

		Autumn		Spring		Summer	
		1	2	1	2	1	2
YEAR 10	Topic	Graphic skills. Introduction to communicating ideas using 2D and 3D techniques <i>Natural and manufactured woods</i>	Polymers Task - Past and present designers	Energy Generation and storage <i>New and Emerging Technologies - sustainability issues.</i>	Textiles / Paper and Board Electronic components	Metals	Mechanical Components and Devices
	Learning Aims / Spec	2.2 - Communicating ideas, marking out, using tools and equipment. Core 9 - Natural and manufactured timbers	2.2 - Developing ideas, prototyping, investigating the work of others. Core 11 - Thermoplastics and Thermosetting plastics	Core 3 - How energy is generated and stored. Core 2 critical evaluation of new and emerging technologies 2.2 - Developing ideas	Core 5 - How electronic systems provide functionality to products and processes. Core 6 - The use of programmable components. Core 9 - Paper and board Core 12 - natural and synthetic fabrics	Core 10 Ferrous and non-ferrous metals	Core 7 The functions of mechanical devices, to produce different sorts of movement.
	Activities	2D Crating, shading and outlining. Isometric drawing and rendering to a light source. Perspective drawing. Exploded views and sections. Basic wood tasks to support drawing activities - marking wood joints, pairs box making task. How do we enrich our students outside of the classroom?	Responding to client briefs. Investigating the work of others - 3 artists + Dezeen.com Investigating the properties of thermoplastics. Laser cutting and fabricating using sheet acrylic.	Wind turbine Challenge. Joule Island investigation Investigation into non renewable & renewable energy sources Design Challenge - wind up and solar products. Mackies Farm Virtual Reality investigation. SRs investigation task. Lifecycle analysis of products. Sustainable Design challenge.	Build basic electronic circuits using simple input and output devices (switch, LDR, Thermistor, LED etc). Identify features of systems diagrams including feedback loops. Microprocessors VR Activity Programming BBC microbit computers to perform basic functions - Dice, Steady Hand Game, motor speed controller. Programming robots to follow routines and sub-routines.	Design of a simple pewter cast keyring using 2D Design. Casting in pewter. Manufacturing patterns for casting. Casting in aluminium. Investigation into ferrous metals, non-ferrous metals, alloys, types, properties and finishes. Stock forms and uses task.	Use of gear trains, calculating gear ratios and output speeds. Use of pulley systems, calculating velocity ratios and output speeds. Levers investigation (practical) and calculations. Cams task and plotting movement. Linkages investigation (practical) Toy design task.
	Outcomes	Students will work through arrange of drawing and shading techniques in a structured activity pack. They will also produce wooden test joints which they will draw. Design folio and practical outcome of a storage project using woods including the use of laminating to bend / curve wood Summative assessment of activity pack.	Clock based on the work of a chosen artist, manufactured from acrylic. Case study on two different products which demonstrates understanding of the impact of new and emerging technologies on: • industry • enterprise • sustainability 1. Assessment of design folio and practical outcome against GCSE criteria. 2. Written test	Wind turbine tower. Justification for the choices of renewable energy use. Revision booklet (energy sources) on Google Classroom. 3D models or presentation drawing s with critical evaluation of ideas. report on the use of renewable energy sources in manufacturing 1. Formative assessment of individual tasks. 2. Written test 3. Poster Assessment 4. Written test	Understanding of graphical conventions for circuit diagrams, systems diagrams and flow charts. Understanding open and closed loop systems. Understand the function of basic input and output devices in electronic systems. Understand the use of programmable microcontrollers in a range of contexts 1. Formative assessment of in class tasks. 2. Written test	Cast pewter and aluminium products. Understanding of different types, properties and uses of metals. Knowledge of stock forms of metals.	Understanding the functions of the different mechanical devices: pulley systems gear systems levers and linkages rack and pinion cams Knowledge and use of simple 1. Formative assessment of in class tasks (calculations). 2. Written test
Assessment							
		Autumn		Spring		Summer	
		1	2	1	2	1	2
YEAR 11	Topic	Contextual Challenge - Investigation and Development of Ideas	Contextual Challenge - Development of Ideas and production of prototypes	Contextual Challenge - Manufacture of working prototype.	Contextual Challenge - Evaluation Exam Preparation	Exam Preparation	
	Learning Aims / Spec	AO1 Identify, investigate and outline design possibilities to address needs and wants AO2 Design and make prototypes that are fit for purpose	AO2 Design and make prototypes that are fit for purpose	AO2 Design and make prototypes that are fit for purpose	AO3 Analyse and evaluate: •design decision and outcomes including for prototypes made by themselves and others •wider issues in design and technology	Core knowledge and understanding. AO3 AO4	
	Activities	Analysis and recap of contexts and potential briefs. Review requirements of client from interview. SWOT analysis of possible design briefs. Generation of formal client profile and design brief. Existing product analysis. Disassembly of a relevant product. Writing a Specification. Generating design ideas.	Developing ideas through the iterative design process. Improving design ideas based on evaluative process, feedback from client & requirements of the design specification. Manufacture of models using suitable materials to further understand function, appearance etc. Consideration of social / moral / environmental impact of design ideas. Production of final design proposal with consideration of materials, components and finishes. Revision activities for Jan PPE for homework	Manufacture of item including photographs for record of manufacture. Quality Control procedures / Flow diagram with feedback loops. Revision activities for Jan PPE for homework	Testing against Specification. Testing with the Client and user. SWOT Analysis and Evaluation of project. Modifications for future iterations. Revision - 1. Specialist Material Area - Natural and Manufactured Timbers, content 1-7. 2. Impact of Emerging Technologies (1)	Revision exercises and exam style questions focusing on higher level responses and understanding of command words: The impact of new and emerging technologies (2). How energy is generated and stored. Electronics and the use of microcontrollers. Mechanical Devices. Paper and Board. Ferrous & Non Ferrous Metals. Thermofforming and thermosetting plastics. Textiles. Smart & modern materials, & Technical Textiles	
	Outcomes	Completion of Section 1 by end of Sept. Response to generic feedback and opportunities to improve work on formal folder (Google Drive). A range of initial ideas generated and reviewed with client. Manufacture of initial models.	Completion of Design Folder - formal and informal in google Classroom and sketchbooks. Final Design Proposal with working drawings. Production planning / material order forms. Manufacture of final product to have begun.	High quality functioning prototype manufactured to a defined schedule, made with accuracy and precision.	Completed Formal folder, sketchbook and practical for Contextual Challenge. Demonstration of understanding of revision materials through revision notes and low stakes testing.	Demonstration of understanding of revision materials through revision notes and low stakes testing.	Past Paper
Assessment	Sect 1 (research / investigation) to be assessed end of sept against exam board criteria,	Sect 2 (generating and developing design ideas) to be assessed against exam board criteria,	1. Sect. 3 (making) to be assessed against exam board criteria, 2. Jan PPE	1. Full Non Examined Assessment marked to exam board criteria, internally standardised prior to moderator visit. 2. In class tests			