



KS3 Curriculum Map – Design and Technology:

Topic	Knowledge <i>Substantive knowledge:</i> This is the specific, factual content for the topic, which should be connected into a careful sequence of learning.	Skills <i>Disciplinary knowledge:</i> This is the action taken within a particular topic in order to gain substantive knowledge.	Assessment Opportunities What assessments will be used to measure student progress?
Year 7 Baseline assessment data	<ul style="list-style-type: none"> • Measurements and accuracy • Analysing a product • Maths style questions • Design and imagination • Food Technology style questions 	<ul style="list-style-type: none"> • Following written instructions link to Maths. • Using descriptive words with explanations and improvements. • Calculating – Ratios and area • Presentation and imagination drawing towards a theme. 	<ul style="list-style-type: none"> • Baseline assessment = from WATT - World Association of Technology Teachers • Workbook – all assessment and subject work is recorded • Place in table formation linked with ARE • Food Technology knowledge
Year 7 DT Key Fob Project	<ul style="list-style-type: none"> • Introduction to CAD CAM • Drawing skills. • 2D design Techsoft. • Laser machine. • Fabricate keyring design. • Material knowledge – (Acrylic). 	<ul style="list-style-type: none"> • Development of basic sketching skills. • Development of basic toolbar/shortcuts when using 2D Techsoft. • Development of how to vectorise an image and use colour to align with laser speeds for different materials. • Development of how to set up the laser machine and convert files .dtd to .dxf • Apply appropriate glue and finishing techniques to check accuracy. • Develop and communicate design ideas using annotated sketches, detailed plans, 3-D and mathematical modelling, oral and digital presentations and computer-based tools. 	<ul style="list-style-type: none"> • Workbook – assessment and practical work. Feedback in workbook. • Questions and Answers. • Online assessment – SMHW. • Peer assessment of the completed design. • DIRT Sheet • Self-assessment. • End of unit metacognitive assessment.

<p>Year 7 DT Wooden Container Project</p>	<ul style="list-style-type: none"> • Woodwork skills. • Handcraft skills. • H&S. • Material knowledge – (Hardwoods, Softwoods and Manufactured Boards). • Graphic skills 	<ul style="list-style-type: none"> • Introduction to woodwork skills – Gluing, planing, drilling, cutting, sanding and joining. • Apply understanding of graphics skill used as competition for laser burn idea on container. • Using marking gauge, parallel lines, cross grain and following the grain. • Development of design and technology, its impact on individuals, society and the environment. • Understanding - Felling, seasoning, sustainable and saplings. 	<ul style="list-style-type: none"> • Workbook – assessment and practical work. • Students to peer assess each other’s initial design ideas using WWW and EBI method – 2 minutes. • Online assessment – SMHW. • DIRT Sheet • Questions and Answers. • End of unit test.
<p>Year 7 DT Metal Sculpture Award</p>	<ul style="list-style-type: none"> • Metal H&S in the workshop. • Metal work skills. • paper or card models • Alloys, Ferrous Metals and Non-Ferrous 	<ul style="list-style-type: none"> • Use research, including the study of different sports activities, to identify and understand participant needs to design. • Identify and solve their own design problems for the sculpture award. • Select appropriately from specialist metalwork tools, techniques, processes, equipment and machinery. • Scriber, engineers square, engineers blue ink, filing, drilling and brazing. • Woodwork skill for the base of award. 	<ul style="list-style-type: none"> • Students to peer assess each other’s initial design ideas using WWW and EBI method – 2 minutes. • Peer assessment. • Questions and Answers. • DIRT Sheet • Seneca learning – Homework quiz • End of unit test.
<p>Year 7 DT Badge / Torch Project</p>	<ul style="list-style-type: none"> • Electronic circuit symbols and layout. • Material knowledge = electronic components. • Theory lesson on systems and control. • Soldering. • Use and assemble electronic components. 	<ul style="list-style-type: none"> • Use electronics to embed in products that respond to inputs, control and output using circuit layout and components. • Development of how more advanced electrical and electronic systems can be powered and used in their products. • Development LEDs used in other products. 	<ul style="list-style-type: none"> • Workbook – assessment and practical work. Feedback in the workbook. • Online assessment – SMHW. • Assessment of components. • Self-assessment. • DIRT Sheet

	<ul style="list-style-type: none"> Graphics skills - Material knowledge – (paper and board). 	<ul style="list-style-type: none"> Understanding of parallel and series circuits. Test working circuits and conductivity with multimeter. Health and Safety with solder iron. Learn to solder components together. Use coping saw and copper track. Develop graphics for cover of product. 	<ul style="list-style-type: none"> Questions and Answers. End of unit assessment.
Year 8 DT Clock project	<ul style="list-style-type: none"> Material knowledge = acrylic (polymers) laser cutting plywood Thermoplastics / Thermosetting plastics Line bending machine. Theory lesson - new and emerging technologies. Fabricate the Clock. 	<ul style="list-style-type: none"> Development of dimensions and accuracy using CAD via 2D Design Development of how to convert .dxf from 2D format into a 3D shape. (.stl to print in 3D). Maths - geometry shapes and measurement Development of how to use a die-cutting machine – link to industry. Development of how to apply H&S when using the line bender/strip heater and mould/former – link to industry. Demo and apply appropriate glue and finishing techniques to check accuracy. Cross filing and Drawing filing. 	<ul style="list-style-type: none"> Workbook – assessment and practical work. Feedback in the workbook. Online assessment – SMHW. Peer assessment of the completed design. DIRT Sheet Self-assessment. End of unit metacognitive assessment.
Year 8 DT Candle Holder project	<ul style="list-style-type: none"> Typography manipulation Isometric drawing 30 degrees and perspective drawing. Depending on workshop/metal or woodwork Wood Joints Knock down fittings CAD / CAM vs Traditional Hand skills 	<ul style="list-style-type: none"> Use a broad range of manufacturing techniques, including handcraft skills and machinery, to manufacture candle holders precisely. Exploit using CAD/CAM equipment to manufacture products, increasing quality standards. Create a dowel joint to understand knock-down fittings. Learn metal finishes. 	<ul style="list-style-type: none"> Workbook – assessment and practical work. Feedback in the workbook. Online assessment – SMHW. Self-assessment. End of unit metacognitive assessment.

<p>Year 8 DT Table Tennis Bat Project</p>	<ul style="list-style-type: none"> • Composites. • Templates, jigs and moulds. • Manufacturing methods. • Ergonomics and anthropometrics. • Development of a product. 	<ul style="list-style-type: none"> • Know the physical properties of materials, e.g. grain, brittleness, flexibility, elasticity, malleability and thermal • Learn to join different materials together. • Make a commercially viable product. • Develop practical skills in woodwork. • Understanding of products for the sports department. • Product Development throughout the years. 	<ul style="list-style-type: none"> • Produce ordered sequences and schedules for manufacturing table tennis design and detailing stages. • Understand the user, sincerely evaluating the product after using the item. • DIRT Sheet • Seneca learning – Homework quiz.
<p>Year 8 DT Book End Project</p>	<ul style="list-style-type: none"> • Developing a theme. • Learning to join materials together • Manufactured boards and natural woods 	<ul style="list-style-type: none"> • Know how to use different types of cutting tools, coping saw, tennon saw and fret saw. • Different types of wood joints. • Sustainable materials • Templates • Disk Sander H&S and usage. • Working with templates. 	<ul style="list-style-type: none"> • Workbook – assessment and practical work. Feedback in the work book. • Online assessment – SMHW. • Making joints/tenon saw/coping saw/files/scroll saw/sanding machine/pillar drill/power tools/vice/rule measure. • DIRT Sheet • End of unit metacognitive assessment. • Seneca learning – Homework quiz
<p>Year 9 DT Phone Holder Project</p>	<ul style="list-style-type: none"> • Plastics in the ocean – 6r's. • Create a brief and specification. • Laser cutting • Manufacturing methods • Prototype 	<ul style="list-style-type: none"> • Research different exciting products. • Development of isometric drawing. • Environmental factors. • Intended users • Learn Computer-Aided Design Skills. • Learn Computer Aided Manufacture. • How a laser cutter works 	<ul style="list-style-type: none"> • Workbook – all assessment and subject work is recorded bi-weekly in the lesson. Feedback in the work book. • Online assessment – Show my homework (1x per rotation).

	<ul style="list-style-type: none"> Graphics, CAD and CAM skills 	<ul style="list-style-type: none"> Make a cardboard prototype Develop graphic skills using 2D Design 	<ul style="list-style-type: none"> Self-assessment. DIRT Sheet End of unit assessment.
Year 9 DT Bottle opener Project	<ul style="list-style-type: none"> H&S in a metal workshop. Metal work skills. Ergonomics and Anthropometrics Composites 	<ul style="list-style-type: none"> Ferrous metals, Non Ferrous metals and alloys. Use specialist metal tools, techniques, processes, equipment and machinery precisely. Cross-filing and Draw filing Hacksaw, centre punch, drill scribe, file, emery cloth. Metal finishes 	<ul style="list-style-type: none"> Workbook – assessment and practical work. Feedback in the work book. Online assessment – SMHW. Self-assessment. End of unit metacognitive assessment. Seneca learning – Homework quiz. DIRT Sheet
Extra Project Picture Frame project	<ul style="list-style-type: none"> Material knowledge = MDF & Hardboard. Art Deco design style Die cutting machine. Line bending machine. Theory lesson - new and emerging technologies. Fabricate materials. 	<ul style="list-style-type: none"> Development of isometric drawing. Development of dimensions and accuracy using CAD via 2D Techosft/ 3D program. Development of how to convert .dxf from a 2D format into a 3D shape. (.stl to print in 3D). Select from and use specialist tools, techniques, processes, equipment and machinery precisely, including computer-aided manufacture Maths - geometry and measurement Development of how to use a die-cutting machine – link to industry. Development of how to apply H&S when using the line bender/strip heater and mould/former – link to industry. Apply appropriate glue and finishing techniques to check accuracy. Investigate new and emerging technologies. 	<ul style="list-style-type: none"> Workbook – all assessment and subject work is recorded bi-weekly in lessons. Feedback in the workbook. Online assessment – SMHW. DIRT Sheet Peer assessment of the completed design. Seneca learning – Homework quiz End of unit metacognitive assessment.

<p>Extra Project Steady hand game</p>	<ul style="list-style-type: none"> • Perspective drawing. • Material knowledge = electronic components • Recall 2D design Techsoft – working drawing/accuracy. • Use and assemble electronic components. • Theory lesson – structures. • Fabricate steady hand game. 	<ul style="list-style-type: none"> • Develop the ability to follow a technical specification to create the product – investigate creating a specification. • Test electronic components – follow the schematic to produce the product. • Apply appropriate glue and finishing techniques to check accuracy. • Development of and use of the properties of materials and the performance of structural elements to achieve functioning solutions. • Development of perspective drawing. 	<ul style="list-style-type: none"> • Workbook – assessment and practical. Feedback in the work book. • Online assessment – SMHW • Self-assessment. • End of unit metacognitive assessment. • DIRT Sheet • Seneca learning – Homework quiz
-----------------------------------------------	----------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------	-------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------	-------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------