

	Natural & manufactured timber	The physical and working properties of hardwoods, softwoods and man-made boards	Natural solid timber – strengths, weaknesses and defects	Strengths, weaknesses of manufactured boards	The impact on the environment of deforestation	Ecological and social footprint.	Life-cycle analysis of a material or product	Aesthetic properties of natural and manufactured timbers	Functional properties of natural and manufactured timbers.	Responsibilities of designers and manufacturers	Estimating the true costs of a prototype or product	Comparison costs of hardwoods, softwoods and manufactured board	behaviour of natural and manufactured timber under forces or under stress.	Advantages and disadvantages of producing single products, batch production and high volume, continuous production	The importance of CAM in modern high volume production	Tools and equipment to mark out, hold, cut, shape, drill and form laminates	The use of jigs and devices to control repeat activities	Jigs and formers to ensure accuracy as part of the process of drilling, bending, cutting wood materials	The principles of producing wood products using the following processes: jointing, veneering, laminating and steam bending.	Classification of wood joints as frame or box construction.	Adhesives
	Materials	The categorisation and properties of paper, cards, boards and composite materials.	Papers, cards and boards can be laminated	The standard ISO sizes of paper	The use of grammage	The use of microns to measure thickness of card	Categorisation and working properties of ferrous metals, nonferrous metals and alloys	Properties of metals	Ferrous metals and protections/finishes	Non-ferrous metals and protections/finishes	Alloys of metals	Categorisation and physical properties of polymers	Polymers: Manufacture and forms	The differences between a thermoforming (thermoplastic) and thermosetting material	Properties of polymers	The properties of thermoplastics	The properties of the thermosetting plastics	Categorisation and properties of fibres and textiles	The raw materials of textiles	Natural and manufactured polymers and microfibres	The properties of textiles fibres
Mechanical components and devices	Principle of a mechanical device to transform input motion and force into a output motion and force.	Analyse everyday mechanical devices and how they function	Consider mechanical systems in terms of input; process; output	Mechanical systems which increase or decrease speed of movement/rotation;	Mechanical systems which change magnitude/direction of force/movement/rotation	Simple calculations involving mechanical systems.	Analyse the function of mechanical products that have pulley systems	Analyse the function of mechanical products that have gear systems	Analyse the function of mechanical products that have levers and linkages	Analyse the function of mechanical products that have levers and linkages	Analyse the function of mechanical products that have rack and pinion	Analyse the function of mechanical products that have cams									