



Design & Technology
5 Year
Curriculum Journey
2021 – 2022

Y7 D&T	CONTENT	ASSESSMENT
Autumn Term	Safety in the workshop. Pupils will learn about and develop: 2D and 3D sketching skills; modelling skills; perspective drawing. They will learn about 3D CAD modelling.	Homework End of unit assessment test
Spring Term	This term, pupils will learn about polymers and their applications in products for the visually impaired. They will learn how to: identify needs; develop specifications; design for the disabled; use basic tools and equipment to produce a mould from a pre-cut MDF base and card to vacuum form a sign for the visually impaired	Homework End of unit assessment test
Summer Term	Pupils will be challenged to design and make an educational toy. Pupils will be taught how to use a range of manual tools, to apply finishes safely and accurately.	Assessment will be through the design and make activity.
Homework	Homework will be set once per lesson cycle. It will be an extension and assessment of the lessons.	
Subject / Department KeyTerms	PPE – Point Evidence Explain/personal Protective Equipment ; WISE – Write, Identify, Substitute, Ensure; ACCESSFM –aesthetics, cost, client, ergonomics, safety, sustainability, function, materials; bio-mimicry, iterative designing, deciduous; coniferous Reinforcement; composites; thermoplastic, thermosetting; polymers.	
One thing to read or watch...	How's it's made? How do they do that? Inside the factory	

<p>How can technology help in this subject?</p>	<p>https://technologystudent.com/</p> <p>https://www.robives.com/mechanism/</p> <p>https://electronicsclub.info/</p> <p>https://learnabout-electronics.org/</p>
<p>Skills required to succeed in this subject...</p>	<p>A resilience to working hard to see a design problem through to its final solution; be adaptable; be able to think outside of the box; accept mistakes, learn from them and adapt to them.</p> <p>Be able to apply knowledge from math, English, science, art, etc. To solving problems and to designing and making.</p>
<p>Vision for this subject...</p>	<p>Develop pupils' interest in technology and how it affects our everyday lives. Producing discerning consumers, craftspeople, designers, and engineers of the future.</p>

Y8 D&T	CONTENT	ASSESSMENT
Autumn Term	<p>Safety in the workshop.</p> <p>Pupils will learn about forces and stresses; reinforcement and stiffening; Structures and strength; bridge building, testing and evaluation.</p> <p>They will then individually design a bridge as part of a group and pitch their design's merits to the group. They then will test to destruction the selected bridge.</p>	<p>Homework</p> <p>End of unit assessment test</p>
Spring Term	<p>Pupils will learn about metal's sources, classification, and properties. They will be introduced to sand and die casting. They will be challenged to use a given brief and specification to produce a range of design iterations for die-casting a piece of pewter jewellery.</p>	<p>Homework</p> <p>End of unit assessment test</p>
Summer Term	<p>Pupils will be challenged to use the iterative design process to design and make a toy car.</p> <p>They will use a range of tools, equipment and materials to realise their designs.</p>	<p>Assessment will be through the design and make activity.</p>
Homework	<p>Homework will be set once per lesson cycle. It will be an extension and assessment of the lessons.</p>	
Subject / Department KeyTerms	<p>PPE – Point Evidence Explain/personal Protective Equipment ; WISE – Write, Identify, Substitute, Ensure; ACCESSFM; SCAMPER –substitute, combine, adapt, modify, put to other use, Rearrange; bio-mimicry, iterative designing, torsion; Tension; compression, shear, ferrous; deciduous; coniferous Reinforcement; composites.</p>	

<p>One thing to read or watch...</p>	<p>How's it's made? How do they do that? Inside the factory</p>
<p>How can technology help in this subject?</p>	<p>https://technologystudent.com/ https://www.robives.com/mechanism/ https://electronicsclub.info/ https://learnabout-electronics.org/</p>
<p>Skills required to succeed in this subject...</p>	<p>A resilience to working hard to see a design problem through to its final solution; be adaptable; be able to think outside of the box; accept mistakes, learn from them and adapt to them. Be able to apply knowledge from math, English, science, art, etc. to solving problems and to designing and making.</p>
<p>Vision for this subject...</p>	<p>Develop pupils' interest in technology and how it affects our everyday lives. Producing discerning consumers, craftspeople, designers, and engineers of the future.</p>

Y9 D&T	CONTENT (Carousel)	ASSESSMENT
Autumn Term	<p>Safety in the workshop.</p> <p>Students will be introduced to Mechanical Systems and Movement e.g types of motion simple machines</p> <p>They will then design a card Automaton to a given theme using the iterative design process</p>	Homework
Spring Term	<p>Manufacturing the design Testing and evaluating the Automaton.</p>	<p>End of unit assessment test Homework</p>
	<p>Constructing and programming microcontroller circuits Electrical and electronic principles Feedback systems</p>	Homework
Summer Term	<p>Timing systems Constructing the circuit Testing and evaluating the circuit. Designing and making the circuit enclosure</p>	<p>End of unit assessment test Homework</p>
Homework	Homework will be set once per lesson cycle. It will be an extension and assessment of the lessons.	
Subject / Department KeyTerms	<p>PPE – Point Evidence Explain/personal Protective Equipment ; WISE – Write, Identify, Substitute, Ensure ; mechanical Advantage; resistance, ACCESSFM; SCAMPER –substitute, combine, adapt, modify, put to other use, Rearrange; peripheral or programmable, interface controller; bio-mimicry, iterative designing; 123, FLE;</p>	

<p>One thing to read or watch...</p>	<p>How's it's made? How do they do that? Inside the factory</p>
<p>How can technology help in this subject?</p>	<p>https://technologystudent.com/ https://www.robives.com/mechanism/ https://electronicsclub.info/ https://learnabout-electronics.org/</p>
<p>Skills required to succeed in this subject...</p>	<p>A resilience to working hard to see a design problem through to its final solution; be adaptable; be able to think outside of the box; accept mistakes, learn from them and adapt to them. Be able to apply knowledge from math, English, science, art, etc. to solving problems and to designing and making.</p>
<p>Vision for this subject...</p>	<p>Develop pupils' interest in technology and how it affects our everyday lives. Producing discerning consumers, craftspeople, designers and engineers of the future.</p>

Subject: Design and Technology		
Year group: Year 10		Exam Board: Pearsons (Edexcel)
	Content	Department Assessment
Autumn Term 1	<p>Health and Safety in the Workshop. Wood joint practice</p> <p>Introduction to materials types to include structure and properties – Timber Softwood, Hardwood, Manufactured Boards – Ferrous and Non- Ferrous metals - Thermoforming/Thermosetting Plastics</p> <p>Electronic systems provide functionality to products and processes, including sensors and control devices to respond to a variety of input she functions of mechanical devices used to produce different sorts of movements, including the changing of magnitude and the direction of forces</p> <p>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>How energy is generated and stored in order to choose and use appropriate sources to make products and power systems</p> <p>categorization of the types, properties and structure of natural, synthetic, blended and mixed fibres, and woven, non-woven and knitted textiles</p> <p>Developments in modern, smart composite materials and technical textiles.</p>	<p>Coursework monitoring Throughout – photographic documentation of practical work</p> <p>Verbal and written feedback to include meaningful and manageable target setting</p> <p>Notes taken in work-books, mind-maps, resources kept in folder</p>
Autumn Term 2	<p>Investigations into environmental, social and the economic challenges when identifying opportunities and constraints that influence the processes of designing and making. Investigating and analysing the work of past and present designers and design companies.</p> <p>Design practice: Using different design strategies to generate initial ideas and avoid design fixation.</p> <p>Develop, communicate, record and justify design ideas, applying suitable techniques</p> <p>Introduction to specialist material area (Timbers)</p> <p>Apply knowledge and understanding of the advantaged, disadvantages and applications of different types of timber.</p>	<p>Coursework monitoring Throughout</p> <p>Verbal and written feedback to include meaningful and manageable target setting</p> <p>Notes taken in work-books, mind-maps, resources kept in folder</p> <p>Mini NEA Brief – Begin Digital Portfolio</p> <p>End-of-module internal assessment</p>

<p>Spring Term 1</p>	<p style="text-align: center;">Specialist Material Area (timbers)</p> <p>Apply knowledge and understanding of the advantages, disadvantages and applications of the following materials in order to discriminate between them and select appropriately.</p> <p style="text-align: center;">Natural Timber – hardwoods; Natural Timber – Softwoods.</p> <p style="text-align: center;">Manufactured Timbers</p> <p style="text-align: center;">Sources and Origins – where natural and manufactured timbers are sourced/manufactured and their geographical origin.</p> <p>Working Properties – the way in which each material behaves or responds to external sources.</p> <p>Social and ecological Footprint of timber. Factors influencing the selection and application of timbers, including ethical factors.</p>	<p>Coursework monitoring Throughout</p> <p>Verbal and written feedback to include meaningful and manageable target setting</p> <p>Notes taken in work-books, mind-maps, resources kept in folder</p>
<p>Spring Term 2</p>	<p>Pupils will have knowledge and understanding:</p> <ul style="list-style-type: none"> • of the influence of forces and stresses that act on a material and the methods that can be employed to resist them, such as: Reinforcement and stiffening techniques. • of tock forms/types including standard sizes, PAR, PSE Imperial and metric sizes, • of the application, advantages and disadvantages of processes, scales of production and techniques when manufacturing products. 	<p>Coursework monitoring Throughout</p> <p>Verbal and written feedback to include meaningful and manageable target setting</p> <p>Notes taken in work-books, mind-maps, resources kept in folder</p>
<p>Summer Term 1</p>	<p>Pupils will have knowledge and understanding:</p> <p style="text-align: center;">of fabricating and constructing products of the application, advantages and disadvantages of finishing techniques and methods of preservation in order to select the most appropriate technique of Surface finishes and treatment.</p> <p style="text-align: center;">Mini Contextual Challenge – Coffee Table and</p> <p style="text-align: center;">Digital folder –</p>	<p>Coursework monitoring Throughout</p> <p>Verbal and written feedback to include meaningful and manageable target setting</p> <p>Notes taken in work-books, mind-maps, resources kept in folder</p>

Summer Term 2	<p>Mini Contextual Challenge – Coffee Table and Digital folder.</p> <p>Introduce students to NEA Contextual challenge</p> <p>Questions for year 11 – Explore questions</p>	<p>End of term assessment feedback and peer Assessment</p>
Home work	<p>Homework will be set once per cycle. The homework will be extended task which will build on the knowledge gained during the cycle of learning</p>	
Subject / Department Key Terms	<p>PPE – Point Evidence Explain/personal Protective Equipment ; WISE – Write, Identify, Substitute, Ensure ; Product Analysis, ACCESSFM, Metacognitive questioning, Growth Mindset, bio-mimicry, iterative designing; ACCESSFM –aesthetics, cost, client, ergonomics, safety, sustainability, function, materials;</p>	
Recommended Reading / Viewing	<p>Edexcel GCSE (9-1) Design and Technology Student Book (Edexcel GCSE Design and Technology (9-1)) by <u>Mark Wellington</u> (Author), <u>Andrew Dennis</u> (Author), <u>Trish Colley</u> (Author), <u>Tim Weston</u> (Author), <u>Jenny Dhami</u> (Author): ISBN: 9781292184586</p> <p>My Revision Notes: Pearson Edexcel GCSE (9-1) Design and Technology Ian Fawcett, Andy Knight, Jacqui Howells, David Hills-Taylor: ISBN-13978-1510480506</p>	
How can technology help in this subject?	<p>https://www.technologystudent.com/</p> <p>Focused Internet Based Research</p> <p>CAD, Illustrator,</p>	
Skills required to succeed in this subject...	<p>Problem solving skills; Good English, Mathematical, Coding, investigative, an ability to use tools and equipment safely and accurately; Computer literacy;</p>	

Vision for this subject...	<p>Pupils will develop their understanding of product design and manufacture. They will develop problem solving skills.</p> <p>Pupils who achieve well in this course will be able to move on to a level 3 course in product design. Leading to a professional career in either architecture, interior design, industrial design, etc.</p> <p>For those people who prefer to learn by doing, the course will provide them with those skills most valued by employers and apprenticeship schemes.</p>
---	--

Subject: GCSE Design and Technology

Year group: 11

**Exam Board:
Pearsons (Edexcel)**

	Content	Department Assessment
Autumn Term 1	<p>Initial research and investigation analysis Design brief and specification Methods of developing ideas. Drawing Techniques Generating design ideas – circuits, systems blocks; including Testing and evaluation. Looking at Mocks-ups and Models Design Development, Mock-ups and Models. Circuits and system blocks; Testing and evaluation. Materials and their properties. Looking at detailing of the solution and producing production drawings - CAD Production of Orthographic Drawings / Production drawing and cutting list Mock exam revision</p>	<p>Coursework monitoring throughout. Providing generic feedback as/per the qualification requirements.</p>
Autumn Term 2	<p>Mock exam revision Y11 AUTUMN EXAMS Production of Working Drawings and cutting list Developing a Manufacturing Specification / Developing Gantt Chart for Planning Production planning Assembly of Materials.</p>	<p>Nov Mock exam Coursework monitoring throughout. Providing generic feedback as/per the qualification requirements.</p>
Spring Term 1	<p>Production</p>	<p>Coursework monitoring throughout. Providing generic feedback as/per the qualification requirements.</p>

<p>Spring Term 2</p>	<p>Production Exam Revision Final CW Marks Given</p>	<p>Final Hand in (completed CW folder with final Testing and evaluation)</p>
<p>Summer Term 2</p>	<p>Exam Revision Final Exam.</p>	
<p>Homework</p>	<p>Homework will be the reworking of specific pieces of coursework as directed by the teacher.</p>	
<p>Subject / Department KeyTerms</p>	<p>PEE (Point.Evidence.Explain); WISE (Write.identify.Substitute.Ensure) 123, FLE(Fulcrum, Load, Effort); Iterations; SCAMPER(Substitute, combine, adapt, modify, put to other uses, eliminate, rearrange): ACCESSFM –aesthetics, cost, client, ergonomics, safety, sustainability, function, materials;</p>	
<p>Recommended Reading / Viewing</p>	<p>My Revision Notes: AQA GCSE (9-1) Engineering Student eTextbook; Paul Anderson, David Hills-Taylor; ISBN: 9781398315297; AQA GCSE (9-1) Engineering Paperback – 29 Mar. 2018; Paul Anderson (Author), David Hills-Taylor (Author), Mark Griffiths (Contributor)</p>	
<p>How can technology help in this subject?</p>	<p>Internet: -Investigating and researching iterations CAD – Designing and simulating: circuits; mechanisms and products CAM- for programming CNC machinery to produce products.</p>	
<p>Skills required to succeed in this subject...</p>	<p>Problem solving skills; Good English, Mathematical, Coding, investigative, CAD Draughting skills.</p>	

Vision for this subject...	<p>Students will develop their understanding of engineering and go on to study an engineering related course at college or/and at university.</p> <p>It is envisaging that students who would prefer to learn by doing, through an engineering apprenticeship scheme, would be the candidate of choice for potential employers. This would be because they will have developed level 2 engineering skills and knowledge required by such companies as LUL, network rail and various motor vehicle dealerships etc.</p>
-----------------------------------	--