d use of braces and tie bars e</p>	<p>pine, cedar, larch, European forests – oak, beech, ash, birch, Amazonian forests – mahogany. frame structures, suitable fabrication/assembly/construction processes, lamination, use of braces and tie bars e embedding composite materials, Stock forms/types, regular sections, mouldings, dowels, sheets. Sizes: PAR/PSE/imperial and metric, cross-sectional area, diameter, board sizes – 2440 mm × 1220 mm, 1220 mm × 610 mm, jointing – butt, dowel, lap, housing, mitre, mortise and tenon, dovetail, wastage, addition. Assembling, knock-down fittings, hinges, ironmongery, Surface finishes and treatments, painting, staining, varnishing, wax, oil, shellac, veneering, staining, Scales of production, one off, batch, mass production, continuous, marking-out, jigs, fixtures, templates, patterns, sub-</p>

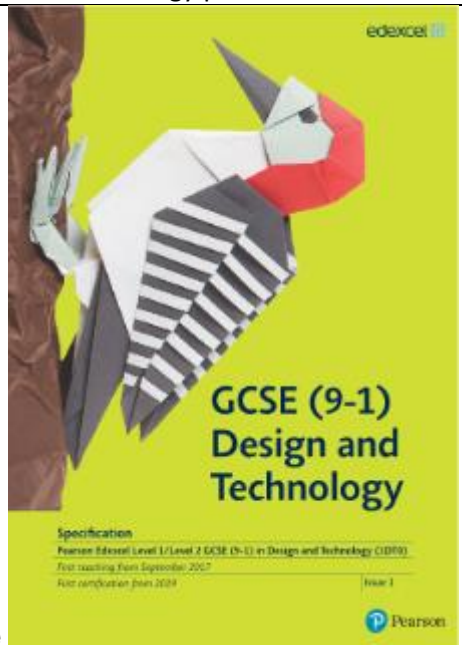
	<p>required quantity of each natural and manufactured timber</p> <p>7.6 Alternative processes that can be used to manufacture typical products of each natural and manufactured timber to different scales of production</p> <p>7.7 Specialist techniques, tools, equipment and processes that can be used on each natural and manufactured timber to shape, fabricate, construct and assemble a high-quality prototype</p> <p>7.8 Appropriate surface treatments and finishes that can be applied to each natural and manufactured timber for functional and aesthetic purposes</p>	<p>embedding composite materials.. 7.5.1 Stock forms/types: a regular sections b mouldings c dowels d sheets. 7.5.2 Sizes: a PAR/PSE/imperial and metric b cross-sectional area c diameter d board sizes – 2440 mm × 1220 mm, 1220 mm × 610 mm. 7.6.1 Processes that can be used to cut and shape materials: a routing b sawing c use of a mortise d use of a bag press. 7.6.2 Scales of production: a one off b batch c mass production d continuous. 7.6.3 Techniques for quantity production – methods that are employed when making products in quantity: a marking-out methods (use of reference points, lines and surfaces) b jigs c fixtures d templates e patterns f sub-assembly g computer-aided manufacturing (CAM) h quality control i working within tolerance j efficient cutting to minimise waste. 7.7.1 Tools and equipment: a hand tools b machinery c digital design and manufacture. 7.7.2 Shaping: a drilling b cutting c planing d chiselling e turning – face plate and between centres f abrading – glass paper g carving h use of rasps/surforms. 7.7.3 Fabricating/constructing: a lamination b veneering c use of screws d nailing e use of adhesives – PVA, contact adhesive f jointing – butt, dowel, lap, housing, mitre, mortise and tenon, dovetail g wastage h addition. 7.7.4 Assembling: a knock-down fittings b hinges c ironmongery. 7.8.1 Surface finishes and treatments: a painting b staining c varnishing d wax e oil f shellac g veneering h staining.</p>	<p>assembly, computer-aided manufacturing (CAM), quality control, working within tolerance, efficient cutting, planning, chiselling, turning , abrading, glass paper, carving, rasps, surforms, fabricating, constructing, lamination, veneering, screws, nailing, adhesives – PVA, contact adhesive, one off, batch, mass production, continuous, hardness, toughness, durability, elasticity, tensile strength, compressive strength, Social footprint, trend forecasting, impact of logging on communities', recycling, disposal, Ecological footprint, sustainability, deforestation, habitat destruction, processing, transportation, wastage, pollution, Aesthetic factors, form, colour, texture, Environmental factors, sustainability, genetic engineering, seasoning, up cycling.</p>
	<p>Link to knowledge organiser here</p>	<p>Link to homework here</p>	<p>Link to full Y10 vocabulary here</p>
<p>The content of your curriculum in this academic year for your subject 1st June – starting Non Examined Assessment in chosen material area. This practical and written assessment is 50% of the total GCSE DT 9-1.</p>			
<p>Year</p>	<p>Key Knowledge</p>	<p>Key Skills</p>	<p>Key Vocabulary</p>
<p>11</p>	<p>1.1 Investigation of needs and research</p>	<p>1.1a Identify the needs of the end user. 1.1b Outline a design problem from the context provided and identify a need for a product that could solve the problem. 1.1c Investigate existing products to inform the product specification for the prototype, from past and present designers. 1.1d Carry out a range of research strategies to gather relevant</p>	<p>Calculate Work Describe Discuss</p>

<p>1.2 Product specification</p> <p>2.1 Design ideas</p> <p>2.2 Review of initial ideas.</p> <p>2.3 Development of design ideas into a chosen design</p> <p>2.4 Communication of design ideas</p> <p>2.5 Review of chosen design</p> <p>3.1 Manufacture.</p> <p>3.2 Quality and accuracy</p> <p>4.1 Testing and evaluation</p>	<p>information, to inform the design specification for the prototype, including: a market research b research into the context in which the prototype will be used c research into other possible materials d any sustainability issues that will be considered relevant to the intended prototype</p> <p>1.2a Production of a design brief, that addresses all needs previously identified. 1.2b Production of a product specification that includes statements that are technical, measurable and justified, and include consideration of: a form b function c user requirements d performance requirements e material and component requirements f scale of production g cost h sustainability i performance requirements. 1.2c Identification of criteria, which will be used to evaluate the success of the prototype. 2.1a Production of a range of design ideas that address the criteria in the design brief and product specification. 2.1b Consideration of a range of issues when producing the design ideas, including: a budget b aesthetics c cultural issues d sustainability issues. 2.1c Exploration of different design approaches, including: a materials b components c processes d techniques.</p> <p>2.2a Analysis and evaluation of how each design idea meets the design brief and product specification. 2.2b Determine which designs follow the design brief and product specification and should be taken forward for development. 2.2c Modification of design ideas to fit the design brief and product specification</p> <p>2.3a Consideration of user group needs and preferences, of design ideas, conducting further research where necessary. 2.3b Consideration of the design as a whole, rather than focussing on component parts in isolation. 2.3c Modelling/simulation used to test the features of the design ideas. 2.3d Analysis and evaluation of the design ideas, to inform choice as to the chosen design to take forward. 2.3e Modification of design ideas to produce the chosen design, which meets the design brief and product specification. 2.4a Use a range of communication techniques and media to present the design ideas, including: a freehand sketching (2D and/or 3D) b annotated sketches c cut and paste techniques d digital photography/media e 3D models f isometric and oblique projection g perspective drawing h orthographic and exploded views i assembly drawings j system and schematic diagrams k computer-aided design (CAD) and other specialist computer drawing programs. 2.4b Communicate the design ideas clearly and effectively using written techniques. 2.5a Produce a chosen design solution for the product that meets the design brief and product specification. 2.5b Consideration given to the materials, techniques and processes required to produce the chosen design solution. 2.5c Incorporation of feedback from research into the chosen design. 3.1a Production of a prototype that meets the requirements of the design brief and product specification, showing a wide range of making skills with precision and accuracy. 3.1b Selection and application of: a material b range of tools, including marking-out tools, hand tools and machinery c range of techniques d fixtures, templates, jigs and/or patterns e components f surface treatments and finishes used in the manufacture of the prototype. 3.1c Demonstration of safe working practice, for themselves and others</p> <p>3.2a Measuring the</p>	<p>Identify</p> <p>Evaluate</p> <p>Review</p> <p>Explain</p> <p>Give</p> <p>State</p> <p>Name</p> <p>Identify</p> <p>Use annotated sketches to show...</p>
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	<p>degree to which the prototype performs as intended. 3.2b The prototype is accurately assembled and finished to a high quality. 4.1a Analyse the prototype against the product specification by conducting a variety of tests under realistic conditions, to ensure fitness for purpose. 4.1b Analyse the results of the prototype testing. 4.1c Evaluate whether the prototype meets the product specification. 4.1d Evaluate the sustainability of the final prototype by carrying out a life cycle assessment (LCA), in order to assess its impact on the environment.</p>	
<p>Link to knowledge organiser here Y:Curriculum:Design Technology: Knowledge Organisers</p>	<p>Link to homework/revision here Giles App. https://www.gcsepod.com/ https://www.pearsonactivelearn.com/app/Home http://technologystudent.com/</p>	<p>Link to full Y11 vocabulary here Y:\Curriculum\Design Technology\DT curriculum information: DT Terminology KS4</p>
<p>The content of your curriculum in this academic year for your subject Component 1 (*Paper code: 1DT0/1A, 1B, 1C, 1D, 1E, 1F) Written examination: 1 hour and 45 minutes 50% of the qualification 100 marks Section A: Core This section is 40 marks and contains a mixture of different question styles, including open-response, graphical, calculation and extended-open-response questions. There will be 10 marks of calculation questions in Section A. Section B: Material categories This section is 60 marks and contains a mixture of different question styles, including open-response, graphical, calculation and extended-open-response questions. There will be 5 marks of calculation questions in Section B. Component 2 (Paper code: 1DT0/02) Non-examined assessment 50% of the qualification 100 marks Content overview There are four parts to the assessment: 1 – Investigate This includes investigation of needs and research, and a product specification 2 – Design This includes producing different design ideas, review of initial ideas, development of design ideas into a chosen design, communication of design ideas and review of the chosen design 3 – Make This includes manufacture, and quality and accuracy 4 – Evaluate This includes testing and evaluation. Assessment overview • Students will undertake a project based on a contextual challenge released by us a year before certification. • This will be released on 1st June and will be available on our website. • The project will test students’ skills in investigating, designing, making and evaluating a prototype of a product. • Task will be internally assessed and externally moderated. • The marks are awarded for each part as follows. o 1 – Investigate (16 marks) o 2 – Design (42 marks) o 3 – Make (36 marks) o 4 – Evaluate (6 marks)</p>		
<p>How will my work be assessed? / assessment components / frequency / term</p>		
<p>Y9</p>	<p>Assessment of completed units of core design technology content by testing and reporting in effort and attainment grades in terms 2, 4 and 6. Practical making project in Timber assessed at the end of the unit of work.</p>	
<p>Y10</p>	<p>Subject specific content assessed by testing and reporting in effort and attainment grades in term 2 Mini Contextual challenge – a design and make project assessed during the last term of Year 10. 50% designing/50% making. Continual assessment and verbal feedback throughout and final assessment of completed work.</p>	
<p>Y11</p>	<p>On-going assessment of NEA (Non Examined Assessment) during Year 11 then final assessment Easter of Year 11</p>	
<p>Extra-curriculum activities / Trips / Work experience / Community cohesion / Events participation</p>		
<p>Students may be asked to assist in the making of props and costumes for school productions.</p>		
<p>What would this subject enable me to do when I finish school? / Career Paths</p>		
<p>Key Stage 5: A level Product Design. Apprenticeships in Carpentry, Graphic Design, Product Design, Machine Technician, Teaching, Designer/Maker.</p>		

How parents or other members of the public can find out more about the curriculum your subject is following

<https://qualifications.pearson.com/content/dam/pdf/GCSE/design-and-technology/2017/specification-and-sample-assessments/Specification-GCSE-L1-L2-in-Design-and-Technology.pdf>



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