

Design and Technology curriculum map 2016-17 Year 11.					
	topic	Points	Literacy	SMSC	Assessment
AUTUMN 1					
A U T U M N 1 W e e k 1	<p>identify, investigate and outline AO1- Design and technology practice.</p> <p>Identify and investigate gaps in the market. Consider environmental, social and economic challenges. To identify opportunities and constraints of designing and making</p> <p>LO: determine the most suitable design brief for you using a concept board</p>	<p>9 Justify initial specification. Refer to challenge, innovation, achievability, resources required, availability of resources and skill development.</p> <p>8 plan to research UPS features to develop innovative product</p> <p>7 create an initial specification list that incorporates USPs</p> <p>6 identify opportunities for the use of new materials and processes in the development of designs</p> <p>5 undertake effective identification of opportunities for the development of designs to reduce carbon footprint</p> <p>4 consider the different wants and needs of new target markets. What product adaptations would be required in terms of comfort and ease of use?</p> <p>3 identify existing target market, How is the product used? Where and when is it used? What target markets are ignored? What are the economic and social benefits of designing for this new market?</p> <p>2 present market leading product(s) images and identify ACCESSFM features and then suggest aesthetic and functional and SWOT</p> <p>1 define key words from brief. Create spray diagram using ACCESSFM questions relevant to the brief. Create research plan. Identify one opportunity for the possible development of design.</p>	<p>What are the design problems that surround this brief? What are the design problems that surround existing products? Show understanding of the implication of “market-pull, technology-push”. Consider form, function, shape, colour, materials, texture, component parts, decoration and aesthetic appeal to evaluate suitability for purpose</p> <p>Plan research to develop a solution to ensure project is achievable within a timescale.</p> <p>Explore possible themes; lifestyles of the target market</p>	<p>consider the needs of the client and the user</p> <p>consider aesthetic and functional requirements in relation to cultural diversity</p>	<p>Coursework marked 1-9- concept board and spray diagram</p> <p>Controlled assessment week 5. Qu 1-4 from exam paper.</p>
	<p>Homework AO1 design requirements</p> <p>You have been asked to design and make a children’s toy for a well-known toy company. The toy should be educational, suitable for pre-school children and it should improve hand eye coordination. Write 4</p>	<p>Possible responses:</p> <ol style="list-style-type: none"> 1. Must be entertaining / interesting 2. Must be soundly constructed 3. Must be made from nontoxic materials 4. Must have no small / detachable parts 5. Must be capable of being manufactured in quantity 6. Must be safe to use 7. Must be ergonomically designed 8. Must be eye catching 9. Must be durable 			


	<p>design requirements for a toy and remember to include explanations</p>	<p>(4 x 1 mark)</p> <p>Any three relevant explanations Possible responses:</p> <ol style="list-style-type: none"> 1. This will encourage children to use it 2. It should not fall to pieces 3. Children should not become ill when using it 4. Children like to put things into their mouths and may choke 5. Making things in bulk reduces the unit cost 6. No child should be injured when using the toy 7. It should be easy and comfortable to use 8. Children should be drawn to it 9. The toy should withstand everyday use by children <p>(4 x 1 mark)</p>			
	<p>Homework AO1 design requirements</p> <p>You have been asked by a company that designs and manufactures personal hi-fi equipment to produce a range of casing designs for an MP3 docking station with speakers. It should be suitable for a teenage market.</p> <p>Write 4 design requirements for a toy and remember to include explanations</p>	<p>Any one correctly identified requirements. Possible responses:</p> <ol style="list-style-type: none"> 1. Must be entertaining / interesting to a teenager 2. Must be soundly constructed 3. It should be easy to carry around 4. Must be capable of being manufactured in quantity 5. Must be safe to use 6. Must be ergonomically designed 7. Must be durable 8. Must be stable <p>1 mark</p> <p>Any one relevant explanations Possible responses:</p> <ol style="list-style-type: none"> 1. This will encourage a teenager to use it 2. It should not break when in use 3. Teenagers will want to take it into different rooms 4. Making things in bulk reduces the unit cost 5. No one should be injured when using the radio 6. It should be easy and comfortable to use 7. It should withstand everyday use by a teenager 8. It should not fall over 			

<p>AO1 Homework – Define market pull and technology push. Use a kettle as an exemplar product and state features that are market pull or technology push. Give reasons why you judge these features to be market pull and technology push</p>	<p>A response that simple states features of the design without any qualification or judgemental comment (1)</p> <p>A basic response that qualifies or makes a judgemental comment about a design feature(2)</p> <p>A simple response that qualifies or makes a judgemental comment about some design features(3)</p> <p>A detail response that qualifies or makes a judgemental comment about several design features(4)</p>	<p>Concise sentence structure using key words from ACCESSFM. Recognising and responding to key instruction words</p>		<p>Exam question 3 marks.</p>
<p>AO1 Homework – design and market influences Explain what is meant by the term market pull and technology push. Give examples of products to illustrate your answer</p>	<p>Look for details relating to: Market pull relates to the particular needs of society having a direct influence of the development of a product.</p> <p>Society has an ever increasing demand for greener products and therefore product such as recycling bins, reusable carrier bags, hybrid cars, low energy light bulbs have been developed as a consequence.</p> <p>Technology push relates to advances in technology having a direct influence on the development of a product.</p> <p>The developments in electronic engineering have enabled smaller, smarter electronic components to be fitted into everyday products such as the mobile phone, personal hi-fi and cameras.</p>	<p>A fully detailed and comprehensive response that includes details of most of the examples above. The answer is well-structured, with good use of appropriate design & technology terminology and showing a good grasp of grammar, punctuation and spelling.(8-7)</p> <p>A detailed and comprehensive response that includes some of the examples above. The answer is well-structured, with good use of appropriate design & technology terminology and showing a good grasp of grammar, punctuation and spelling.(6-5)</p> <p>A fairly detailed response which refers to a few of the examples above. The answer is fairly well structured, with some use of design & technology terminology and with a small number of errors in grammar, punctuation and spelling.(4-3)</p> <p>A response which contains very limited reference to any of the examples above. The answer is vague or poorly structured, with little use of design & technology terminology and with a considerable number of errors in grammar,</p>		

			punctuation and spelling.(3-2) A response which is poorly structured with no relevant examples. There is very little or no use of design technology terminology and with many errors in grammar, punctuation and spelling.(1-0)		
W e e k 2	Revision AO3- be able to make suitable materials components and systems choices by considering the impacts of emerging technologies on industries, the environment , multi-cultures, societies today and in the future	Add to concept board 8 UPS features used to develop innovative product 7 initial specification list incorporates USPs 6 identify opportunities for the use of new materials and processes in the development of designs 5 undertake effective identification of opportunities for the development of designs to reduce carbon footprint 4 consider the different wants and needs of new target markets. What product adaptations would be required in terms of comfort and ease of use?	Consider the impact of technology on industry- using key terms of market pull; technology push; consumer choice using example product.	Explore idea of consumers voting with their pounds to demand development	Exam question Teacher marking and Assessment mapped.
	AO1 Homework Study the design brief from last week and your design specification. Use this information to help you draw 5 different design ideas for your product. Marks will be awarded for creativity and appealing to the target market.	Mark each idea out of 3 using the following scale: <ul style="list-style-type: none">A repeat idea 0 markA simple / obvious idea lacking in detail 1 markA simple idea displaying some creativity 2 marksAn idea that displays creativity 3 marks			Exam question
W e e k 3	AO1- user needs Choose suitable target market and understand client and user needs through collection of primary and secondary information	9 undertake detailed and effective analysis of information. Prioritise the needs, wants and values of clients or potential users. Write design requirements without discrimination. 8 develop an initial specification list that incorporates USPs 7 create a specification that incorporates the needs of existing target markets and newly identified target market (USP).	To construct questions to elicit quantitative responses about product preferences To analyse patterns in responses and develop a specification for own product.	To identify target market profiles and choose a suitable target market for the brief based on Social, environmental and economic factors	Coursework marked 1-9 Questionnaire and results and concise list of findings.

		<p>Recognise there may be conflicts between different markets wants and needs.</p> <p>6 identify target markets excluded from existing products who would benefit from its use to improve their lives.</p> <p>5 undertake effective analysis of information, reflecting the needs, wants and values of potential users... Recognise the strengths and weaknesses of using primary and secondary research to inform designs</p> <p>4 construct questionnaire to ask specific open and closed questions relevant to the brief to ascertain requirements</p> <p>3 undertake primary research - construct a questionnaire to ask to new target market to identify wants and needs. analyse answers summarise some findings ready to insert into brief and specifications</p> <p>2 profile a new target market. Consider their environmental, social and economic challenges to identify e how their design requirements differ</p> <p>1 undertake secondary research - profile existing target market. Income, accommodation, location, interests and product requirements</p>			
<p>AO1 homework Design development qu3. Use notes and sketches to show how you would develop the design features of your chosen design. Your developed design should include details about materials and finishes, method of construction and design features. You should include 3 important (ergonomic) sizes. When you have completed the design evaluate 3 of its features using ACCESSFM.</p>		<p>Development details could include:</p> <p>Materials and finishes There is a maximum of 3 marks for this question. Award up to two marks for materials, award up to two marks for finishes, however, the total may not exceed three marks.</p> <p>Award marks for details relating to:</p> <ul style="list-style-type: none"> • Suitable specific material(s) • Details of the properties of that material • A suitable finish • Details of the properties of that finish <p>3 marks</p> <p>Method of construction Award marks for details relating to:</p> <ul style="list-style-type: none"> • Suitable method(s) of construction • Details of the method(s) of construction <p>3 marks</p> <p>Design features and sizes 3 marks</p>			<p>Exam question 9 marks design development</p>

		<p>There is a maximum of 3 marks for this question. Award up to two marks for design features, award up to two marks for sizes, however, the total may not exceed three marks.</p> <p>Award marks for details relating to:</p> <ul style="list-style-type: none"> • Explanations of the design features • Suitable realistic sizes (sizes are expected to be given in mm unless otherwise stated) Realistic imperial measurement are to be awarded 1 mark. <p>Maximum 9 marks</p>			
W e e k 4	<p>AO3- be able to make suitable materials components and systems choices by considering the impacts of emerging technologies on industries, the environment , multi-cultures, societies today and in the future</p> <p>Existing products research</p>	<p>8 UPS features used to develop innovative product</p> <p>7 initial specification list incorporates USPs</p> <p>6 identify opportunities for the use of new materials and processes in the development of designs</p> <p>5 undertake effective identification of opportunities for the development of designs to reduce carbon footprint</p> <p>4 consider the different wants and needs of new target markets. What product adaptations would be required in terms of comfort and ease of use?</p>	<p>Key points</p> <p>Materials and processes developments drive technology push</p> <p>Developments in materials and manufacturing processes have enabled designers to develop products that improve our standard of living.</p> <p>Prior to industrial revolution materials were limited to local supply and manufacture.</p> <p>With the development of the steam engine, iron and steel production proliferate, materials and processes became more mobile and markets grew. Mass produced products were created.</p> <p>With the development of synthetic plastics from coal, plastics enabled a wide range of people to get products at a reasonable price- Bakelite 1907</p> <p>New manufacturing processes such as JIT and CAD CAM have improved product quality further ad reduced costs to the consumer.</p> <p>Market pull also effects the design and manufacture of products.</p> <p>Summary</p> <p>Development in technology have affected materials, manufacturing. New materials</p>	<p>How have social factors and environmental considerations impacted on design of lamps over the last 10 years?</p> <p>Social factors- acceptable views and fashion changes over time. Products should be designed to appeal to consumers.</p> <p>Environmental factors</p> <p>The disposable culture is being replaced with the 6 R philosophy- refuse reduce, re-use, repair, rethink and recycle</p> <p>Key terms</p> <p>Mass produced – made in quantity by standardised process using specialised machinery</p>	<p>Mark exam question. 10 marks.</p>

			<p>have been produced, and the way we make products has changed.</p> <p>Social factors have an impact on the products that we use.</p> <p>Products for a greener future are being developed.</p>	<p>Bakelite- synthetic plastic</p> <p>Utility- describes a product that is made for usefulness only.</p>	
<p>AO1 Homework.</p> <p>This question is about the client, the designer, the manufacturer and the consumer. A client requires a new computer workstation Suggest two different types of research the designer will need to carry out when designing it. In each case explain why it is necessary to carry out this type of research</p> 	<p>Award one mark for each relevant type of research.</p> <p>Award one mark for each correct explanation</p> <p>Carry out a questionnaire – to gain information from the target market</p> <p>Use books – to gain information</p> <p>Use the Internet – to gain information</p> <p>Carry out a product analysis of an existing computer workstation – to gain information on the types of material, construction methods and ergonomic features</p> <p>Carry out market research – to find what designs are already being sold</p> <p>Measure the various pieces of computer equipment that are to be housed in the computer workstation – to ensure that it will hold everything</p> <p>Research anthropometric data – to ensure that it will be the correct size for the target market</p> <p>Research materials – to ensure that the materials will be strong enough and suit the design</p> <p>Research construction methods – to ensure that the materials will be fixed together securely</p> <p>Research finishing techniques – to ensure that the material will look good and be durable</p> <p>(4 x 1 mark)</p>				Exam question
<p>Homework</p> <p>Qu 1</p> <p>AO1 Homework. Define 6 R's</p> <p>Qu2 Discuss the sustainability of a drinks bottle.</p> <p>a- Glass bottle</p> <p>b- PET plastic bottle</p>	<p>Award one mark for each correctly linked R.</p> <p>Up to a maximum of 5 marks</p> <p>Award one mark each for any of the following details or two marks each for an expanded detail:</p> <p>Glass bottle</p> <ul style="list-style-type: none"> • Glass is made from sand • Glass is made from a non-renewable resource 			relative sustainability of contemporary products considered	Exam question 8 marks

		<ul style="list-style-type: none"> • Glass is made from a plentiful resource • Glass is reusable • Glass is recyclable • It takes energy to produce glass Max 4 marks <p>Plastic bottle</p> <ul style="list-style-type: none"> • Plastic is made from a non-renewable resource • Plastic is made from oil • Oil is a finite resource • Plastic can be recycled • It takes energy to produce plastic • Plastic bottles can be reused Max 4 marks 			
Week 5	AO1- add 6 R's to design specification AO1- work of designers and companies identify and investigate the work of relevant designers, recognise constraints and opportunities for development and use these to inform designs	<p>9 undertake detailed and effective analysis of existing products information. Prioritise the needs, wants and values of clients or potential users in specification.</p> <p>8 develop an initial specification list that incorporates USPs</p> <p>7 identify opportunities for development of designs based on cost reduction and increased availability</p> <p>6 identify opportunities for development of designs based on improved sustainability</p> <p>5 identify opportunities for development of designs based on target market needs, wants and values</p> <p>4 summarise strengths to use in own product and weaknesses to avoid in a more developed specification its</p> <p>3 use specification to identify strengths and weakness of chosen designer products product descriptions</p> <p>2 present 5 images of popular/iconic products. Write product descriptions. Recognise similarities and differences.</p> <p>1 undertake research on a designer/ design company from the past or present liked by the target market. Write a list of design principles to insert into brief and specifications</p>	Concisely summarise strengths to use in own product and weaknesses to avoid in a more developed specification. Identify opportunities for development.	Prioritise the needs, wants and values of clients or potential users in specification.	Existing products coursework levelled 1-9
	AO1 Homework Evaluative comment. Research a designer who makes a product similar to that which you want to design. Draw/trace the	<p>Award one mark each for a justified evaluative comment. Justified comments must be relevant to be awarded a mark.</p> <p>3 x 1 mark</p> <p>3 marks</p>			Exam question

<p>design and clearly show strengths and weaknesses of the design. Next redraw the design but with solutions to the design problems. – uses notes to clearly show the developments you have made.</p> <p>Revise for half termly assessment test.</p>																																																																																								
<p>W e k 6</p> <p>Revision AO1- brief and specification outline the project-construct brief and specification that takes into account human needs, wants and interests</p>	<p>Review exam paper questions 1-4 from design requirements to design evaluation.</p> <p>D&T: Resistant Materials Unit 1 160 UMS scaled /120</p> <table border="1"> <tbody> <tr><td>8</td><td>A*(144)</td><td>91</td><td>76%</td></tr> <tr><td>8-</td><td>A+</td><td></td><td>72%</td></tr> <tr><td>7</td><td>A</td><td></td><td>69%</td></tr> <tr><td>7-</td><td>.A(128)</td><td>81</td><td>66%</td></tr> <tr><td>6+</td><td>B+</td><td></td><td>64%</td></tr> <tr><td>6</td><td>B</td><td></td><td>61%</td></tr> <tr><td>5</td><td>.B(112)</td><td>71</td><td>59%</td></tr> <tr><td>5-</td><td>C+</td><td></td><td>57%</td></tr> <tr><td>4</td><td>C</td><td></td><td>54%</td></tr> <tr><td>4-</td><td>.C(96)</td><td>61</td><td>51%</td></tr> <tr><td>3+</td><td>D+</td><td></td><td>48%</td></tr> <tr><td>3</td><td>D</td><td></td><td>46%</td></tr> <tr><td>3-</td><td>.D(80)</td><td>53</td><td>44%</td></tr> <tr><td>2+</td><td>E+</td><td></td><td>42%</td></tr> <tr><td>2</td><td>E</td><td></td><td>40%</td></tr> <tr><td>2-</td><td>.E(64)</td><td>45</td><td>38%</td></tr> <tr><td>1+</td><td>F+</td><td></td><td>36%</td></tr> <tr><td>1</td><td>F</td><td></td><td>34%</td></tr> <tr><td>1-</td><td>.F(48)</td><td>38</td><td>32%</td></tr> <tr><td>PSG7</td><td>G+</td><td></td><td>30%</td></tr> <tr><td>PSG6</td><td>G</td><td></td><td>28%</td></tr> </tbody> </table>	8	A*(144)	91	76%	8-	A+		72%	7	A		69%	7-	.A(128)	81	66%	6+	B+		64%	6	B		61%	5	.B(112)	71	59%	5-	C+		57%	4	C		54%	4-	.C(96)	61	51%	3+	D+		48%	3	D		46%	3-	.D(80)	53	44%	2+	E+		42%	2	E		40%	2-	.E(64)	45	38%	1+	F+		36%	1	F		34%	1-	.F(48)	38	32%	PSG7	G+		30%	PSG6	G		28%	<p>To understand and respond to instructions and to identify key words to secure full marks.</p> <p>To develop use of concise sentence structure to identify design requirements and give clear explanation.</p>		<p>Controlled assessment of exam paper 1-4</p>
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Week 7	Improvement week.	Use assessment covey to identify areas for development with each student. Consolidate information. Make improvements to develop points on topic AO's taught in Autumn 1			Review and update coursework / controlled assessment points on covey.
	Ao1 Homework Name the following tools from the images and state the process they are used for	Award one mark for each correctly identified tool and one mark for each correctly identified, specific, process.			
AUTUMN 2					
Week 1	AO1- brief and specification outline the project-construct brief and specification that takes into account human needs, wants and interests	9 write with clarity and vision to show that the client has made clear choices about what they want and don't want. to be innovative and inspirational , 8 consider opportunities develop the brief -to reduce impact of goods and products. to society; to improve the quality of living ,to individual 7 demonstrate a very good understanding of the task ahead and the requirements which have to be met, to satisfy the needs, wants and interests of potential users 6 ensure specification, includes measurable criteria, so that the prototype can be tested for success. 5 use previous specifications to write an objective specification, to inform the design and manufacture of a prototype. 4 outline the problems to solve. Write a detailed brief that answers each problem 3 write a specification, based on ACCESSFM and including the key points from research to inform the design and manufacture of a prototype. 2 write a 1st design brief that identifies target markets, product requirements, where and when it will be used. 1 write design brief modelled on original class brief	Review and develop Design specification <i>Effectively address the main issues of the design task. Good practice shows the use of a hierarchy and included measurable Criteria.</i> write a list of aesthetic values, target market, cost constraints, environmental factors affecting disposal of waste, surplus and by products, safety (BSI and ISO standards), ergonomics, fitness for purpose, finish, maintenance and product life, social and cultural aspects,	Clearly state the intended consumer groups , and justify your choice in terms of their needs not being met. How the product will effect and be affected by its intended environment.	Coursework 1-9 levelled.
	Homework AO2 Create 5 designs using Scaffitti or 2 point perspective based on your design brief and your specifications				

<p>Week 2</p>	<p>Revision</p>	<p><i>Understand what is meant by the term creativity.</i></p> <p>Understand several different ways of developing 2d creative ability</p> <p>Learn different ways of developing 3D creativity</p>	<p>Use of key terms and definitions.</p> <p>4.1 What is creativity? Risk taking, and thinking beyond what exists. Incremental and radical developments. Key term- unique- e.g. - concept cars. Methods- mood boards and thought showers</p> <p>4.2 developing creative ability strategies. Think outside the box strategies- Scraffitti method- random curvy lines scribble and see. Jackstraws- random straight lines. Geometric shapes overlap and colour in interesting forms. Automatic drawing- look away from the page and draw your design- freedom of creativity without rationality. Morphing- functional object and unrelated object morph.</p> <p>4.3 quick modelling and CAD- prototypes use inexpensive or reusable modelling materials like- Lego, meccano, plasticine, card, paper, prototype is a model to test design prior to production. Ergonomic design can be used efficiently by making it comfortable and easy to use.</p> <p>CAD design virtual shapes quickly to accept, adjust or reject. Design on screen. Editable. view from range of angles, render in different materials</p>		<p>Creativity key terms test</p>
	<p>Homework AO2 Make templates for parts of your strongest design.</p> <p>There should be enough detail for most of the design to be marked out by another person using a template. Most tools and equipment should be given in the form of instructions.</p>	<p>Marking out (traditional)</p> <p>Sufficient detail for most of the design to be marked out by a third party, as a one off. Most tools and equipment given</p> <p>Sufficient detail for most of the design to be marked out by a third party, in quantity, using a template. Most tools and equipment given.</p> <p>Or</p> <p>Marking out CAD</p>			

		<p>Sufficient detail for the design to be drawn by CAD by a third party. Most tools and equipment given.</p> <p>Look for details relating to: Computer hardware</p> <p>Naming software</p> <p>Net on screen</p> <p>Use of different coloured lines</p> <p>Power settings</p>			
<p>W</p> <p>AO2 explore and develop ideas, testing, and critically analysing and evaluating their work to refine decisions and improve outcomes</p>	<p><i>9 identified and considered social, moral and economic factors which are relevant to the context and potential user(s)...made very good use of testing to evolve ideas and to refine their design decisions.</i></p> <p><i>8 ensure purpose of testing is clear and that design decisions develop the solution</i></p> <p><i>7 develop designs to take account of user's environment.</i></p> <p><i>6 develop design to account of sustainability</i></p> <p><i>5 develop design to account for anthropometrics and ergonomic requirements of users. Include tests for comfort and ease of use</i></p> <p><i>4 review/ test design ideas with manufacturer to evolve ideas regarding construction and materials and to refine their design decisions.</i></p> <p><i>3 identify social, moral and economic factors with designer products then state how it meets or misses specification</i></p> <p><i>Review/ test design ideas with client to evolve ideas and to refine their design decisions.</i></p> <p><i>2 make use of specification rate successes and weaknesses of designs.</i></p> <p><i>1 Add annotations regarding usability for client</i></p>	<p>Review and develop Design ideas verbally.</p> <p><i>Effectively address the main issues of the design task. Good practice shows the use of a hierarchy and included measurable Criteria.</i></p>	<p>Consider social, economic and environmental factors in designing and design development.</p>	<p><i>Clear and concise design specification that will guide initial design ideas.</i></p>	
<p>Homework AO2</p> <p><i>Plan the cutting order for your product in enough detail for most of the design to be cut and shaped by a third party, using jigs/templates. Most tools and equipment given in the instructions.</i></p>	<p><i>Cutting and shaping (traditional)</i></p> <p><i>Sufficient detail for some of the design to be cut and shaped by a third party as a one off. Most tools and equipment given</i></p> <p><i>Sufficient detail for most of the design to be cut and shaped by a third party, in quantity, using jigs/templates. Most tools and equipment given.</i></p> <p><i>Cutting and shaping CAM</i></p> <p><i>Sufficient detail for the design to be manufactured by CAM. Most tools and equipment given.</i></p> <p><i>Look for details relating to: Transfer of data to CAM</i></p>				

		<i>Laser cutter/CNC router Clamping work piece Changing tools Safety</i>			
Week 4	<p>Revision 3.5 Design periods though history.</p> <p>Pre industrial revolution- few possessions. Handmade. Small scale production. Varying quality according to income.</p> <p>Industrial revolution- quantity manufacture. Machines and division of labour into manufacturing cells. More affordable products. Style and quality limited.</p> <p>Arts and crafts movement- style and craftsmanship into everyday products. Natural materials and organic shapes and quality.</p> <p>Art nouveau- art into everyday products. Free flowing lines, organic, natural shapes. Intricate and elaborate designs.</p> <p>Bauhaus- form follows function. Everyday products for everyone to use. Use new materials and manufacturing processes. Simple geometric forms.</p> <p>Art Deco- make everyday products stylish elegant and ultra-modern. Geometric shapes, stepped forms, sweeping curves. Post war design. Create a time line with images and annotations.</p>	<p><i>Gain an understanding of the work of key design movements What impact did these designers have on everyday products?</i></p>	<p>Define JIT, Mass, Batch, Single production methods. Apply definitions to make statements regarding quality and target markets. Quality, client, cost, environment, safety, sizes (size of target market) functions, materials. Production processes time for production.</p>	<p>Consider economic discrimination</p>	<p><i>Exam design question</i></p>

	<p>Homework AO2 Bending / joining Plan joining in enough detail so that the design can be joined by someone else with use of jigs/formers. Most tools and equipment given in the instructions</p>	<p><i>Applying the surface finish (traditional)</i> Sufficient detail for the design to be finished by a third party. Most tools and equipment given. Look for the following details: Material preparation Use of a brush/aerosol/rag Application of varnish/paint</p> <p>or</p> <p><i>Applying the surface finish (CAM)</i> Reference to the fact that a laser cut stand would not need finishing as the laser produces a good quality finish. or Reference to improving the quality of laser cut edges by use of wet and dry paper, 'Brasso' and polishing/buffing</p>		
W e e k 5	<p>AO2 using design strategies use design strategies such as collaboration, user centred design, systems thinking to generate a range of possible solutions</p>	<p>9 review design with manufacturer and adapt parts to make product suitable for multiple repeats. 8 include preassembled standardised components in later designs and recognise the benefits of this approach 7 demonstrate creative and innovative solutions 6 imaginative ideas have been developed using further relevant research. Some consideration has been given to appropriate material properties. 5 a range of ideas show some creativity. SWOT analysis against the specifications is evident. This is used to direct further development of the solution Consideration has been given to social, moral, environmental and sustainability issues. 4 review "best" designs with client and develop designs to meet requirements. 3 use tracing to draw and then develop existing/ designer products so that they meet specifications. Use arrows to show direction of development. annotate functional strengths and weaknesses to enable ideas to evolve 2 generate 4+ drawings from life studies. 1 generate 4+ scaffitti based designs collaboratively. Add annotations regarding usability for client</p>	<p><i>Creative work is characterised by the use of a variety of "Design Toolkit" approaches to broaden the range and style of approaches to designing. Clear reference back to the draft design specification to evaluate ideas and proposals must be evidenced to gain marks and also to establish a clear direction for the project.</i></p>	<p><i>using a variety of media, such as freehand sketching, formal working and presentation drawings, 2D and 3D modelling, ICT generated images</i></p>
	<p>AO2 Homework</p>	<p>Use quick modelling and CAD- Lego, meccano, plasticine, card, paper to create prototype. It must be Ergonomic design Can use CAD to design virtual shapes quickly</p>		

Week 6	Revision AO2 using design strategies use design strategies such as collaboration, user centred design, systems thinking to generate a range of possible solutions	Review exam paper question 1-4 and then 5 and 6 from plan of make to production aids from batch production D&T: Resistant Materials Unit 1 160 UMS scaled /120 8 A*(144) 91 76% 8- A+ 72% 7 A 69% 7- .A(128) 81 66% 6+ B+ 64% 6 B 61% 5 .B(112) 71 59% 5- C+ 57% 4 C 54% 4- .C(96) 61 51% 3+ D+ 48% 3 D 46% 3- .D(80) 53 44% 2+ E+ 42% 2 E 40% 2- .E(64) 45 38% 1+ F+ 36% 1 F 34% 1- .F(48) 38 32% PSG7 G+ 30% PSG6 G 28% PSG5 .G(32) 31 26%	To understand and respond to instructions and to identify key words to secure full marks. To develop use of clear concise sentence structure to instruct manufacture process		Controlled assessment of exam paper 1-6
Week 7	Improvement week.	Use assessment covey to identify areas for development with each student. Consolidate information. Make improvements to develop points on topic AO's taught in Autumn 2			Review and update coursework / controlled assessment points on covey.
SPRING 1					
SPR	AO2 communicating ideas Develop, communicate, record and justify design	9 demonstrate an ability to create CAD exploded diagrams of all parts so that a manufacturer can make the product with no reference back to the designer.	Define ergonomics and apply anthropometric research to summarise ease of use and comfort in use.	Consider the change of sizes required to adapt the product	Coursework

<p>I N G 1 W e e k 1</p>	<p>ideas, applying suitable techniques,</p> <p>Including <i>Relevant use of human and environmental measurements and statistics to inform design</i></p>	<p>8 demonstrate orthographic drawings of all parts separately and a parts assembly guide.</p> <p>7 demonstrate exploded diagrams of some parts to communicate ideas and proposals to a third party.</p> <p>6 demonstrate CAD drawing skills presentation drawing .include materials surfaces (samples)</p> <p>5 demonstrate CAD drawing skills orthographic drawing</p> <p>4 demonstrate orthographic drawing skills, showing all sides of a product. Indicate sizes, tolerances and construction details. Create an accompanying parts list.</p> <p>3 draw close ups of parts using isometric skills to give further information about construction and joining. So that a third party can make it</p> <p>2 demonstrate isometric drawing skills. Demonstrate shading and outlining skills. Include arrows and annotation to communicate design details</p> <p>1 demonstrate plan metric drawing skills. Demonstrate shading skills Include arrows and annotation to communicate details</p>		<p>for disabled use, so that it is easy and comfortable for a wider target market without discrimination.</p>	<p>Ergonomic drawings and applied anthropometric data. Distinctions made between tall, average and small. Male and female.</p>
	<p>Homework AO1 ergonomics and anthropometrics. Study an image of a child's pushchair. Give 4 ergonomic features of the pushchair (what makes it comfortable and easy to use?)(8)</p>	<p>Possible suggestions:</p> <p>A moulded handle</p> <p>A canopy Seat belt Hand rail</p> <p>Quick release folding device</p> <p>Wheels</p> <p>Castor front wheel</p> <p>Foot rest</p> <p>Under seat storage</p> <p>Correctly sized for occupant</p> <p>Shape of the seat</p> <p>Award one mark each for four correct explanation</p>			
<p>W e e k 2</p>	<p>Revision</p> <p>Have a knowledge of anthropometric data and how it is relevant to ergonomic design</p> <p>Measurements of the human body. Graph of 50th percentile, 5th and 95th</p>	<p>Candidates can get one mark for stating an advantage/disadvantage and a second mark for explaining the advantage/disadvantage.</p> <p>Mark the candidate's answer on its technical merit first, then, apply the QWC descriptors. This may increase or decrease the candidate's marks by 1 or 2 marks depending on the quality of the QWC.</p> <p>Note: Candidates must address advantages and disadvantages for 8 marks. If a candidate fails to address both aspects then they can only score a maximum of 7 marks.</p>	<p>Possible responses: Advantages:</p> <ul style="list-style-type: none"> • Less effort is required to screw in screws o The motor does the work for you • Greater torque/Tighter screws o The motor delivers more power than a person can • Adjustable torque o You can set the torque so that small screws are not destroyed • Magnetic 		<p>Objectives. Notes and diagrams with key terms.</p>

<p>Key terms- aesthetics, function, anthropometrics, and ergonomics- comfortable safe and easy to use to maximise efficiency- shapes, texture, colours, weight and size. Identify ergonomic features on a cordless drill then identify further improvements.</p> <p>Explain the advantages and the disadvantages of using a cordless drill/driver rather than a screwdriver.</p>	<p>A detailed and comprehensive response that includes several of the examples above. The answer is well- structured, with good use of appropriate design & technology terminology and showing a good grasp of 7 - 8 Grammar, punctuation and spelling. 7 - 8 marks</p> <p>A fairly detailed response which refers to some of the examples above. The answer is fairly well structured, with some use of design & technology terminology and with a small number of errors in grammar, punctuation and Spelling. 5 - 6 marks</p> <p>A response which contains a one or two of the examples above. The answer has some structure, with some use of design & technology terminology and with a number of Errors in grammar, punctuation and spelling. 3 – 4 marks</p> <p>A response which contains very limited reference to any of the examples above. The answer is vague or poorly structured, with little use of design & technology terminology and with a considerable number of errors in Grammar, punctuation and spelling. 1 - 2 marks</p> <p>A response which is poorly structured with no relevant examples. There is very little or no use of design technology terminology and with many errors in grammar, punctuation and spelling. 0 marks</p>	<ul style="list-style-type: none"> o This makes it easier to screw in awkward places • Versatile/interchangeable bits/drill o You can change the bit to match the type of screw o You can use it as a drill • Ergonomic o It has lots of moulded/high friction/colour coded areas <p>Disadvantages</p> <ul style="list-style-type: none"> • Expensive o A cordless drill driver is far more expensive to buy than a screwdriver • Bulky o The cordless drill driver takes up room in a toolbox/has to have its own box/is difficult to carry around • Battery needs charging o The battery may run out during use o You need to have access to mains electricity • Not environmentally friendly O It uses more materials and requires more manufacturing processes to make. The batteries need mains electricity to recharge 		
<p>Homework Model your design in detail</p>				
<p>W AO2 developing a prototype e . Design and develop at least e one prototype that k responds to needs and/or 3 wants and is fit for purpose, demonstrating functionality, aesthetics, marketability</p>	<p>9 develop detailed proposal, including relevant details of materials, dimensions, finishes and production techniques, which clearly addresses all requirements of the design brief and specification</p> <p>8 develop prototype to include pre-assembled parts to increase efficiency of manufacture</p> <p>7 develop prototype to account of required finishes given the environment of use. . Show testing</p>	<p>Design must clearly address all requirements of the design brief and specification</p> <p><i>Modelling and testing are an essential development tool both through traditional hand modelling and through 3D modelling software.</i></p>		<p>Coursework modelling</p>

	and consideration of innovation.	<p>6 develop prototype to account for materials properties and manufacturing techniques. Show testing</p> <p>5 develop new prototype and/or parts including dimensions, 4 review prototype against the design brief and/or specification. And state developments required parts.</p> <p>3 develop new prototype including some details of materials, dimensions, finishes and/or production techniques, 2 review prototype against the design brief and/or specification. And state developments required parts.</p> <p>1 develop a prototype with superficial details of materials, dimensions, finishes and/or production techniques which addresses few requirements of the design brief and/or specification.</p>	<p>Test using modelling</p> <p>Use modelling and testing to evaluate ideas further.</p> <ol style="list-style-type: none"> 1. test materials and construction techniques 2. assess with reference to specification 3. Work out how individual parts fit together and how big they need to be. 4. Refine the shapes of the parts 5. Check that the design works <p>Show the model to the client to gain their views.</p>		
	<p>Homework</p> <p>Draw final design as in Qu 4 from exam.</p> <p>Materials</p> <p>Construction</p> <p>Anthropometrics</p>				
Week 4	<p>Revision Use ICT to develop innovative and functional ideas further. Evaluate the strength and weaknesses of ideas by using your specifications list. Continue to develop ideas on paper too.</p>	<p>CAD/CAM</p> <p>Designers can make use of CAD (Computer Aided Design) software to produce virtual models of their designs.</p> <p>Explain the advantages and disadvantages of using CAD (virtual) modelling instead of traditional modelling techniques.</p> <p>You will be assessed on Quality of written communication in this question.(Max 8 marks)</p> <p>Award marks for details relating to advantages and disadvantages of using CAD As a modelling technique.</p> <p>Candidates can get one mark for stating an advantage/disadvantage and a second mark for explaining the advantage/disadvantage.</p> <p>Possible responses: Advantages</p> <ul style="list-style-type: none"> • It is quick to produce a virtual 3D model/therefore saving time and money • It can be easily modified/therefore you do not need to redraw the design if you wish to make a change 			

- It can be rendered to look like it is made in any material/so you can quickly visualise how will look if made from a variety of materials
- It can be emailed anywhere in the world/saving the time and expense of postage
- It can be transferred to manufacture/saving time and money
- It can be shared instantly with the client/reducing the time it takes to get a successful design

Disadvantages

- The initial set up cost is expensive/both the hardware and design software are expensive
- If there is a technical fault all your work can be lost/computers can fail and this would be costly in terms of time and money
- Your idea can be hacked/computers can accessed by other people and ideas stolen
- You need good IT skills to design in 3D/this main involve employing a different workforce or retrain the existing workforce.

A fully detailed and comprehensive response that includes details of most of the examples above. The answer is well-structured, with good use of appropriate design & technology terminology and showing a good grasp of grammar, punctuation and spelling.

A detailed and comprehensive response that includes several of the examples above. The answer is well- structured, with good use of appropriate design & technology terminology and showing a good grasp of grammar, punctuation and spelling.

A fairly detailed response which refers to some of the examples above. The answer is fairly well structured, with some use of design & technology terminology and with a small number of errors in grammar, punctuation and spelling.

A response which contains very limited reference to any of the examples above. The answer is vague or poorly structured, with little use of design & technology terminology and with a considerable number of errors in grammar, punctuation and spelling.

		A response which is poorly structured with no relevant examples. There is very little or no use of design technology terminology and with many errors in grammar, punctuation and spelling.			
Homework AO1 This question is about CAM A local manufacturing company makes “one-off” furniture by traditional methods. Explain the advantages and disadvantages of changing to CAM techniques	<p>Look for details relating to the advantages and disadvantages of using CAM:</p> <p>Mark the candidates work based on its technical merit. Then assess it for its QWC and increase/decrease the mark by up to 2 marks.</p> <p>Advantages</p> <ul style="list-style-type: none"> • Quicker machining time • Safer to use • Greater consistence • Greater accuracy • Cost effective when manufacturing in large quantities • Less workforce required <p>Disadvantages</p> <ul style="list-style-type: none"> • High initial set up costs • Staff require retraining • Higher energy costs • Not cost effective for manufacturing in small quantities 	<p>A fully detailed and comprehensive response that includes details of all of the examples above. The answer is well-structured, with good use of appropriate design & technology terminology and showing a good grasp of grammar, Punctuation and spelling. (9 – 10 marks)</p> <p>A fully detailed and comprehensive response that includes details of most of the examples above. The answer is well-structured, with good use of appropriate design & technology terminology and showing a good grasp of grammar, Punctuation and spelling. (7 – 8 marks)</p> <p>A detailed and comprehensive response that includes several of the examples above. The answer is well-structured, with good use of appropriate design & technology terminology and Showing a good grasp of grammar, punctuation and spelling. (5 – 6 marks)</p> <p>A fairly detailed response which refers to some of the examples above. The answer is fairly well structured, with some use of design & technology terminology and with a Small number of errors in grammar, punctuation and spelling. (3 – 4 marks)</p> <p>A response which contains very limited reference to any of the examples above. The answer is vague or poorly structured, with little use of design & technology</p>			

			<p>terminology and with a considerable number of errors in grammar, Punctuation and spelling. (1 – 2 marks)</p> <p>A response which is poorly structured with no relevant examples. There is very little or no use of design technology terminology and with many errors in grammar, punctuation And spelling. (0 marks)</p>																													
<p>W</p> <p>Design review with target market.</p> <p>Find out if you have designed what is really wanted?-create a list of key questions based on the specification to accompany your strongest designs and then quiz your target market.</p> <p>Write down responses and act on them to develop your solution further.</p>	<p>Evaluate design ideas</p> <p>How well each design meets its specification.</p> <p>How the client reacts to the ideas</p> <p>Does it meet their needs? Wants? Is it appealing?</p> <p>Create a check list specification. SWOT analyse the product.</p> <p>Justify compromises.</p>	<p>Design manufacture feasibility</p> <p>Seek expert advice through interviews, visits, letters, and e-mails.</p> <p>Why reinvent the wheel- create a list of key questions and ask experts in your products field.</p>																														
	<p>Homework</p> <p>Drawer design development made during prototyping and justify developments</p>																															
<p>W</p> <p>Revision</p> <p>AO2 using design strategies use design strategies such as collaboration, user centred design, systems thinking to generate a range of possible solutions</p>	<p>Qu 1-6 then also Qu 7 - Quality assurance and quality control</p> <p>Review exam paper question 1- 6 then add 7 QA and QC</p> <p>D&T: Resistant Materials Unit 1</p> <p>160 UMS scaled /120</p> <table border="1"> <tr> <td>8</td> <td>A*(144)</td> <td>91</td> <td>76%</td> </tr> <tr> <td>8-</td> <td>A+</td> <td></td> <td>72%</td> </tr> <tr> <td>7</td> <td>A</td> <td></td> <td>69%</td> </tr> <tr> <td>7-</td> <td>.A(128)</td> <td>81</td> <td>66%</td> </tr> <tr> <td>6+</td> <td>B+</td> <td></td> <td>64%</td> </tr> <tr> <td>6</td> <td>B</td> <td></td> <td>61%</td> </tr> <tr> <td>5</td> <td>.B(112)</td> <td>71</td> <td>59%</td> </tr> </table>	8	A*(144)	91	76%	8-	A+		72%	7	A		69%	7-	.A(128)	81	66%	6+	B+		64%	6	B		61%	5	.B(112)	71	59%			Exam papers
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Week 7	Improvement week.	<p>Use assessment covey to identify areas for development with each student.</p> <p>Consolidate information.</p> <p>Make improvements to develop points on topic AO's taught in Spring 1</p>			Review and update coursework / controlled assessment points on covey.
SPRING 2					
Spring 1	<p>AO2 plan of manufacture plan staggers for production including correct materials , training, materials costs and sources, risk assessments, quality controls and time lines for completion</p>	<p>9 maintain detailed journal of manufacture, noting changes in make to improve efficiency and quality of manufacture</p> <p>8 undertake a risk assessment of parts of make</p> <p>Clearly communicate the plan to prepare all materials. Plan the make within a time frame a by making parts in logical sequence. Provide see tables for further details.</p> <p>7 ensure flow chart shows achievable timeline for the stages of production and testing of final prototype.</p> <p>6 include details of tools and equipment required for quality checks and show the pathway backwards if a stage of the make is unsuccessful.</p>			Materials and processes table.

		<p>5 create an accurate flow chart showing sequence of make, including quality checks, materials and tools required, and estimated times for processes.</p> <p>4 create a simple low chart showing stages of make, including some quality checks, and some tools required.</p> <p>3 communicate simple details of a sequence for manufacture and testing of 1 prototype.</p> <p>2 communicate simple details of a sequence for manufacture</p>			
	<p><i>Homework AO1</i> <i>Quality control</i> Describe different methods a manufacturer uses to ensure a high quality outcome in manufacture</p>	<p>Award up to four marks for a suitable detailed explanation. Possible responses:</p> <ul style="list-style-type: none"> The manufacturer will use quality control techniques at every stage of manufacture e.g. templates /jigs/formers/checking/sample The manufacturer may use CAD to design their product. This is more accurate and consistent than traditional methods of drawing. The manufacturer may use CAM to produce their product. This is more accurate and consistent than traditional methods of manufacture. The manufacturer will use high quality materials The workstation will be tested to ensure that it is safe to use The workstation will be tested to ensure that it is functional The workstation may have 3rd party testing. (BSI) Package and store the product safely and securely <p>(4 x 1 mark)</p>			
<p>W e e k 2</p>	<p>Revision AO1 Materials and processes research Experiment to choose the best materials and tools for the job through modelling a parts development. manufacture</p>	<p><i>useful table format should be used to effectively to record selection criteria and performance data of materials then researching relevant materials data and undertaking Experimental making is a sound way forward. Costings and fair testing should also be included here. Appropriate data comparing a selected range of available materials is a sound approach. Laser set up and trail cut information fits well into this section.</i></p> <p><i>Explain why designers will make models of their ideas during the design process. (Max 4 marks)</i> <i>Award one mark each for any of the response shown below.</i> <i>Award a second mark for a qualification</i></p>	<p>Explain the need for certain properties in your product. Create a hierarchy of characteristics. Recognise key physical, chemical and mechanical characteristics needed for materials Such as tensile and compressive strength, shear, stiffness, density, malleability, conductivity, hardness, ductility and insulation.</p>		<p>Materials information and justification included in final design</p>

		<p><i>Do not accept 'Cheap'</i> <i>Possible responses:</i></p> <ul style="list-style-type: none"> • <i>To show the client the idea</i> • <i>To test the idea works</i> • <i>To test to see if the idea is safe</i> • <i>To see what the idea looks like in 3D</i> • <i>The materials cost less</i> • <i>It is quicker to produce</i> 			Materials question on exam paper
	<p><i>Homework A01</i> <i>Use notes and drawings to show how to cut out a curved line using a coping saw</i></p>	<p>Award up to three marks for details of a suitable process CUTTING A CURVED LINE</p> <ul style="list-style-type: none"> • A work piece clamped in a vice or onto a bench(1) • A curved line being cut(1) • A drawing of the blade/saw(1) 			Exam question

<p>W e e k 3</p>	<p>AO1 Using appropriate and accurate marking out methods, Use specialist techniques and processes to shape, fabricate, construct and assemble a high quality product with appropriate surface finish.</p>	<p>9 create a prototype of such a high quality that it meets/exceeds its design specifications and could be sold in a retail outlet, and used by the target market for specified life span. 8 Use appropriate surface finishes for functional and aesthetic purposes. Select and work with appropriate materials and components to complete the manufacture of prototype to a self-defined schedule. 7 Use specialist techniques including production aids to shape, fabricate, construct and assemble a high quality prototype, 6 select and safely use specialist tools, (including hand tools, machinery, digital design and manufacture)) with accuracy and precision to enable the prototype to perform as intended and meets the user's requirements. 5 show a good understanding of working properties and performance characteristics of specified materials and surface treatments. select and work with appropriate materials and components and finishes to successfully complete the manufacture of an accurate prototype 4 select and safely use specialist tools, techniques, processes, equipment and machinery with a degree of accuracy and precision to produce a functioning prototype that mostly meets the requirements of the design specification. 3 show an understanding of the main working properties and performance characteristics of the specified materials and, where appropriate, demonstrated basic consideration of surface treatments/finishes. 2 show a limited understanding of the working properties and/or performance characteristics of the specified materials. select and safely use specialist tools, techniques, processes, equipment and machinery with a limited degree of accuracy, the prototype partially performs as intended, though meets few aspects of the needs, wants and values of the user.</p>	<p>Recognise key terms <i>compositing, combining, laminating and Reforming; Finishing techniques, including both self-finished and applied-finishing processes to improve aesthetic and/or physical characteristics, such as coating, painting, varnishing, laminating, anodising and holographic finishes.</i></p> <p><i>evaluate the benefits and drawbacks of using new materials together with their application,</i></p>		<p>Coursework - Range of processes test samples with annotation regarding strengths and weaknesses of the process Range of samples/ photos with annotations regarding strengths and weaknesses of finishes.</p>
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	<p>AO1 homework</p> <p>Qu 1 Explain why a coping saw is designed so that the blade can be replaced.</p> <p>Qu 2 compare the effectiveness of a coping saw and a jigsaw</p>	<p>Award up to four marks for a suitable detailed explanation.</p> <ul style="list-style-type: none"> • When a blade wears out it can be replaced • When a blade breaks/bends it can be replaced • It saves time as the saw is always being used with an efficient blade • It saves money as the user doesn't need to replace the whole tool • It saves the environment as the cost to the environment of replacing a blade is far less than replacing the whole tool • It improves the sustainability of the tool • You can use different blades for different materials/processes <p>4 marks</p> <p>Award up to six marks for a suitable detailed answer. these responses deal with the advantages of using the saws</p> <p>Coping saw</p> <ul style="list-style-type: none"> • Lighter than the jigsaw • Easier to handle • Better control • Less expensive to buy • No power source required • Safer to use • Environmentally friendly <p>Jigsaw</p> <ul style="list-style-type: none"> • Cuts much quicker • Less effort required • Greater variety of blades available • Will cut a wider variety of materials • Requires a power source • Better ergonomic styling • More comfortable to use • Safer has guards/soft grip/dust extraction • Accurate with a guide 6 marks 			<p>Exam question 10 marks</p>
<p>W</p>	<p>Revision</p> <p>Reduce environmental impact of design. 6 Rus:</p>	<p><i>Design for the environmental factors affecting disposal of waste, surplus and by-products; and the cost; manufacturing, maintenance and product life</i></p>		<p>Reduce environmental impact of design to develop</p>	<p><i>Coursework</i></p> <p><i>Design for environmental</i></p>

k 4	repair, reduce, recycle, reuse, rethink, and refuse.	<p>Explain why it is important for a designer to think about maintenance when designing products. (Max 4 marks) Award up to four marks for an explanation of why it is important for a designer to think about maintenance when designing products.</p> <p>Possible responses:</p> <ul style="list-style-type: none"> • It extends the life of the product • You don't have to buy a new product when a part is worn out or fails • You can keep the product in optimum working order • A product in optimum working order is more efficient • It is cost effective • You don't have to buy a complete new product • It increases the sustainability of the product • It is environmentally friendly • It ensures that the product will be safe to use <p>4 x 1 mark</p>		understanding of designer responsibilities	<i>accountability page</i> Coursework evaluation section. Exam question.
	AO1 homework Insert appropriate material group, What are the property differences between them? Give example materials and example products and explain what makes these materials suitable for this job. Natural and manufactured wood, ferrous and alloy metal, thermos and thermoset plastic, smart and composite new technology materials.				
W e k 5	AO2 journal of manufacture document processes through make, review quality regularly and document adaptations	9 show quality checks throughout the process, adaptations and development to meets the requirement of the client, the brief and the specification. 8 show design and production of finishing aids to improve the quality of the final product. Show understanding of the working	produce a sequence of instructions that would allow a competent third party or machine to manufacture the product;		Journal of manufacture page in coursework

	<p>during production to improve final outcome</p>	<p>properties and performance characteristics of the specified materials and surface treatments/finishes.</p> <p>7 show design and production of manufacturing aids to improve the quality of the final product</p> <p>6 show use of a range of specialist tools and processes and detail the stages of manufacture including finishing</p> <p>5 review quality of making skills and processes and materials. Demonstrate a good understanding of the working properties and performance characteristics of the specified materials and, surface treatments/finishes. Consider use of alternative processes to improve performance</p> <p>4 identify use of safe processes in photos and identify reduction of specific risks.</p> <p>3 review materials performance in making and consider alternative materials that could be used.</p> <p>2 name materials and state the properties that make them suitable for use.name surface finishes used and give reasons for use</p> <p>1 take photos of stages of manufacture and identify stages of manufacture, tools and processes</p>	<p>identify critical points for quality control(state tools used) , and time scales in the manufacturing process; Develop methods to aid accuracy and repetition in manufacture.</p>		
	<p>Homework AO1 Quality control Explain the importance of tolerance when manufacturing components(4)</p>	<p>Award one mark each for details relating to the importance of tolerance when manufacturing components.</p> <ul style="list-style-type: none"> • Very difficult to make a component exactly correct • Easier to make a component within tolerances • This is the maximum and minimum sizes a component can be • Manufacturer knows that if a product is within tolerances then it will work. 			
	<p>Homework AO1 Explain the importance of quality control to the consumer</p>	<p>Award one mark each for the details relating to the importance of quality control to the consumer or two marks each for an expanded detail:</p> <p>Quality control gives the consumer to have a better quality product</p> <p>It has undergone numerous checks throughout its manufacture</p> <p>Quality control gives the consumer a more reliable product</p> <p>There is less chance of a part of the product failing as each component is independently checked.</p> <p>Maintenance possible because all components are manufactured to a set tolerance facilitating interchangeability</p>			

Week 6	Revision	Construct appropriate project management for plastic/ wood product.	Understand key processes of making in order and the definitions of key terms so that they are applied correctly when answering the question Preparation- degreasing, planning, sawing, cutting Marking out- use marking out tools, equipment and processes including use of templates. use measurement systems with accuracy and have an understanding of the need to work within tolerance cutting- tools and equipment that are used for cutting commonly used materials Shaping- Forming and bending, Casting and Moulding Joining techniques- permanent and non-permanent methods of joining materials together. Cleaning and finishing- different finishing products and their applications CAD and CAM, for metal, plastics, wood, smart materials and composites- understand the use of x, y, z co-ordinates in CAD and CAM systems		Exam question 6.
Week 7	Improvement week.	Use assessment covey to identify areas for development with each student. Consolidate information. Make improvements to develop points on topic AO's taught in Spring 1			Review and update coursework / controlled assessment points on covey.
Summer 1					
Week 1	AO3 Analyse and Evaluate Testing and evaluation Undertake a critical and objective evaluation of the design process and the end product	9 respond to feedback and clearly identify the potential for further development of their prototype, with detailed suggestions for how modifications could be made. 8 Analyse feedback and state how you agree and disagree with comments. 7 Gain objective comments	Perform tests to check success Undertake the quantities tests as stated in your specifications to check it meets its stated criteria		Test product functions. Photograph tests. Recognise successes

<p>Analyse and evaluate prototypes. Deconstruct information and/or issues to find connections and provide logical chain(s) of reasoning.</p>	<p>Ask expert manufacturers opinions regarding strengths, weaknesses and opportunities for development. Analyse feedback and state how you agree and disagree with comments. 6 use feedback to consider opportunities for development and draw modifications including materials and processes required 5 Create a questionnaire to ensure objective evaluation by users Analyse feedback and state strengths, weaknesses and opportunities for development. 4 draw design modifications to clearly show developments. State how modifications could be made 3 evaluate the product against specifications using your test findings. Identify the potential for some further development of prototype, include suggestions of how modifications could be made." 2 evaluate the product against written brief. Identify the potential for some further development of prototype, include suggestions of how modifications could be made. 1 Test the product works get photos of this. Identify how prototype could be modified.</p>			and areas of weakness
		<p>Evaluate the product against the brief and specifications Use photos and annotate areas of strength and weakness and identify modifications that could be made to improve the product further</p>		Written evaluation against the brief and specification
		<p>Photograph the final product and show how and why modifications took place during manufacture List aspects of the design that require further modifications Produce drawings to show possible modifications</p>		Photos of completed product with annotations showing possible modifications
		<p>Create a questionnaire to ensure objective evaluation by users Analyse feedback and state strengths, weaknesses and opportunities for development.</p>		Questionnaire results
		<p>Gain objective comments Ask experts opinions regarding strengths, weaknesses and opportunities for development. Analyse feedback and state how you agree and disagree with comments. <i>objective comment from those with commercial or specialist knowledge is essential</i></p>		Expert opinions noted
<p>Homework Ao1 Quality control and Production aids. You have been asked to design a drilling jig that will enable a manufacturer to quickly, repeatedly and accurately drill 5 holes in small MDF boards. Each board will need to be the same as the other 100. Each hole will be 5mm in</p>	<p>Award one mark for each of the following features:</p> <ul style="list-style-type: none"> • 12 guide holes • X direction limiter • Y direction limiter • Locking device • Ease of use <p>5 x 1 marks</p>			

	<p>diameter. Each will be 5mm away from any other and 10mm from the edge of the board.</p> <p>Draw the jig carefully and label each part and its function</p>				
	<p>Homework AO1 Production aids. Explain how the use of jigs, moulds and templates affect the manufacture of products (8)</p>	<p>Award marks for details relating to how the use of jigs, moulds and templates affect the manufacture of products.</p> <p>Look for details relating to: Accuracy: The level of accuracy is improved as human error is limited. Consistency: The level of consistency is improved as all the products will be identical. Speed: The time taken to produce a product is reduced as there is no requirement for marking out.</p> <p>Cost: The cost of producing products is reduced as the use of jigs, moulds and templates means less labour is required. Initial set up cost is high.</p> <p>8 x 1 marks</p>			
Week 2 final revision starts for final year exam					
Week 2	<p>Revision Materials properties and characteristics.</p>	<p>What are properties, working characteristics And combinations of metals?</p>	<p>recognise the working characteristics of the common forms of metals</p> <p>differences between ferrous and non-ferrous metals and how they are used;</p> <p>properties of metals can be changed by heat treatments</p> <p>metals can be combined to form alloys</p>		Exam question
	<p>Homework AO1 Material lifecycle What are the environmental impacts of using metals to manufacture products? (7)</p>	<p>Award one mark each for the following details or two marks each for an expanded detail:</p> <p>Candidates may choose to answer this question from the positive/negative or a mixture of viewpoints.</p>			Exam question Material lifecycle/ environmental impact.

	<p>Insert other materials as relevant to the design brief.</p>	<p>Possible response Metal is a non-renewable resource. The extraction of metal ore from the earth creates scars in the landscape. The production of metal from ore uses vast quantities of energy. The production of metal from ore pollutes the atmosphere The manufacture of metal products uses vast quantities of energy The manufacture of metal products pollutes the atmosphere Pollution of the atmosphere leads to global warming Metal products are can be repaired. Metal is capable of being recycled. Some metals are biodegradable</p>			
Week 2		<p>What are the working characteristics of common Forms of plastics?</p>	<p>differences between thermoplastics and thermosetting plastics and how this affects the way they are used;</p>		Exam question
	<p>AO1 materials – Wood What are the working characteristics of the Common forms of wood?</p> <p>Give three advantages of using MDF (Medium Density Fibreboard) instead of solid, natural timber. (Max 6 marks)</p>	<p>Use the following criteria to mark questions 6 (b) (i), (b) (ii) and (b) (iii). Award one mark each, for an advantage of using MDF. Possible responses:</p> <ul style="list-style-type: none"> • MDF is available in large sheets • MDF has a smooth surface • MDF is an environmentally friendly/sustainable material • MDF is a stable material • MDF is cost effective (cheap) • MDF does not have knots/defects • MDF can accept a veneer/'Formica' finish <p>(3 x 1 marks)</p> <p>Award one mark each a suitable explanation.</p> <ul style="list-style-type: none"> • Therefore you can create much large surface areas • So there is no need for planning and sanding • It can be made from waste or recycled wood • It will not warp or twist • Therefore products will be less expensive • Therefore the product will be stronger and will not require any additional treatment • Therefore its appearance and properties can be altered. <p>(3 x 1 marks)</p>	<p>Difference between hardwoods and softwoods,</p> <p>Differences between natural timber and manufactured boards.</p>		Exam question

<p>Homework AO1 Materials properties. Study 4 different kitchen products. Name suitable specific materials which have been used to make each product. Give two reasons for the choice of material. Give the original source of the material.</p>	<p>1 mark per material. 2 marks per correctly identified property. 1 mark per source. 16 marks.</p>			<p>Exam question suitable materials properties</p>
	<p>What combinations of materials are used to change their characteristics?</p> <p><i>Explain what is meant by the term 'smart' material Award up to 2 marks using the following criteria: A brief answer 1 mark A detailed response 2 marks Look for details relating to:</i></p> <ul style="list-style-type: none"> • <i>A material that changes due to external stimuli</i> • <i>Such as temperature change</i> • <i>Changes in lighting</i> • <i>Electrical impulse</i> <p><i>Explain what is meant by the term nanomaterial Award up to 2 marks using the following criteria: A brief answer 1 mark A detailed response 2 marks Look for details relating to:</i></p> <ul style="list-style-type: none"> • <i>A material that contains nanoparticles/tubes</i> • <i>A material has improve mechanical properties</i> • <i>A material that has an average particle size of between 1 and 100 nanometres</i> <p>Explain why the designer has used ABS plastic in the manufacture of the toothbrush. (Max 4 marks) Award up to four marks for an explanation of how the designer has thought about the materials used. Possible responses: Single word statement 'strong/cheap' cannot be awarded a mark</p>	<p>What is an Alloy? Ferrous alloys- steel, what are its properties? What are the properties of carbon and iron? What is its advantage over its component pure metals? Nonferrous alloy- brass-, what are its properties? What are the properties of zinc and copper? What is its advantage over its component pure metals? Composites- what is a composite? Give examples of mixed materials improving performance of a product for instance by increasing strength and decreasing weight. Plywood, carbon fibre, carbon Kevlar. Smart materials have a reactive capacity. Give examples of smart materials reacting to their environments to improve the performance of a product. – thermochromatic, Nanomaterials can change the characteristics of a material when used to form a nanocomposite. Give examples of nanocomposite in use and explain the role of the nanomaterial</p>		<p>Exam question</p>

		<ul style="list-style-type: none"> • ABS is tough material that will withstand normal use as a toothbrush and being dropped onto the floor. • ABS is hygienic as can be easily cleaned • ABS is waterproof and therefore the electrical components will not get wet ABS is suited to mass production techniques such as injection moulding ABS can be easily moulded into an ergonomic shaped • ABS is self-coloured • ABS is self-finished • ANS is a non-toxic material <p>4 x 1 mark</p>			
	Finishes	<p>Explain why the mild steel hook requires a finish</p> <p>Award up to 2 marks using the following criteria:</p> <p>A brief answer 1 - 2 mark A detailed response 3 – 4 marks Look for details relating to steel:</p> <ul style="list-style-type: none"> • Because it will rust if not protected • Because its appearance will deteriorate if not protected • Because it will weaken if not protected • Because it is cold to the touch • Because it will stain clothing if not protected • Because it does not look appealing without a finish • Because last longer if protected • Because it will look better if a finish is applied 			
W e e k 3	Systems and control	Mechanical systems	Basic mechanisms. Task- research the change in movement involved in the following mechanisms, how do these systems make the task easier? Levers, rack and pinion, pulleys, etc.		
	Homework Look at a bicycle. State 4 mechanisms. Draw the mechanisms. Label the parts. Describe input, process and output				

<p>W e e k 4</p>	<p>Consumer rights legislation, product maintenance and codes of practice</p>	<p>Identify legal requirements concerning consumer rights and codes of practice relating to safety into account when designing products</p> <p>Explain the importance of this symbol (lion mark) to the consumer.</p> <p>Award marks for details relating to the importance of the symbol or similar 'standard' symbols, to the consumer. Candidates can get one mark for stating an important fact and one mark for explaining it.</p> <p>Note: This part of the question can relate to the use of any 'standard symbol.</p> <p>Possible responses:</p> <p>The consumer knows that a product bearing the 'standard' symbol;</p> <ul style="list-style-type: none"> • has been tested o and is therefore safe for the child to play with • is of a high quality o and therefore will last a long time/will not break • has been ethically produce o therefore no one has been exploited in its manufacture • has been produced using sustainable methods o therefore it will have minimal effect on the environmental • is educational o therefore the child will learn by playing • is not counterfeit o it is a genuine product 	<p>Research the roles of BSI CE ISO and the role of independent watchdogs like Which</p>		
	<p>Homework AO1 Explain why it is important for designers to protect their ideas</p>	<p>Award up to four marks for a suitable explanation.</p> <p>Possible responses:</p> <ul style="list-style-type: none"> • To prevent others copying their idea • Ideas have a value • By protecting your idea you will receive all the money from their idea • Designers will take out a patent/copyright • Patents/copyright can be sold • Patents/copyright are legal document (4 x 1 mark) 			
<p>W e e</p>	<p>Moral, ethical and economic issues</p>	<p>Be aware of the financial and human costs involved in designing and making products.</p>	<p>Every design and make decision has costs and benefits. When do the costs outweigh the benefits?</p>		<p>Exam question</p>

k 5	<p>Discuss the possible environmental impact of using MDF (Medium Density Fibreboard).</p> <p>Include information on sourcing the raw material, the manufacture of the board and the end of the product's life. (Max 10 marks)</p> <p>Award marks for details relating to the environmental impact of using MDF. Candidates may qualify each of these points and gain extra marks</p> <p>Possible responses:</p> <ul style="list-style-type: none"> • MDF is made from wood • Wood is a renewable resource • MDF can be made from recycled wooden products • MDF can be made from parts of the tree normally thrown away • The process of manufacturing MDF uses fossil fuels • Fossil fuels are a finite resource • The burning of fossil fuels damages the environment • MDF is manufacture using adhesives that are not environmentally friendly • MDF needs to be transported using vehicles that cause pollution • MDF products can be recycled at the end of their life <p>(10 x 1 mark)</p> <p>Look for details relating to the possible environmental impact of using plastics (polymers) to manufacture products:</p> <ul style="list-style-type: none"> • Plastics come from crude oil • Crude oil is a non-renewable resource • The transportation of oil can be dangerous for the environment • Non-renewable fossil fuels are burnt in the refining of oil into plastic • Pollution is caused when refining oil into plastic • Non-renewable fossil fuels are used when moulding plastics into products • Pollution is caused when moulding plastics into products • The pollution leads to climate change • The pollution causes acid rain • Plastic products can be recycled • Plastic products are durable 	<p>Discuss in relation to wind turbines on Cheverton down.</p>		
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<p>Homework Ao1 Maintenance and sustainability.</p> <p>Study a bicycle. Identify 3 components found on bike that require maintenance. For each component describe the maintenance operation that should be carried out.(6)</p>	<ul style="list-style-type: none"> • Many plastic products are very slow to degrade (8 x 1 mark) <table border="1" data-bbox="533 140 712 418"> <thead> <tr> <th>Component</th> <th>Maintenance operation</th> </tr> </thead> <tbody> <tr> <td>Chain/bracket/pedal (1 mark)</td> <td>Clean, oil (2 marks)</td> </tr> <tr> <td>Tires (1 mark)</td> <td>Check level/depth of tread and inflate to correct pressure (2 marks)</td> </tr> <tr> <td>Brakes (1 mark)</td> <td>Check pad/shoe wear and replace as necessary (2 marks)</td> </tr> <tr> <td>Drivetrain/cadeflexors (1 mark)</td> <td>Oil and adjust, replace if required (2 marks)</td> </tr> <tr> <td>Saddle (1 mark)</td> <td>Adjust height, check security (2 marks)</td> </tr> <tr> <td>Stem/handlebars (1 mark)</td> <td>Check for play, Adjust or replace if necessary (2 marks)</td> </tr> <tr> <td>Suspension (1 mark)</td> <td>Clean, oil and check pressure (2 marks)</td> </tr> </tbody> </table>	Component	Maintenance operation	Chain/bracket/pedal (1 mark)	Clean, oil (2 marks)	Tires (1 mark)	Check level/depth of tread and inflate to correct pressure (2 marks)	Brakes (1 mark)	Check pad/shoe wear and replace as necessary (2 marks)	Drivetrain/cadeflexors (1 mark)	Oil and adjust, replace if required (2 marks)	Saddle (1 mark)	Adjust height, check security (2 marks)	Stem/handlebars (1 mark)	Check for play, Adjust or replace if necessary (2 marks)	Suspension (1 mark)	Clean, oil and check pressure (2 marks)			<p>Ao1 Maintenance and sustainability.</p>
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<p>Homework Explain why a designer should consider the importance of maintenance when designing products (7)</p>	<p>Award up to two marks each for details relating to why a designer should consider the importance of maintenance when designing products.</p> <ul style="list-style-type: none"> • Safety; components are less likely to fail if they are well maintained and therefore they will be safer. • Reliability; the product is less likely to break down if maintained. Worn components are replaced • Sustainability; the life of the product will be extended if components that wear out can easily be replaced and therefore there will be less impact on the natural resources. • Efficiency; a product will run with greater efficiency if worn out components can be replaced and therefore there will be less pollution of the environment. • Cost; It is cost effective to replace worn out components than replacing the complete product. <p>8 x 1 mark</p>																			

<p>Homework AO1 Explain what is meant by the term sustainability. Give examples of products where sustainability has been considered in terms of their materials, manufacture, use and disposal.</p>	<p>Initially, mark the answer based on the technical content.</p> <p>Look for details relating to:</p> <p>Sustainability is the ability of a product to be used indefinitely with limited impact on the environment.</p> <p>A product manufactured from wood is considered to be very sustainable as it is renewable, can be recycled, reused and has limited effect on the environment when being processed.</p> <p>A product manufactured from metal can be sustainable if it is recycled and/or reused at the end of its life. However, metal is a non-renewable resource and harms the environment when it is being processed.</p> <p>A product manufactured from plastic can be sustainable if it is recycled and/or reused at the end of its life. However, plastic is a non-renewable resource and harms the environment when it is being processed.</p>	<p>Now refine your mark depending on the QWC. A technically correct response that displays poor QWC may lose 1 or 2 marks. A technically incorrect response that displays good QWC may gain 1 or 2 marks.</p> <p>A fully detailed and comprehensive response. The answer is well-structured, with good use of appropriate design & technology terminology and showing a good grasp of grammar, punctuation and Spelling. 9 - 10 marks</p> <p>A detailed and comprehensive response. The answer is well-structured, with good use of appropriate design & technology terminology and showing a good grasp of grammar, punctuation and Spelling. 7 - 8 marks</p> <p>A detailed response. The answer is well-structured, with good use of appropriate design & technology terminology and showing a good grasp of grammar, punctuation and spelling. 5 - 6 marks</p> <p>A fairly detailed response. The answer is fairly well structured, with some use of design & technology terminology and with a small number of errors in grammar, punctuation and spelling. 3 – 4 marks</p> <p>A limited response. The answer is vague or poorly structured, with little use of design & technology terminology and with a considerable number of errors in grammar, punctuation and spelling. 1 – 2 marks</p>		
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			A response which is poorly structured with no relevant examples. There is very little or no use of design technology terminology and with many errors in grammar, punctuation and spelling. 0 marks		
	<p>Homework Qu 1 AO1 Homework. Define 6 R's</p> <p>Qu2 Discuss the sustainability of a drinks bottle. c- Glass bottle d- PET plastic bottle</p>	<p>Award one mark for each correctly linked R. Up to a maximum of 5 marks</p> <p>Award one mark each for any of the following details or two marks each for an expanded detail:</p> <p>Glass bottle</p> <ul style="list-style-type: none"> • Glass is made from sand • Glass is made from a non-renewable resource • Glass is made from a plentiful resource • Glass is reusable • Glass is recyclable • It takes energy to produce glass Max 4 marks <p>Plastic bottle</p> <ul style="list-style-type: none"> • Plastic is made from a non-renewable resource • Plastic is made from oil • Oil is a finite resource • Plastic can be recycled • It takes energy to produce plastic • Plastic bottles can be reused Max 4 marks 		relative sustainability of contemporary products considered	Exam question 8 marks
Week 6	Health and Safety Issues	recognise that safety of the individual is essential;	<p>Follow 5 stages of risk assessment-in a workshop</p> <p>Identify hazard Assess level of hazard Act to reduce level of or remove hazard record actions review impact</p>		

