

Programme of Learning – Product Design

	Year 7	Year 8	Year 9	Year 10	Year 11	Post 16
Knowledge & Understanding	Skills Identify and correct use of Hand tools Materials and properties Metal, wood, plastic pewter MDF Acrylic Health and safety Design process Basic design criteria /specification Annotating design work Developing ideas and recording processes Perspective drawing / isometric drawing Rendering techniques Advantages and disadvantages of CAD / CAM Creative and manufacturing skills in the workshop Templates intro to Illustrator or Corel draw	PODS Modern materials Plastics Develop use of hand tools Moulds, templates and Jigs Health and Safety Design process Annotating designs Social moral and cultural consideration when designing Hand drawing skills – rendering techniques Google sketch up/3d design	Unit 1 Materials and properties – Paper/card plus one other plus new/smart materials Product analysis Design process: Communication and representation of ideas – drawing and modelling Design against design criteria/specification Orthographic Projection Isometric drawing Product manufacture – cut shaping and forming to tolerances Safety- own and users, risk assessment Quality – QA, QC, quality of design, quality of manufacture Evolution of product design – Design movements and their impact on design/architecture Methods of production Ergonomics and	Exam Industrial processes and Production methods subject specific. Just In Time, line and sub-assembly QC & QA Product development – investigation and analysis material and processes foci Ethical & environmental issues – 6 ‘R’s, carbon footprint, fair trade, etc Human factors – anthropometrics, ergonomics, colour, special groups Product manufacture – cut shaping and forming to tolerances Safety- own and users, risk assessment Term Two Packaging – functions, environmental issues, labeling Product marketing – branding and advertising Product manufacture – cut shaping and forming to tolerances	Controlled Assessment Design and Development Manufacturing and industrial practice Product/manufacturing plans Evaluation of product compared with market alternatives Exam Review previous ensure rest of content is covered include Use of ICT – CAD/CAM, video conferencing, remote manufacturing, etc Methods of production – scales of, JIT, team production, etc Manufacturing systems – organisation, systems, etc Product manufacture – cut shaping and forming to tolerances Safety- own and users, risk assessment	Properties of materials and their manufacturing processes Extraction and processing of raw materials Conversion and seasoning Sustainability Form and Function New/smart materials Components Quality control and quality assurance Risk assessments/health and safety ICT Biotechnology Re-newable and non re-newable energys. Cleaner design and technology Manufacturing systems CIM (Comp. Integ. Manuf) Robotics and artificial intelligence Design History Form and Function

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			Anthropometrics Environmental/Sustainability issues	Safety- own and users, risk assessment Consumer issues – standards, consumer groups, legislation, etc Term three /Controlled Assessment Analyse and evaluate existing products, including those from professional designers Client profile Create a design criteria/specifications		Anthropometrics/ergonomic Life cycle assessment Responsibilities of developed countries
Skills & Application	Students will develop their workshop capabilities. Hand held device exploring properties of styrofoam/card Skills in a range of materials and appropriate finishing techniques Pewter cast key ring Mini light CAD Students will be shown how to create 2D/3D designs Quality control 3D printing Health and safety	Storage Pods Students will develop their hand and machine skills to create a useful product for a given client selecting and using a variety of materials and components. Building on year 7 skills with techniques used, forming /moulding Joining/ finishing Quality Control	Lamps Cutting skills and hand machine Hot wire cutter Lazer cutter / Plotter cutter Abode illustrator / photo shop Digital printing Tolerance levels Intro to manufacturing plans	Machine skills Setting up and using the lazer cutter 3D printing	Machine skills 3D printing	Hand and machine skills using a range of materials based on their properties Independent use of CAD CAM Technical drawing to visualise ideas/concepts Quality control Working with a client and user group Designing for a commercial use CAD CAM

Learning Approaches