KS4 Design & Technology / Curriculum Overview

Curriculum Intent		
In DT students use enquiry and decision-making skills to generate purposeful and meaningful design ideas for artifacts or dishes which can be created using tools, machines and/or equipment. In GCSE DT, students acquire subject knowledge in design and technology that builds on key stage 3, incorporating knowledge and understanding of different materials and manufacturing processes in order to design and make prototype products for a range of issues, needs, problems and opportunities. Students learn how to take design risks, helping them to become resourceful, innovative and enterprising citizens. They develop an understanding of technology on daily life and the wider world. They learn to understand that high-quality design and technology is important to our culture and wealth.		
How is Design & Technology / Food Preparation & Nutrition assessed at THA?	**Cross Curricular Links**	**How this prepares students for their next stage of education/employment**
The exam board is Eduqas and the final grade is made up of two parts: 50% Non-Examined Assessment ('coursework'): An extended design and make project of portfolio and artefact. Students may choose from 3 themes published by the exam board. Students will need to: • identify, investigate and outline design possibilities • design and make prototypes • analyse and evaluate design decisions	Design & Technology links with Business Studies, Art and Science	Student can go on to study Design, Engineering, Architecture at college and go on to university or apprenticeships.
	Enrichment Opportunities	**Resources/Materials to Support Learning**

50% written examination, 2 hrs : Design & Technology in the 21st Century A mix of short answer, structured and extended writing questions about: • technical principles • designing and making principles • ability to analyse and evaluate design decisions and wider issues in design and technology. • Exam board: https://www.eduqas.co.uk/qualifications/design-and-technology-gcse/#tab_keydocuments Revision Links: https://www.bbc.co.uk/bitesize/examspecs/z4nfwty https://app.senecalearning.com/classroom/course/b4e64de8-a5d1-411b-81e2-aa4e2016e908 (This is written for AQA but the content is the same for Eduqas)	The department is planning visits to the Design Museum and the V&A Museum in London for 2023	Most resources are created by the department. Revision book: My Revision Notes: WJEC Eduqas GCSE (9-1), Hodder Education. Available through https://www.amazon.co.uk/My-Revision-Notes-Eduqas-Technology/dp/1510471693 NEA (coursework) mobile app: https://technologystudent.com/mobapps/nea1.pdf

	Term 1	Term 2	Term 3	Term 4	Term 5	Term 6
Year 10	**Topic:** **Ornamental metal work**	**Topic:** **Clocks inspired by architecture**	**Topic:** **Lamps & Lights**	**Topic:** **Mechanisms and Electronic Systems**	**Topic:** **Design for the non-standard body**	**Topic:** **Y11 NEA AO1 & AO2**
	Key Knowledge: Source of metals Classification of metals Properties of metals Stock forms of metals Surface finishes for metal: paint, plastic powder dip coating Current cultural and historical use of scrolled metal Fixtures for metal: rivets, nuts & bolts Health & Safety	**Key Knowledge:** 20th Century architecture Source of Polymers Classification of polymers Properties of Polymers Stock forms of Polymers Surface finishes Fixtures and adhesives Health & Safety	**Key Knowledge:** Range of lamps typical of design movements Source of Timbers Classification of Timbers Properties of Timbers Stock forms of Timbers Steam bending Living hinges Surface finishes Fixtures and adhesives Health & Safety, incl. PAT testing	**Key Knowledge:** Range of gears, levers, cams, pulleys. Change of directions and force of motion. Revolutions per minute. Mechanical advantage. Input & output devices Micro controllers Flowcharts & feedback Health & Safety	**Key knowledge:** Ergonomics and anthropometrics How typical products are designed for an 'average' person. How human body parts may differ from the norm. Smart materials	**Key Knowledge:** The role of the designer. Understanding the user's needs. Collecting and analysing data. Evaluating existing products. Environmental considerations. Social and economic challenges
	Key Skills: Primary research, photos in the neighbourhood Secondary research: existing products Working with a brief and constraints Freehand design skills 3D Card modelling	**Key Skills:** Secondary research: existing products. Working with a brief and constraints. Using elements of existing design as a starting point. Orthographic drawing skills 2D Card modelling CAD and laser cutting Thermo-forming Acrylic	**Key Skills:** Research into Design movements	**Key Skills:** Research the use of mechanical and electronic components. Assemble mechanical components to perform a given task. Calculate RMS and MA Assemble electronic systems in virtual environment. Reflection/evaluation Working safely and considerately.	**Key skills:** Measure boy parts Use given anthropometric data. Freehand sketching Moulding smart polymers into to create handles for ergonomic table utensils	**Key Skills:** Exploring 3 contextual challenges & suggesting solutions. Selecting & describing a client/user group Conducting primary &

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	Hole punching, scrolling, bending, twisting metal strip Joining metal strips. Applying surface finishes Reflection/evaluation Working safely and considerately.	Using adhesives Polishing edges of Acrylic. Reflection/evaluation Working safely and considerately.	Evaluating existing products using ACCESSFM Sketching 3D CAD modelling Laser cutting Steam bending Laminating veneers Creating living hinges Wiring a lamp & switch circuit. Applying surface finishes Reflection/evaluation Working safely and considerately.		Range of sketching and rendering skills. Reflection/evaluation Working safely and considerately.	secondary research Establishing critical dimensions. Writing a Design Brief and Specification
	Assessment: Formative assessment: Verbal by teacher/peers. Summative assessment: Range and complexity of skills assessed against age expected expectations. Knowledge assessed through quizzes &	**Assessment:** Formative assessment: Verbal by teacher/peers. Summative assessment: Range and complexity of skills assessed against age expected expectations. Knowledge assessed through quizzes & sample exam questions.	**Assessment:** Formative assessment: Verbal by teacher/peers. Summative assessment: Range and complexity of skills assessed against age expected expectations. Knowledge assessed through quizzes &	**Assessment:** Formative assessment: Verbal by teacher/peers. Summative assessment: Range and complexity of skills assessed against age expected expectations. Knowledge assessed through quizzes & sample examquestions.	**Assessment:** Formative assessment: Verbal by teacher/peers. Summative assessment: Range and complexity of skills assessed against age expected expectations. Knowledge assessed through quizzes & sample exam questions.	**Assessment:** Formative assessment: Verbal by teacher/peers. Summative assessment vs AO1 & 2, 10 & 10 points. Knowledge testing through sample exam questions.

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	sample exam questions.		sample exam questions.			
Year 11	**Topic: Generating and Developing Design Ideas**	**Topic: Manufacturing a Prototype**	**Topic: Manufacturing a Prototype**	**Topic: Analysing and Evaluating Design decisions and prototypes**	**Topic: Final examination**	**Topic: N/A**
	Key Knowledge: Market pull & technology push. Product life cycle People, culture and society	**Key Knowledge:** CAD & CAM Automation & Robotics Sustainability Life-cycle analysis Fairtrade Carbon Footprint	**Key Knowledge:** Energy generation and storage. Core knowledge of Paper & boards Core knowledge of Textiles Revision of range of surface finishes and techniques	**Key Knowledge:** Individual focussed revision of chosen materials specialism extension	**Key Knowledge:** Final revision > examination	**Key Knowledge:** N/A

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	Key Skills: Sketching outline ideas Developing designs by referencing existing designers' work Modelling by hand and using CAD Using feedback from client and peers to finalise design.	**Key Skills:** Create a bill of materials and planning manufacturing sequence. Establish quality control checks Manufacture the artifact using range of tools, machines & equipment	**Key Skills:** Manufacture the artifact using range of tools, machines & equipment. Record decision and necessary changes.	**Key Skills:** Testing the performance of the prototype against original expectations Evaluation of manufacturing processes and proposals for further development of the prototype. Final portfolio improvements.	**Key Skills:** Final revision > examination	**Key Skills:** N/A
	Assessment: Formative assessment: Verbal by teacher/peers. Summative assessment vs AO3, 30 points. Knowledge testing through sample exam questions.	**Assessment:** Formative assessment: Verbal by teacher/peers. Summative assessment vs AO4, 30 points. Knowledge testing through sample exam questions.	**Assessment:** Formative assessment: Verbal by teacher/peers. Summative assessment vs AO4, 30 points. Knowledge testing through sample exam questions.	**Assessment:** Formative assessment: Verbal by teacher/peers. Summative assessment vs AO5, 20 points. Knowledge testing through sample exam questions.	**Assessment:** EXAM BOARD EXAMINATION	**Assessment:** N/A