# SUNNYDOWN SCHOOL
## DT CURRICULUM PLAN

| Subject | DT | Year group | Y9 |
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| Subject Intent | Throughout year 9 students are encouraged to think creatively and develop their skill base for potential GCSE work going forward. Projects have a wider brief which helps teach students to explore designs and options for projects. There is an increased emphasis on a portfolio of research, design, making and evaluating and various inclusive learning opportunities. Students are prepared for the demands of GCSE work. | | |

| Term | Topic | Core learning | Key concepts | Sequencing |
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| Autumn 1 | Tower of Hanoi puzzle | **Technical knowledge:**<br>Safe use of chisels. Properties of softwoods. Applying different surface finishes.<br><br>**Design:**<br>Using isometric paper to draw out a design in 3D. Creating a choice of designs for parts of the puzzle.<br><br>**Making:**<br>Marking, measuring and cutting a material within 0.5 mm tolerance. Using new bits when working on the pillar drill. Safe technique when using chisels. Applying surface finishes neatly. Designing components to be 3d printed.<br>**Evaluate:**<br>All tools and materials used should be named. Description of the making process written in full sentences and choices that students made should be justified. Improvements considered and personal targets set. | • Cross-halving joint<br>• Measuring within tolerance<br>• 3d printing<br>• Pillar drill<br>• Varnish<br>• Vernier caliper. | **Building on…..**<br>Year 7 Autumn 2 pillar drill work. Year 8 Summer 1 wood joint work. Introduction of cross halving joint. Reinforcing accuracy and tolerances. Use of different wood finishes for aesthetic appeal.<br><br>**Building towards...**<br>students being able to use chisels safely and independently with an aim of creating finger joints in year 10. Students will have a greater understanding of different surface finishes and be able to select the appropriate one depending on material used. |

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| **Autumn 2** | Clock project | **Technical knowledge:**<br>Designing for a specific customer. Use of analogue clock mechanisms. Understanding relief design.<br><br>**Design:**<br>Creating an individual, themed design using a selection of materials. All designs need to include relief (parts that project from the flat background) Students should create a specification of at least 5 points that their product must do. Measurements planned.<br><br>**Making:**<br>Selection of appropriate materials. Students to use their previous experience to select processes and tools to turn their selected materials into their individual design.<br><br>**Evaluate:**<br>All tools and materials used should be named. Description of the making process written in full sentences and choices that students made should be justified. Finished product evaluated against specification. Improvements considered and personal targets set. | ● Research<br>● Customer needs and wants<br>● Evaluating existing products<br>● Finishes<br>● Relief design<br>● Design Process<br>● Properties of materials<br>● Design proposal | **Building on…..**<br>Creative design from Year 8 Summer 2. Multiple, detailed designs explored in more depth. Research from year 8 work now developed to provide inspiration for design work. Material knowledge from year 7 and 8 used to help selection of materials for an individual design.<br><br>**Building towards...**<br>by working on a project with no set outcome, students gain the confidence and experience to use their own creativity when creating a product. Students begin to be able to problem solve and develop their own ideas. |
| **Spring 1** | Copper candle holder | **Technical knowledge:**<br>Soldering using the forge/ torch. Using flux to clean a metal to help the joining process. Understanding different metal joining processes depending on material.<br><br>**Design:**<br>Creating a design themed around nature. Understanding the best way to combine two different materials in an aesthetical way (pine and copper) | ● Copper<br>● Source of materials<br>● Stock form<br>● Soldering<br>● Pipe cutter<br>● Pipe bender<br>● Metal finishes<br>● Design inspiration | **Building on…..**<br>Year 8 Autumn 2 metal work. Introduction of new material (copper). Year 8 Spring 2 soldering work. Students develop their material knowledge to discuss source of different metals and their stock form in retail.<br><br>**Building towards...** |

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| | | **Making:**<br>Using a silhouette template to create a wooden component. Introduction to new tools for cutting and shaping metal (pipe cutter and bender) Accurate marking and measuring of materials. Being able to securely join copper pieces using solder.<br><br>**Evaluate:**<br>All tools and materials used should be named. Description of the making process written in full sentences and choices that students made should be justified. Improvements considered and personal targets set. Peer assessment of finished product. | | Students having a more in depth knowledge of the properties of metals used in DT. Being able to include a mixture of materials when designing a product. |
| **Spring 2** | Mono amplifier project | **Technical knowledge:**<br>Using a soldering iron to create a working circuit. How a speaker works. The function of resistors and capacitors in a circuit.<br><br>**Design:**<br>Students are briefed to make a housing for their speaker circuit and are then encouraged to be creative to design a solution. Design ideas are researched and design proposals are developed to include materials and measurements.<br><br>**Making:**<br>Students choose materials and tools that they will use to build their design. Emphasis on creativity and quality of end product.<br><br>**Evaluate:**<br>All tools and materials used should be named. Description of the making process written in full sentences and choices that students made should be justified. Evaluated against a specification. | ● Electronic components<br>● Circuits<br>● Soldering<br>● Researching a design<br>● Design proposal<br>● Planning<br>● Cutting list<br>● CAD<br>● CAM | **Building on…..**<br>Year 8 Spring 2 electronics. More advanced circuitry introduced. Developing electronic component knowledge with work in Science. Carries on research and compilation of a design proposal looked at in Autumn 2. Use of CAD and CAM to create components for speaker housing.<br><br>**Building towards...**<br>by encouraging creativity and independence students are beginning to prepare for larger KS4 projects leading to the NEA in year 11. By including more research and planning before practical work there is a greater understanding of the amount of paperwork required in KS4. Students beginning to consider their options path for year 10. |

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| | | Improvements considered and personal targets set. | | |
| **Summer 1**<br>**Summer 2** | Simplified GCSE course work style project | **Technical knowledge:**<br>Portfolio writing.<br>Design contexts.<br>Task analysis.<br>Investigating a design<br>Problem.<br>Planning a solution.<br><br>**Design:**<br>After investigating a design problem, students will need to come up with a design proposal for a product to help. Investigation of existing products leads to development of ideas. Designs need to be evaluated with the best idea taken forward for production.<br><br>**Making:**<br>Students can use any materials or tools to create a prototype and final product. Their product should be a functional example of their design proposal and show hoe iterative design has been applied from the initial prototype.<br><br>**Evaluate:**<br>A diary of making, showing photographs of what was done should be evidenced.Finished product should be evaluated against specification and testing should be shown. Analysis of finished product will explain if a practical solution has been created or if the design needs refinement. | ● Design contexts<br>● Task analysis<br>● Finding a design problem<br>● Needs of user<br>● Investigating existing products<br>● ACCESSFM<br>● Research<br>● Brief writing<br>● Specification<br>● Multiple design ideas<br>● Design evaluation<br>● Design development<br>● Modeling<br>● Diary of making<br>● Improvements<br>● Testing<br>● Evaluation | **Building on…..**<br>Design work carried out throughout year 9. Students are encouraged to use their previous experiences to investigate a context and research and plan a product to solve a real world problem. Independence and health and safety skills learnt throughout KS3 used when students are carrying out practical work.<br><br>**Building towards...**<br>by completing the work on this project, students will have gone through a shortened example of the KS4 coursework. They will now understand the balance between theory, written work and practical work that will be carried out in KS4 and be better equipped to choose their options for year 10. |