Curriculum Assessment Map: Year 10 GCSE Design & Technology

	Autumn Term One	Autumn Term Two	Spring Term One	Spring Term Two	Summer Term One	Summer Term Two
Topic	3D CAD – Autodesk Inventor Professional Principals of Design & Technology	Mini USB Lamp project Principals of Design & Technology	Mini USB Lamp project continued Principals of Design & Technology	Careers in Engineering with Dyson (*date subject to change due to the availability of the Dyson equipment*) Dyson Product disassembly Practical skills, techniques and processes. Principals of Design & Technology	Practical skills, techniques and processes (*continued*). NEA – Non-Examined Assessment introduction and preparation. Principals of Design & Technology Contextual challenges released on the 1st June by the examination board (OCR)	Non-Examined Assessment: Explore strand using the contextual challenges set by the exam board.

Key Learning & Skills	• Introduction to Computer Aided Design software - Autodesk Inventor Professional.
	• Students to learn the basic tools and processes of the CAD software.
	• To learn how to create 3D models for digital outputs, including the 3D printer.
	• Learn how to use the 3D model to generate Engineering drawings with dimensions.
	• Produce a portfolio of evidence to communicate and present the students work for assessment.
		• Explore a range of products using ACCESSFM
		• Identify primary user and stakeholder requirements.
		• Create 10+ design solutions to meet the needs of the primary user and stakeholders.
		• Develop an idea using several techniques, including:
		   o Sketches
		   o CAD models
		   o Card modelling
		   o Material consideration
		   o Ongoing testing and evaluation
		• Electronics researched and used in the design iterations.
		• Produce a portfolio of evidence to communicate and
			• Develop an idea using several techniques, including:
			   o Sketches
			   o CAD models
			   o Card modelling
			   o Ongoing testing and evaluation
			• Final solution presentation
			• Prototype manufactured to meet the primary user and stakeholder requirement.
			• Electronic circuits assembled and integrated into the prototype.
			• Test and evaluate final prototype and check against the original primary user requirements.
			• Produce a portfolio of evidence to communicate and
				• Explore different STEM careers with Dyson.
				• Explore a Dyson product, disassembling the components and gain knowledge of how the product was manufactured and assembled.
				• Produce a basic portfolio of evidence to communicate and present the students work for assessment.
				
				• Practical skills practical task – Bottle Opener using mild steel.
				• Students to accurately make a bottle opener following an engineering drawing.
				• Health & Safety procedures to be followed to manufacture product.
				• Students to record all practical skills and
					The Non-Examined Assessment component offers the opportunity for learners to demonstrate understanding of and skills in iterative designing, in particular:
					
					• The interrelated nature of the processes used to identify needs and requirements (explore)
					• Creating solutions to meet those needs (create)
					• Evaluating whether the needs have been met (evaluate).
					
					As an outcome of their challenge, learners will produce a chronological portfolio and one final prototype(s).	

		present the students work for assessment. • Principals of Design & Technology theory.	present the students work for assessment.	outcomes in a portfolio.		

End points	• Students to be able to create a range of accurate 3D models using CAD.
	• Engineering drawings generated from the accurate 3D models, including dimensions and scale.
	• Evidence of CAD recorded in a PowerPoint portfolio, similar to the NEA project.
		The portfolio should demonstrate the following Design Iteration endpoints:
		
		• Research of existing products using ACCESSFM.
		• Primary user and stakeholder requirements.
		• A range of initial design ideas which meet the primary user needs.
		• Iterations are recorded responding to the primary user needs.
		• Iterations include material considerations.
		• Iterations include technical understanding.
		Iterations include manufacturing processes and techniques.
			The portfolio should demonstrate the following Design Iteration endpoints:
			
			• Final prototype manufactured and recorded in the design portfolio, considering the primary user requirements.
			• The prototype is manufactured using suitable material, electronics, processes and techniques, including the Laser Cutter (CAM).
			• The prototype is manufactured against the Technical Specification.
			• Feasibility of the final prototype(s).
			• Evaluation of the final prototype(s).
				• Students have a clear understanding of STEM careers linked to the Dyson project.
				• Portfolio of evidence demonstrating skills and knowledge of the product disassembly.
				
				• Practical skills to include the following skills:
				  o Marking out accurately
				  o Drilling correctly and safely
				  o Cutting and filing the mild steel material, using the correct tools and processes.
				  o Applying a suitable finish to the metal.
				• Students must be able to work safely, following all Health & Safety procedures.
					• Practical skills (*continued*)
					• Portfolio of evidence demonstrating the practical task outcomes in comparison to the original engineering drawing.
					
					• Preparation for the Non-Examined assessment, students should be able to:
					  o Organise a portfolio to meet the marking criteria.
					  o Analyse exemplar projects.
						The NEA portfolio should demonstrate the following Explore endpoints:
						
						• The contextual challenged explored.
						• Write a design brief to reflect the contextual challenges.
						• Primary user and Stakeholders identified and explored.
						• Existing products analysed using ACCESSFM.
						• Primary user requirements are listed in preparation for initial design ideas and the iterative design process.

Informal (*formative*) Assessment	Ongoing verbal feedback Whole class feedback GRIT tasks DIRT	Ongoing verbal feedback Whole class feedback GRIT tasks DIRT	Ongoing verbal feedback Whole class feedback GRIT tasks DIRT	Ongoing verbal feedback Whole class feedback GRIT tasks DIRT	Ongoing verbal feedback Whole class feedback GRIT tasks DIRT	Ongoing verbal feedback Whole class feedback GRIT tasks DIRT

Formal *(summative)* **Assessment**	Project marked using Explore, Create & Evaluate. 100 marks referring to the OCR assessment criteria.	Project marked using Explore, Create & Evaluate. 100 marks referring to the OCR assessment criteria. Test paper marked using the OCR grade boundaries.	Project marked using Explore, Create & Evaluate. 100 marks referring to the OCR assessment criteria.	Project marked using Explore, Create & Evaluate. 100 marks referring to the OCR assessment criteria. Test paper marked using the OCR grade boundaries.	Project marked using Explore, Create & Evaluate. 100 marks referring to the OCR assessment criteria. GCSE - NEA 50%. 100 marks using the OCR assessment criteria.	GCSE - NEA 50%. 100 marks using the OCR assessment criteria.

Curriculum encompassing literacy, careers and enrichment as well as interconnectivity with other subjects

Curriculum Assessment Map: Year 11 GCSE Design & Technology

	Autumn Term One	Autumn Term Two	Spring Term One	Spring Term Two	Summer Term One	Summer Term Two
Topic	Non-Examined Assessment: Design Iterations	Non-Examined Assessment: Design Iterations	Non-Examined Assessment: Prototype – Final Design Solution	Non-Examined Assessment: Evaluation of prototype and project. Project submitted to the exam board	Exam revision and preparation	
Key Learning & Skills	The Non-Examined Assessment component offers the opportunity for learners to demonstrate understanding of and skills in iterative designing, in particular: • The interrelated nature of the processes used to identify needs and requirements (explore) • Creating solutions to meet those needs (create) • Evaluating whether the needs have been met (evaluate). As an outcome of their challenge, learners will produce a chronological portfolio and one final prototype(s). It is through the iterative processes of designing that learners draw on their wider knowledge and understanding of Design and Technology principles.				The examination component brings together the learners 'core' and 'in-depth' knowledge and understanding. •'Core' knowledge of Design and Technology principles demonstrates learners' broad understanding of principles that all learners should have across the subject. •'In-depth' knowledge allows learners to focus more directly on at least one main material category, or design engineering. The examination paper is split into two sections. A minimum of 15% of the paper will assess learners' mathematical skills as applied within a design and technology context	
End points	The NEA portfolio should demonstrate the following Design Iteration endpoints: • A range of initial design ideas which meet the primary user needs. • Iterations are recorded responding to the primary user needs. • Iterations include material considerations. • Iterations include technical understanding. • Iterations include manufacturing processes and techniques.	The NEA portfolio should demonstrate the following Design Iteration endpoints: • A range of initial design ideas which meet the primary user needs. • Iterations are recorded responding to the primary user needs. • Iterations include material considerations. • Iterations include technical understanding. • Iterations include manufacturing processes and techniques.	The NEA portfolio should demonstrate the following Final Prototype endpoints: • Final prototype manufactured and recorded in the design portfolio, considering the primary user requirements. • The prototype is manufactured using suitable material, processes and techniques. • The prototype is manufactured against the Technical Specification.	The NEA portfolio should demonstrate the following Evaluation endpoints: • Viability of the final prototype(s). • Feasibility of the final prototype(s). • Evaluation of the final prototype(s).	Core knowledge: Students will gain the core knowledge throughout the NEA project which builds on the core knowledge from year 10 and KS3. In-depth knowledge: In the examination, learners will only be expected to demonstrate in-depth knowledge of the chosen material – **Paper and Boards.** • Physical and working properties of the material. • Sources and origins. • Commonly available forms and standards of unit of measurements. • Finishes and surface treatments. • Processes used to model early iterative models. • Accurate marking out methods. • Manipulating and joining. • Digital design tools.	

					• Manufacturing at different scales of production and processes used. • Cost and availability considerations.	
Informal (*formative*) Assessment	Ongoing verbal feedback Whole class feedback GRIT tasks DIRT	Ongoing verbal feedback Whole class feedback GRIT tasks DIRT	Ongoing verbal feedback Whole class feedback GRIT tasks DIRT	Ongoing verbal feedback Whole class feedback GRIT tasks DIRT	Ongoing verbal feedback Whole class feedback GRIT tasks DIRT	Ongoing verbal feedback Whole class feedback GRIT tasks DIRT
Formal (*summative*) Assessment	GCSE - NEA 50%. 100 marks using the OCR assessment criteria.	GCSE - NEA 50%. 100 marks using the OCR assessment criteria.	GCSE - NEA 50%. 100 marks using the OCR assessment criteria.	GCSE - NEA 50%. 100 marks using the OCR assessment criteria.	GCSE - NEA 50%. 100 marks using the OCR assessment criteria. GCSE – Exam 50% 100 marks 2 hour written paper	GCSE - NEA 50%. 100 marks using the OCR assessment criteria. GCSE – Exam 50% 100 marks 2 hour written paper

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