

Design
Year 10
Curriculum Overview



THE HART SCHOOL
Creative Education Trust

Intent: Year 10: By the end of the year... For students to know and understand about materials and their working properties, specialist materials, Investigation, primary and secondary data, Making principles, New and emerging technologies. Students should be able to apply research techniques to effectively explore design problems and then design and develop prototypes to meet a design brief.

	AUTUMN 1	AUTUMN 2	SPRING 1	SPRING 2	SUMMER 1	SUMMER 2
	Assessment 1				Assessment 2	
Core Course Topic: These topics are taught through the identified terms. They are taught in small bitesize chunks and revisited regularly.	Papers and Boards Natural and manufactured timbers Metals and Alloys Polymers Textiles	Selection of materials or components Forces and stresses Ecological and social footprint Sources and origins Using and working with materials Stock forms, types and sizes Scales of production Specialist techniques and processes Surface treatments and finishes	Investigation, primary and secondary data Environmental, social and economic challenge The work of others Design strategies Communication of design ideas Prototype development	Energy, storage and generation Developments in new materials Systems approach to designing Mechanical Devices Mini NEA – Contextual challenge	Selection of materials and Components, Tolerances Material Management and marking out Specialist tools and equipment Specialist techniques and processes, <i>Mini NEA – Contextual challenge</i>	New and emerging technologies. <i>Schools delivering AQA will be conducting NEA in line with exam specification</i> Section A: Identifying and investigating design possibilities
Additional support links: Here are links to additional resources which will help your child	Seneca https://senecalearning.com/en-GB/ PG online presentations https://www.pgonline.co.uk/resources/design-and-technology/gcse-aqa/ Technology Student http://www.technologystudent.com/ BBC Bitesize https://www.bbc.co.uk/bitesize/examspecs/zby2bdm					
Knowledge: Included here is the specific knowledge your child will learn in detail	To recognise and discuss the range of materials used interchangeably within design and be able to distinguish the advantages and disadvantages of all. To select, discuss and use appropriate materials used in school and within industry. To apply knowledge learnt.	To be a skilful, independent and competent student within their chosen specialist material(s). To competently discuss knowledge of the material and use the material with confidence in a practical setting. To apply knowledge learnt.	To apply the knowledge learnt within design principles. To showcase skills within design. To practice designing using a wide range of influences and techniques. To be able to consider and be inspired by the work of others and to produce innovative and creative ideas that avoid design fixation. ideas. To experiment and demonstrate excellent communication within your work. To apply knowledge learnt.	To use primary and secondary data to understand client and/or user needs. To write a well justified design brief and specification. To articulately explain and discuss the use of new materials within design. To apply this knowledge to their own projects both in school and at home. To recognise how to write a good for and against argument. To apply knowledge learnt to practical scenarios.	To generate imaginative and creative design ideas using a range of different design strategies To explore and develop their own ideas. To cut materials efficiently and minimise waste. To use appropriate marking out methods, data points, coordinates, surface treatments and finishes. To consider tolerances and allowances. To skilfully use specialist tools, equipment, techniques and processes To apply knowledge learnt.	To showcase higher order, reflective thinking skills. To write responses that consider the bigger picture. Responses showcase deeper social, moral and economic understanding. To demonstrate skills in critical evaluation. To articulate how the critical evaluation of new and emerging technologies informs design decisions. To apply knowledge learnt.
Skills: Included here is the specific skills your child will learn in detail	To recognise and discuss the range of materials used interchangeably within design and be able to distinguish the advantages and disadvantages of all. To select, discuss and use appropriate materials	To be a skilful, independent and competent student within their chosen specialist material(s). To competently discuss knowledge of the material and use the material with confidence in a practical setting.	To apply the knowledge learnt within design principles. To showcase skills within design. To practice designing using a wide range of influences and techniques. To be able to consider and be inspired by the work of others	To use primary and secondary data to understand client and/or user needs. To write a well justified design brief and specification. To articulately explain and discuss the use of new materials	To generate imaginative and creative design ideas using a range of different design strategies To explore and develop their own ideas. To cut materials efficiently and minimise waste. To use appropriate marking out methods,	To showcase higher order, reflective thinking skills. To write responses that consider the bigger picture. Responses showcase deeper social, moral and economic understanding. To

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	<p>used in school and within industry.</p> <p>To apply knowledge learnt.</p>	<p>To apply knowledge learnt.</p>	<p>and to produce innovative and creative ideas that avoid design fixation. ideas. To experiment and demonstrate excellent communication within your work.</p> <p>To apply knowledge learnt.</p>	<p>within design. To apply this knowledge to their own projects both in school and at home. To recognise how to write a good for and against argument. To apply knowledge learnt to practical scenarios.</p>	<p>data points, coordinates, surface treatments and finishes. To consider tolerances and allowances. To skilfully use specialist tools, equipment, techniques and processes</p> <p>To apply knowledge learnt.</p>	<p>demonstrate skills in critical evaluation.</p> <p>To articulate how the critical evaluation of new and emerging technologies informs design decisions.</p> <p>To apply knowledge learnt.</p>
<p>Common Lexicon: These are the key words and terms learnt. These can be found on knowledge organisers.</p>	<p>Working properties, Physical Properties, absorbency, density, fusibility, electrical and thermal conductivity, strength, hardness, toughness, malleability, ductility and elasticity, papers, boards, hard wood, soft wood, manufactured boards, alloys, ferrous, non-ferrous, thermoforming, thermosetting, natural fibres, synthetic fibres, blended fibres, mixed fibres, woven, non-woven, knitted textiles</p>	<p>Forces, stresses, tension, compression, bending, torsion, shear, reinforced, stiffened, flexible, ecological and social footprint, deforestation, mining, drilling, farming, carbon, reduce, refuse, re-use, recycle, rethink, oceanic/ atmospheric pollution, sources and origins, stock forms, types and sizes, scales of production, processes, surface treatments, finishes, functionality, aesthetics, environmental, availability, cost, social/ cultural/ ethical factors, life cycle assessment, additives/ seasoning/ annealing/ stabilisers/ flame resistant/ photosensitive, cutting, abrasion, addition, prototype, batch, mass, continuous, reference points/ templates/ jigs/ patterns, shape, fabricate, construct, assemble, tolerance, commercial processes, quality control</p>	<p>Evaluate, analyse, investigate, collaboration, user centered design, systems approach, iterative design, design fixation, sketching, modelling, testing, communicate, freehand, isometric, perspective, schematic, exploded diagrams, working drawings, orthographic</p>	<p>Primary/ secondary data, client, user, market research, interviews, focus groups, analysis, evaluation, anthropometrics, percentiles, needs, wants, specification, brief, environmental, social, economic, deforestation, carbon dioxide, global warming, fair trade, investigate, analyse, evaluate</p> <p>Fossil fuels, nuclear power, renewable power, wind, solar, tidal, hydro-electrical, Biomass, batteries, kinetic, modern materials, smart materials, stimuli, composite materials, technical textiles, inputs, outputs, processes, sensors, switches, programming, buzzers, speakers, lamps, Graphene, Metal foams and Titanium.</p>	<p>Prototype, innovation, evaluate, reflect, feedback, modifications, prototypes, tolerances, cut, shaped, formed, efficiently, waste, nesting, marking out, accuracy, health & safety, addition, wastage, deforming, reforming, surface treatments, finishes</p>	<p>Automation, robotics, crowd funding, marketing, co-operatives, fair trade, finite, non-finite, technology push, pull market, fashion, trend, culture, society, sustainability, environment, pollution, global warming, production techniques, automation, CAD, CAM, flexible manufacturing systems, JIT, lean manufacturing, planned obsolescence, ethics,</p>