Curriculum Plans: Year 7 Design & Technology

	Knowledge: By the end of the unit students will know:	**Skills**: What skills will students have developed by the end of this unit?	**Key terms**: What new key terms and vocabulary will be learnt in this unit?	**Summative Assessment:** How will pupils be assessed in this unit?
Cross Project Theory & Manufacture	• The categories of timber, including the differences between hardwoods (e.g., oak, beech, mahogany) and softwoods (e.g., pine, cedar, spruce), and manufactured boards (e.g., MDF, plywood). • The properties of these timbers and their applications in product design and construction. • The timber conversion process, including cutting methods like quarter sawn and through and through sawing, and how this affects wood stability. • The process of seasoning timber, such as air drying and kiln drying, and the importance of moisture control in preventing warping or shrinkage. • Measuring and marking out timber, including using tools such as a try square and a ruler to ensure accuracy. • Different woodworking joints, especially the cross-halving joint, and why precise joining techniques are important for structural stability. • The surface preparation process (e.g., sanding and smoothing) and how different finishes (e.g., varnish, stain, oil) enhance timber durability and aesthetics. • How to evaluate their own work using criteria based on functionality, accuracy, and aesthetic value.	• Measuring and marking out timber accurately, ensuring precise cuts using tools such as a steel rule, try square, and marking gauge. • Cutting techniques for wood using tenon saws, coping saws, and chisels, particularly focusing on cutting cross-halving joints with precision. • Using adhesives and fixings like screws and nails to join timber pieces together securely. • Shaping and smoothing wood by using various grades of sandpaper to prepare it for finishing. • Applying surface finishes (e.g., varnish, oil, stain) to protect and enhance the appearance of their product. • Developing and following a design process: from initial research to creating sketches, making prototypes, and refining designs based on feedback. • Critical evaluation of their own product, assessing accuracy of the joint, overall quality of the finish, and how closely it meets the design specification.	**Hardwood**: Wood from deciduous trees, typically harder and denser. E.g., Oak, Beech, Mahogany. **Softwood**: Wood from coniferous trees, typically lighter and softer. E.g., Pine, Cedar, Spruce. **Manufactured board**: Man-made wood products such as MDF, plywood, and chipboard. **Grain**: The pattern formed by the growth rings in timber, affecting how it cuts and finishes. **Knots**: Circular imperfections in wood where branches grew, affecting the strength and appearance. **Timber conversion**: The process of cutting logs into usable timber, including quarter sawn and through and through methods. **Seasoning**: Drying timber to reduce moisture content and increase its stability. **Cross-halving joint**: A joint where two pieces of wood are cut halfway through at the point where they cross, allowing them to interlock. **Surface preparation**: The process of sanding and smoothing timber before applying finishes. **Varnish/Stain/Oil**: Surface treatments applied to timber to protect and enhance its appearance. **Marking out**: Drawing guide lines on wood before cutting, to ensure precision. **Evaluation**: Reflecting on the success and challenges of a project, and identifying areas for improvement.	**Practical assessment**: Pupils will be evaluated on the craftsmanship and accuracy of their cross-halving joint, the quality of their cutting and shaping, and the application of surface finishes. Key aspects to be assessed include: • How well the joint fits, with no visible gaps and clean cuts. • Smoothness of the surface and quality of sanding. • Even application of finishes like varnish or oil. **Workbook completion**: Students will complete written exercises covering theory on timber properties, the timber conversion process, and surface finishes. Their workbook will also include sketches and plans of their design. **Peer and self-assessment**: Pupils will review each other's work and provide constructive feedback based on criteria such as joint accuracy, design functionality, and overall appearance. **Final written evaluation**: Each student will write a final evaluation of their cross project, reflecting on the design and manufacturing process, challenges faced, and areas for improvement. This will assess their ability to critically evaluate their own work. - **Formative assessment**: Throughout the project, pupils will be given feedback through class discussions, peer reviews, and teacher guidance. This will track progress and understanding of key concepts throughout the unit.
Cross Project Design skills & Computer Aided Design (CAD)	• The principles of isometric drawing and how it's used to represent 3D objects on a 2D plane.	**Freehand sketching**: Drawing in isometric, ensuring accuracy in proportions and perspectives using a 30-degree angle grid.	**Isometric Drawing**: A method of visually representing 3D objects on a 2D plane using 30-degree angles. **Ghosting**: Lightly sketching lines before finalising to plan positioning. - Crating:	**Hand-drawn isometric sketches**: Students will submit a series of sketches (e.g., cubes, cylinders, and ellipses) for assessment based on accuracy, use of shading, and quality of lines.

Curriculum Plans: Year 7 Design & Technology

	• The role of weighted lines, ghosting, and crating in technical drawings to create clean, structured designs. • The technique for shading and rendering drawings to make them appear more realistic by simulating light and shadow. • How to accurately draw ellipses and integrate them into isometric drawings to represent curved or cylindrical forms. • How to transition from hand-drawn sketches to using CAD software to create technical and 3D models. • The basic tools and features of Techsoft 2D Design and SketchUp, and how to apply them to create accurate digital representations of products. • How to add textures and finishes using CAD software, particularly replicating wood textures for rendering. • The importance of precision and proportions in both hand-drawn and digital designs.	**Ghosting and crating techniques**: Lightly sketching outlines to position elements before committing to solid lines. Shading and rendering: Applying shading to create depth and realism in their sketches, with a focus on understanding light sources. **Ellipses and cylinders**: Accurately drawing ellipses and cylinders in isometric view, ensuring correct proportions and symmetry. **CAD drawing skills**: Using Techsoft 2D Design to create detailed technical drawings with correct dimensions. **3D modelling**: Creating precise 3D models using SketchUp, applying textures and finishes, and manipulating shapes using tools such as push/pull and measurement tools. **Adding textures**: Applying wood grain and other textures to CAD models to enhance realism. **Evaluating design work**: Reflecting on the quality and accuracy of both hand-drawn and CAD models, identifying strengths and areas for improvement.	Creating the basic framework or structure of a drawing, outlining proportions before adding details. **Weighted Lines**: Bolder, darker lines used to emphasise the final edges in a drawing. **Shading**: Using variations in tone to create the illusion of depth and 3D form. **Ellipse**: An oval shape that represents a circle seen from an angle, used to depict cylinders in isometric drawings. **Cylinder**: A 3D shape with circular ends and a curved surface. **Proportion**: The relative size and scale of different elements in a drawing or model. - CAD (Computer-Aided Design): Software used to create precise technical and 3D drawings. **SketchUp**: A 3D modelling software used for creating, editing, and visualising designs. **Rendering**: The process of adding textures, shading, and detail to a drawing or CAD model to make it more realistic. **Techsoft 2D Design**: CAD software used for creating 2D technical drawings with precision. **Push/Pull Tool**: A SketchUp tool that allows users to extrude flat shapes into 3D objects. **Orbit Tool**: A tool in SketchUp used to rotate the view around a 3D model. **Wood Texture**: The visual and tactile quality of wood, replicated in drawings to show material surfaces. **Crating**: The process of using construction lines to create the initial framework of an isometric drawing.	**Shading and rendering**: Students will be assessed on their ability to apply shading techniques, focusing on creating depth and realism in their drawings. **Technical drawing in CAD (Techsoft 2D**): Pupils will submit a technical drawing of their cross or another design, which will be assessed based on correct dimensions, use of line weights, and clarity. **3D modelling in SketchUp**: Students will submit a 3D model of their cross, evaluated based on accuracy of proportions, use of tools like push/pull and orbit, and application of textures. **Final project evaluation**: Pupils will complete a written evaluation of their final product (both hand-drawn and CAD), reflecting on their progress, challenges faced, and areas for improvement. **Formative assessment**: Ongoing feedback will be provided during lessons, especially during practical work and peer reviews. **Quiz and short tests**: To reinforce key vocabulary and concepts, pupils will participate in quizzes and tests to assess their knowledge of drawing techniques, CAD tools, and terminology.

Curriculum Plans: Year 7 Design & Technology

Food Technology	• Personal hygiene, food hygiene and safety in the Kitchen • Safe use of knife and oven • High and low risk foods • Use of kitchen equipment • How to prepare a vitamin drink • How to prepare a fruit salad • How to prepare a baked sandwich • Measuring and weighing out • How to prepare a fruit crumble • How to prepare wedges and dip • How to prepare a Greek salad	• Safe knife skills • Practicing food hygiene • Practicing personal hygiene • What foods are high and low risk • How food poisoning occurs • How to prepare for a practical • How to wash up after a practical • Safe oven skills • How to safely use a grater • How to weigh and measure out solids and liquids for recipes • How to use standard components in a recipe	• Mise en place • Food hygiene • Personal hygiene • Food poisoning • Cross contamination • Ergonomic • Enzymic browning • Bridge and Claw methods • Oblique • Julienne • Brunoise • Baton • Celsius • Fahrenheit • Meniscus level • Standard components • Rubbing in method • Dovetailing	• They will have a knife skills assessment where they will be assessed on their knife safety use, size and shape of chopped ingredients hygiene routines • They will have a written test to assess their theory knowledge of food hygiene and personal hygiene