Key Stage 5 Curriculum Overview

Subject: Design and Technology – Resistant Materials

Year 13

Autumn 1	Autumn 2	Spring 1	Spring 2	Summer 1	Summer 2	Assessment
Discuss value of market feedback and specify questionnaire criteria. Discuss with students need for primary research and organise students to get hold of detailed primary research and feedback from their client. Debate regarding 'form versus function' including the following two opposing views when designing products: • Form follows function (functionality as prime driver) • Form over function (aesthetics as prime driver) • Key ergonomic factors for a designer to consider when developing products, equipment and environments with human interaction sources and applications of anthropometric data. LCA to assess the impact of a product from the 'cradle to the	Advantages/disadvantages of ICT in the design, development, marketing and sales of graphic products in the global marketplace: electronic communications between designers, manufacturers, retailers and consumers using: • email • Electronic Data Interchange (EDI) • Integrated Services Digital Network (ISDN) • video conferencing Specification development automated stock control 'just in time' (JIT) production scheduling and production logistics. Flexible manufacturing systems (FMS) Quick response manufacturing production control marketing, distribution and retailing of products using: • Electronic point of sale (EPOS) • Internet marketing and sales Application of flow charts to represent open and closed loop systems for quality control of production processes.	Global marketplace: • Multinational companies in developed countries manufacturing 'offshore' in developing countries Local and global production. Characteristics, advantages/disadvantages and the impact on the environment of the following genetic engineering techniques when manufacturing products: • altering genes in woods to provide quicker-growing trees, or to supply wood that resists wear, rot or infestation • use of micro-organisms to aid the disposal of environmentally friendly plastics • producing materials that are totally recyclable. Covering characteristics, processes, application and advantages/disadvantages of advanced manufacturing technology (AMT) which enable quick response manufacturing (QRM), including: • concurrent manufacturing	Characteristics, application and advantages/disadvantages of adding the following additives to polymers: • plasticisers • fillers • fibres • stabilisers • foamants. Characteristics, application and advantages/disadvantages of modifying woods: Examination preparation for each topic, checking of theory folders and note taking where ever lacking. Discuss further each topic where required and stretch more able pupils giving them opportunity once all their notes are complete to read further around the topics from the library periodicals, books, old text books, and CD ROMs	Examination preparation for each topic, checking of theory folders and note taking where ever lacking. Discuss further each topic where required and stretch more able pupils giving them opportunity once all their notes are complete to read further around the topics from the library periodicals, books, old text books, and CD ROMs	Examination preparation for each topic, checking of theory folders and note taking where ever lacking. Discuss further each topic where required and stretch more able pupils giving them opportunity once all their notes are complete to read further around the topics from the library periodicals, books, old text books, and CD ROMs	Complete examination questions set for theory lesson. Maintain a high quality well organised theory folder and generate revision notes. Complete all outstanding coursework pages and design exercises set. Maintain high standards with design portfolio. Prepare for departmental assessment (Edexcel exam papers will be used)

grave' using a life cycle inventory of: • Environmental inputs and outputs of raw materials, energy resources and emissions, economic inputs and outputs of products, components or energy that are outputs from other processes. 'Cleaner' design • Design for reducing environmental impact for recycling raw materials reduction or recyclable reduce environmental impact manufacture minimising waste and energy use simplifying processes efficient use of natural resources distribution reduce or lighten packaging reduce mileage of transportation to the customer alternatives to fossil fuels use repair versus replacement. Generating ideas from basic shapes Characteristics in terms of design styles, philosophy and influences on design	The principles and application of minimising waste production throughout the product life cycle using the following 'four R's': • reduce • reuse • recover • recycle Characteristics, comparisons, applications and advantages/disadvantages of using the following renewable and non-renewable sources of energy: • wind • water • solar • biomass and biofuels • nuclear • fossil fuels The impact and advantages/disadvantages of the following technological changes on society, in relation to product manufacture. Mass production: • consumer society including built-in obsolescence • employment. 'New' industrial age of high-technology production: • computers in the development and manufacture of products • miniaturisation of products and components • Use of smart materials and products for	• flexible manufacturing systems (FMS) Application, advantages/disadvantages and its impact on employment of complex automated systems, including: • Robots on fully automated production and assembly lines/cells • Development of artificial intelligence (AI) for industrial applications. Responsibilities of 'developed' countries in relation to social, economic and environmental issues for global sustainable development. • Impact of industrialisation on global warming and climate change. • United Nations Framework Convention on Climate Change (UNFCCC) including Kyoto Protocol Reduction of an individual's 'carbon footprint' by reducing carbon dioxide emissions and carbon offsetting • Non-Fossil Fuel Obligations (NFFO) in the UK • Timber production and sustainable forest management.				

culture of the following designers and design movements: • William Morris and the Arts and Crafts movement • Charles Rennie Macintosh and the Art Nouveau movement • Marcel Breuer and the Bauhaus modernist movement	innovative applications.					