Key Stage 4 Curriculum Overview 2024 – 2025 Reviewed and updated by JRA

TEWKESBURY ACADEMY

Curriculum Area: GCSE Design & Technology (Product Design)

Year group	Key Ideas/learning	Term 1	Term 2	Term 3	Term 4	Term 5	Term 6
Year 10	Topic/ Key ideas	 * Theory work (TCU) – Design and technology and our world. * Theory work (JRA) – Core designing and making principles. * Project work (JRA) – 'Tooling Up' introduction of basic drawing and making skills. Novelty box project. 	 * Theory work (TCU) – Smart materials, composites and technical textiles. * Theory work (JRA) – Core designing and making principles. * Project work (JRA) –Novelty box project. 	* Theory work (TCU) – Electronic systems and programmable components. * Theory work (JRA) – Core designing and making principles. * Project work (JRA) – Mood lamp project.	* Theory work (TCU) – Mechanical components and devices. * Theory work (JRA) – Core designing and making principles. * Project work (JRA) – Mood lamp project.	* Theory work (TCU) – Materials * Theory work (JRA) – Core designing and making principles. * Project work (JRA) – Mock NEA Project	* Theory work (TCU) – Natural and manufactured timber. * Theory work (JRA) – Core designing and making principles. * Project work (JRA) – Final NEA Project – research/ design brief/ design specification.
	Learning objectives	* Learn about the impact of new and emerging technologies. * Learn how the critical evaluation of new and emerging technologies informs design decisions. * Learn how energy is generated and stored. * Learn skills to help develop design ideas – drawing and manufacturing products.	* Learn about the range of smart materials and the condition that triggers a change in their property/ how they can enhance products. * Learn about the different types of composites and how they can be used. * Learn about the different types of technical textiles and how they can be used. * Learn skills to help develop design ideas – drawing and manufacturing products.	* Learn about the impact of new and emerging technologies. * Learn how the critical evaluation of new and emerging technologies informs design decisions. * Learn how energy is generated and stored. * Learn skills to help develop design ideas – drawing and manufacturing products.	* Learn about the impact of new and emerging technologies. * Learn how the critical evaluation of new and emerging technologies informs design decisions. * Learn how energy is generated and stored. * Learn skills to help develop design ideas – drawing and manufacturing products.	* Learn about the impact of new and emerging technologies. * Learn how the critical evaluation of new and emerging technologies informs design decisions. * Learn how energy is generated and stored. * Learn skills to help develop design ideas – drawing and manufacturing products.	* Learn about the impact of new and emerging technologies. * Learn how the critical evaluation of new and emerging technologies informs design decisions. * Learn how energy is generated and stored. * Learn skills to help develop design ideas - drawing and manufacturing products.
	Key Assessment and when?	* Workbooks/ folders. * Project work – practical. * Homework – worksheets/ Seneca	* Workbooks/ folders. * Project work – practical. * Homework – worksheets/ Seneca	* Workbooks/ folders. * Project work – practical. * Homework – worksheets/ Seneca	* Workbooks/ folders. * Project work – practical. * Homework – worksheets/ Seneca	* Workbooks/ folders. * Project work – practical. * Homework – worksheets/ Seneca	* Workbooks/ folders. * Project work – NEA coursework * Homework – worksheets/ Seneca * Mock exam
	Key homework and resources	* Worksheets/ Seneca * PPTs on teams * Knowledge organiser	* Worksheets/ Seneca * PPTs on teams * Knowledge organiser	* Worksheets/ Seneca * PPTs on teams * Knowledge organiser	* Worksheets/ Seneca * PPTs on teams * Knowledge organiser	* Worksheets/ Seneca * PPTs on teams * Knowledge organiser	* Worksheets/ Seneca * PPTs on teams

	to support learning						* Knowledge organiser
Year 11	Topic/ Key ideas	* <u>Product Design skills –</u> <u>NEA Project</u> 1.1 Investigation of Needs and Research • Task Analysis • Target Market Profile • Existing Product Analysis 1.2 Specification • Design Brief • Specification 2.1 Design Ideas 2.2 Review of Initial Ideas	 * <u>Product Design skills – NEA Project</u> 2.3 Development of Design ideas into Chosen Design Aesthetics Construction Materials Finishes Function 2.4 Communication of Design Ideas 2.5 Review of Chosen Design 	* Product Design Skills 3.1a Manufacture – Selection of Materials 3.1b Manufacture – Skills and Processes 3.2 Quality and Accuracy 4.1 Testing and Evaluation Theory revision and exam preparation. NEA completion	* Theory exam revision	* Theory exam revision	* Exam
	Learning objectives	* <u>Production plans</u> Produce and follow a production plan taking into account: materials, processes, time and safety. <u>Selecting materials, parts, components etc</u> Select and safely use a range of appropriate: • materials • parts • components • tools • equipment. In order to manufacture a working solution. <u>Predicting performance</u> Using calculations and modelling. Through systems modelling and data analysis.	 *Testing/QC Apply quality control methods and techniques during the manufacture of a product. Methods and techniques will include: working to necessary tolerances demonstrating the ability to check tolerances through the use of tools (Vernier calipers, micrometers and depth gauges) using software (CNC/CAM) to ensure that all parts/ components fit together allowing the solution to function. Design a range of tests to assess the fitness for purpose and performance of a completed product, taking into account how areas for improvement/ modification could be identified and suggest alternative solutions. <u>Selecting processes.</u> Select and use appropriate processes in order to manufacture a working solution. Examples include: measuring, marking, turning, milling, drilling, forming, bending, casting, joining, fastening, folding, 	* Revise key topics for the exam. * Completion of NEA coursework.	* Revise key topics for the exam.	* Revise key topics for the exam.	* Exam

			shaping, finishing.				
	Key Assessment and when?	* Theory tested through lesson and Homework. * Controlled assessment through deadlines and review sessions	* Theory tested through lesson and Homework. * Controlled assessment through deadlines and review sessions Mock Exams	* Theory tested through lesson and Homework. * Controlled assessment through deadlines and review sessions	* Theory tested through lesson and Homework. * Practice Papers and questions	* Practice Papers and questions	
	Key homework and resources to support learning	* Student resources located in Teams. * Homework to reinforce theory * Homework related to Controlled Assessment	* Student resources located in Teams. * Homework to reinforce theory * Homework related to Controlled Assessment	* Student resources located in Teams. * Homework to reinforce theory * Homework related to Controlled Assessment	* Student resources located in Teams. * Homework to reinforce theory * Homework related to Controlled Assessment	* Student resources located in Teams. * Homework to reinforce theory * Practice Papers	