



Autumn/Spring or Spring/Summer (due to Yr8 rotation)		
Year 8	Topic Big question / Overview	Pine Box Project Big question: How can students use traditional manufacturing skills alongside CAD/CAM to design and manufacture a high-quality pine box that meets a design brief? Phase one: Designing and communicating ideas • Build upon Year 7 experience of working to a design brief and designing products that are fit for purpose. • Consider function, user needs, aesthetics, materials and quality when developing ideas. • Develop graphical communication through isometric drawing. • Use rendering techniques to communicate form, colour, materials and surface finish. • Design an individual logo or graphic for the acrylic lid. • Develop and refine ideas before manufacture. Phase two: Materials, joinery and manufacture • Develop knowledge of pine as a softwood and acrylic as a thermoplastic. • Accurately measure and mark out timber. • Learn how finger joints can be used to construct a strong and accurate box. • Develop greater accuracy when cutting and fitting joints. • Shape, assemble and finish timber to a high standard. • Apply quality-control checks throughout manufacture to improve accuracy, fit and finish. Phase three: CAD/CAM and evaluation • Develop Computer Aided Design (CAD) skills by creating a digital version of the student's logo. • Prepare designs for manufacture using the laser cutter. • Develop understanding of Computer Aided Manufacture (CAM). • Combine traditional hand-manufacturing techniques with modern CAD/CAM processes. • Produce a high-quality finished product that meets the requirements of the original design brief. • Evaluate the finished box against the brief, considering function, accuracy, aesthetics, manufacture and quality. Identify realistic improvements.
	Disciplinary knowledge/skills	• Measuring and marking-out accuracy. • Timber cutting, shaping and finishing skills. • Understanding of wood joints, particularly finger joints. • Understanding of the properties of pine and acrylic. • Safe and increasingly independent workshop practice. • Isometric drawing. • Rendering and presentation techniques. • Designing in response to a brief. • CAD skills. • Laser cutting and CAM knowledge. • Quality-control techniques. • Evaluation against measurable requirements. • Greater precision and independence than in Year 7.

	New vocabulary	• Function • CAD – Computer Aided Design • CAM – Computer Aided Manufacture • Isometric Projection • Finger Joint	• Acrylic • Thermosetting Plastic, Thermoplastic • Accuracy • Tolerance • Rendering
	Links to ...	• Year 7 D&T: builds directly upon designing, materials knowledge, marking out, shaping, finishing and evaluation. • Mathematics: accurate measurement, dimensions, angles, tolerance and checking squareness. • Computing: digital design, CAD and the transfer of digital information to CAM equipment. • Art & Design: logo development, proportion, aesthetics, colour and rendering. • Science: properties and behaviour of timber and thermoplastics. • Geography: efficient use of materials, reducing waste and creating products intended to have a useful lifespan.	