KS4 CURRICULUM MAPPING: Huntington School Design and Technology

The Design Technology department at Huntington School is committed to delivering an exciting and innovative curriculum that is accessible to all students and provides opportunities for learners to become self-confident and imaginative problem solvers who can thrive in an ever-evolving technological society. With creativity at its core, lessons will provide the opportunity to access new technologies and develop traditional skills so that learners can create high quality outcomes that consider important social, ethical, and environmental responsibilities. Evidence based teaching strategies and a safe and supportive environment will foster the independence to experiment without fear of making mistakes and develop the resilience and awareness to become the designers, makers, and consumers of tomorrow.

Year 10	Autumn Term		Spring Term		Summer Term	
	HT1	HT2	HT3	HT4	HT5	HT5
Lesson 1	**3.2.1 Selection of materials or components** • Function • Aesthetics • Availability • Cost • Social Factors	**3.2.2 Forces and stresses** • Tension • Compression • Torsion • Shear • Bending • Enhancing materials to resist forces	**3.2.3 Ecological and social footprint** • Ecological issues • 6 R's • Social issues • Pollution	**3.2.4 Sources and origins** • Primary Sources • Conversion • Processing • Life Cycle Assessment	**3.2.5 Using and working with materials** • Shaping and Forming • Tools and Machinery • Joining Techniques • Properties	**3.3.1 Investigation, primary and secondary data** • Market research • Human factors • Focus Groups • Anthropometric data • Design Briefs • Specifications
	Project 1 Mock NEA Skills Research techniques Brief and specification	**Project 1 Mock NEA Skills** Developing ideas Sketching techniques	**Project 1 Mock NEA Skills** Communicating ideas. Drawing techniques and CAD	**Project 1 Mock NEA Skills** Prototype modelling Final prototype	**Project 1 Mock NEA Skills** Final prototype Evaluation	NEA Context released by AQA exam board on June 1st • Investigating the context • Design Brief and Specification
Lesson 2	**3.2.6 Stock forms** • Types • Sizes • Advantages	**3.2.7 Scales of production** • Prototype • Batch • Mass • Continuous	**3.2.8 Specialist techniques and processes** • Production Aids • Addition and Wasting • Forming • Quality Control	**3.2.9 Surface treatments and finishes** • Based on specialist material areas.	**Y10 Mock Exam revision** 30-minute exam. Short and long response questions. Based on specialist technical principles in chosen material areas	**3.3.2 Environmental, social and economic challenge** • Deforestation • Global Warming • Fair Trade
	Project 2 Skill Builder Paper and board packaging	Project 2 Skill Builder Polymer processes	Project 2 Skill Builder Timber joining techniques	Project 2 Skill Builder Metals	Project 2 Skill Builder Smart materials	NEA • Investigating the context • Design Brief and Specification
Lesson 3 (If 3 lessons in Y10)	**3.1.1 New and emerging technologies** • Industry • Enterprise • Sustainability • People • Culture • Society • Environment • Production Techniques • Design Decisions	**3.1.2 Energy generation and storage** • Fossil Fuels • Nuclear power • Renewables • Energy Storage	**3.1.3 Developments in new materials** • Modern Materials • Smart Materials • Composites • Technical Textiles	**3.1.4 Systems approach to designing** • Systems • Inputs • Processes • Outputs	**3.1.5 Mechanical devices** • Movement • Mechanisms	**3.1.6 Materials and their working properties** • Papers/Boards • Timbers • Manufactured Boards • Metals/Alloys • Polymers • Textiles • Material properties

Year 11	Autumn Term		Spring Term		Summer Term	
	HT1	HT2	HT3	HT4	HT5	HT5
Lesson 1	**3.3.4 Design strategies** • Collaboration • User Centred Design • Systems Approach • Iterative Design • Biomimicry	**3.3.6 Prototype development** Role of prototypes Evaluation of prototypes	**3.3.8 Tolerances** • How and why tolerances are applied during manufacture	**3.3.10 Specialist tools and equipment** • CAD CAM • CNC • 3D printers • Shaping processes	Revision	
	NEA • Design Ideas • Development of Ideas	NEA • Development of Ideas (Modelling) • Realising Design ideas	NEA • Realising Design ideas • Analysing and evaluating			
Lesson 2	**3.3.5 Communication of design ideas** • Sketching • Rendering • Perspective • Annotation • Exploded Drawings • Working Drawings • Modelling	**3.3.7 Selection of materials and components** • Functional Need • Cost • Availability • Aesthetics • Environment • Social/Moral/Cultural	**3.3.9 Material management** • Minimising waste • Tessellation • Cutting allowance	**3.3.11 Specialist techniques and processes** • Surface treatments and finishes	**3.3.3 The work of others** • Design Movements • Designers • Design Companies	
	NEA • Design Ideas • Development of Ideas	NEA • Development of Ideas (Modelling) • Realising Design Ideas	NEA • Realising Design ideas • Analysing and evaluating			

Lesson 3 (If 3 lessons in Y11)	**3.1.6 Materials and their working properties** • Papers/Boards • Timbers • Manufactured Boards • Metals/Alloys • Polymers • Textiles • Material properties	**3.1.3 Developments in new materials** • Modern Materials • Smart Materials • Composites Technical Textiles	**3.1.2 Energy generation and storage** • Fossil Fuels • Nuclear power • Renewables • Energy Storage	**3.1.4 Systems approach to designing** • Systems • Inputs • Processes • Outputs **3.1.5 Mechanical devices** • Movement • Mechanisms	**3.1.1 New and emerging technologies** • Industry • Enterprise • Sustainability • People • Culture • Society • Environment • Production Techniques Design Decisions	

Assessment and Feedback	• Verbal feedback will be conducted in all lessons when supporting the progress of practical work. • **'Strengths'** and **'areas for improvement'** will be stated when using formative assessment statements on theory work. • Significant sections of work will be produced as part of the NEA project. In line with exam board and JCQ regulations, individual feedback is not permitted. Student progress tracking and general class feedback will support student progress. • One-to-one verbal feedback and some written feedback, identifying strengths and areas for improvement will be given for all practice examinations. • Peer feedback will used for some practice examination questions at as a minimum once per term. • In the event of whole class remote learning requirements, feedback will be provided through TEAMS • The mark weighting for the GCSE exam and NEA controlled assessment are shown below and colour coded on the curriculum plan above

Core Technical Principles (20 marks)	Specialist Technical Principles (30 marks)	Designing and Making Principles (50 marks)	NEA Controlled Assessment (100 marks)

Extended Learning	Extended learning tasks will be set on a weekly basis. Students are encouraged to attend extra support sessions to complete NEA projects. Tasks include; • Reinforce and extend learning in class e.g. to practise examination questions. • Embed key subject content in long term memory, e.g. the learning of properties of materials and components. • Practice and develop skills e.g. annotation of design tasks. • Completion of NEA tasks e.g. generation or development of design ideas or completion of written annotation work. • Extension of learning from the lesson e.g. comprehension questions related to key learning. • Learning and revision for class tests and examinations e.g mind maps, flash cards, concept maps. • Improvement and use of DIRT time to improve or develop set tasks • Completion of practical activities in extended learning sessions after school. • EL may be set online as appropriate based on the content covered during lessons. Resources will also be uploaded for remote access. Work can be completed and submitted online.
How can I help my child?	▪ Take the time to look at everyday objects and consider their materials, manufacture and function. Could they be improved? ▪ Watch DT related videos e.g. 'How it's made' and 'Inside the factory' series on Youtube are very informative. ▪ Consider the environmental impact of the products you use at home. ▪ Disassemble and make products if the facilities are available. ▪ Encourage ICT skills in design and modelling e.g. Google Sketch Up. ▪ Act as client for projects and help provide feedback on the work produced.