

Timeline	Topic	Key concepts and knowledge	Skills development	Rationale
<b>YEAR 9 OVERVIEW – carousel so students may carry out activities in different order</b>				
<b>Y9 - half term 1</b>	<b>Engineering Design</b> Computer Aided Design and Manufacture	<ul style="list-style-type: none"> <li>• Solidworks CAD modelling basics (user environment, defined sketches, geometry, extrude, cut, fillet chamfer)</li> <li>• CAD rendering</li> <li>• 3D printing parameters</li> <li>• CURA slicing software</li> </ul>	Confidence Digital skills (Specialist CAD software) Subject specific technical vocabulary Numeracy (dimensions and scale) Problem solving Creativity Self-management	This project builds on the 3D modelling skills gained in year 8 (on Sketch up). Year 8 modelling skills will be transferred into industry standard CAD software (Solidworks) to develop accuracy when modelling and the skills to modify and enhance existing designs. Students will be familiarised with the Solidworks 3D modelling environment before learning how to construct 3D models with levels of precision. Students build on year 8's awareness of 3D printing by exploring print parameters in CURA and how they impact 3D prints.
<b>Y9 – half term 2</b>	<b>Design Technology</b> Prototyping Pencil case	<ul style="list-style-type: none"> <li>• Working with textiles</li> <li>• Material properties (textiles fibres and fabrics )</li> <li>• CAD Techsoft2D</li> <li>• Vinyl cutter</li> <li>• Testing and evaluating</li> <li>• Industrial practices</li> <li>• Scales of production</li> <li>• Sewing Machine skills</li> <li>• Textile Components</li> </ul>	Confidence Sequencing Specialist software (CAD skills) Use of specialist tools and equipment Accuracy Numeracy ( measurements and scale) Subject specific technical vocabulary Problem solving Digital skills Self -management	Builds on yr7 and 8 practical skills when working with Textiles and 2D Recaps and builds CAD/CAM skills in year 7 and 8 (tech soft and laser cutter). Develops problems solving skills when prototyping measuring in mm/cm for accuracy, introducing the vinyl cutter, using textile heat set paper. Students will develop skills further using a zip fastening, within their product. Students will build up their knowledge investigating the properties of all fibres and fabrics. Industrial links are taught to develop their learning ready for KS4 of hoe products are manufactured through scales of production.

<p><b>Y9 – half term 3</b></p>	<p><b>Food preparation and nutrition</b>                  Develop an understanding of food science and the function of ingredients.</p>	<ul style="list-style-type: none"> <li>Define the meaning of the term raising agents.</li> <li>Identify the types of raising agents used in food.</li> <li>Describe how raising agents are added into foods, a) mechanically, b) chemically and c) biologically.</li> <li>Describe how a chemical raising agent enables a food product to work.</li> </ul>	<p>Confidence                  Subject specific technical vocabulary                  A range of practical skills including whisking method, melting method and bread cookery.                  Evaluation skills                  Problem solving                  Communication skills                  Self-management</p>	<p>This module builds on yr7 and 8 practical skills. The focus is to develop a knowledge and understanding of the function of ingredients. Student will also be introduced to the scientific aspect of baking in preparation for GCSE.</p>
<p><b>Y9 – half term 4</b></p>	<p><b>Engineering Design</b>                  Wider engineering knowledge</p>	<ul style="list-style-type: none"> <li>Design cycle</li> <li>Key vocabulary</li> <li>Design briefs</li> <li>Specifications</li> <li>Injection moulding</li> <li>HP die casting</li> <li>Industrial assembly (robotics)</li> <li>System block diagrams and product testing</li> </ul>	<p>Confidence                  Subject specific technical vocabulary                  Awareness of product development and impacts on environment and society                  Digital skills (simulations and programming)                  Communication skills                  Team work                  Self-management</p>	<p>This module is an introduction to the design cycle and the key link with the problem/user needs to develop an effective solution. Students will look at the stages of a design cycle before writing design briefs and specification points. Students then focus on the manufacture stage of the design cycle by learning about commercial manufacturing processes. Finally, students will revisit learning from year 8 by looking at systems design and linking it to industrial robots and why they are used in industry.</p>

<p><b>Y9 – half term 5</b></p>	<p><b>Design Technology</b>                  Designing skills                  2D,3D</p>	<ul style="list-style-type: none"> <li>• Hand drawn designs</li> <li>• Rendering</li> <li>• 2D, 3D drawing techniques</li> <li>Orthographical Isometric layout</li> <li>• Laser cutting</li> <li>• Making nets</li> <li>• Numeracy</li> <li>• Tessellation</li> <li>• Work of others</li> <li>• Modern chair designs</li> <li>• Development</li> <li>• Paper and board material and properties</li> </ul>	<p>Confidence                  Literacy (technical vocabulary)                  Numeracy (explanation of practical application of numeracy)                  Marking and cutting out                  Specialist software (CAD skills) Digital skills                  Drawing skills                  2D 3D drawing skills                  Graphical communication                  Creativity                  Self- management</p>	<p>Builds on year 7 and 8 designing skills iterative design and creativity approach.                  Revisiting prototyping skills using papers and cardboards, to create unusual chair structures.                  Students will secure knowledge exploring the working properties of paper and board materials.                  Students will research in depth the work of unique designers and their work- Furniture, buildings, architecture, to create this outcome.                  This will develop student’s skills for design technology in KS4 for NEA coursework.                  Students will develop their numeracy and CAD skills creating orthographic and isometric chair layouts, which will be developed further at GCSE</p>
<p><b>Y9 – half term 6</b></p>	<p><b>Food preparation and nutrition</b>                  To develop an awareness of the ethical issues which influence food choice.</p>	<ul style="list-style-type: none"> <li>• Factors affecting food choice.</li> <li>• Food provenance</li> <li>• Seasonal eating</li> <li>• Food waste</li> <li>• Vegetarianism.</li> <li>• Handling and making shortcrust pastry dough</li> </ul>	<p>Confidence                  Literacy                  A range of practical skills including vegetarian cookery and shortcrust pastry.                  Awareness of the ethical food issues.                  Communication skills                  Self-management                  Team work</p>	<p>The second food module continues to build on practical skills. Focusing on pastry making and vegetarian cooking. Students will consider cost (use of left overs and seasonal produce.) Student will explore why some choose not to eat meat.</p>