DESIGN & TECHNOLOGIES 7-10 CURRICULUM OVERVIEW

	Year 7	Year 8	Year 9A	Year 10 (Wood)
TERM 1 WEEK 1	**Unit 1: Bridge Building** In this unit students will engage with the basics of the engineering behind bridge design, their uses and compression and tension. Students will design and make several different structures to increase their knowledge and understanding of these concepts. Students will utilise Bridge Designer 3D software to create and test virtual structures.	**Unit 1: Workshop Safety**	**Unit 1: Wood, CAD, Safety** Students are introduced to workshop safety with specific attention to specialised equipment. Students are expected to complete machine safety sheets after being introduced to each machine. Balance Toy - Kangaroo this Unit students learn about pivot points, weight Transfer and gravitational forces during the construction of a toy that uses a gradient to create motion Lathe Task -Candle Stick Design and Construction Task	**Unit 1: Stool Practical** In this unit students explore modern framing methods to join timber. Students will learn how to use stationary machines to dress timber to size while constructing a solid timber small stool project. Specific machines include the planer jointer, thicknesser, saw stop, drill press, compound saw.
WEEK 2		**Unit 2: Dice, Note Roll Holder, Helicopter and CAD** In this unit students will create, test, analyse and modify a dice using CAD software. Students will be introduced to design principles and will use them in the creative process. Students produce x 3 woodwork projects during this unit		
WEEK 3			**Unit 2: Paper Towel Design and Construction Task** Students produce a design folio for a paper towel dispenser system. Students develop a solution that is unique and custom to their needs. Students then produce the design paper towel dispenser form timber. Using newly acquired skills from Unit 1.	**Unit 2: Small Shelf Cabinet Practical** In this unit students explore modern carcase jointing methods to join timber. Students will learn how to use the panel saw to prepare particleboard sheet into dimensioned panels, learn veneer edge treatment techniques and then use the plate joiner for jointing. Other techniques include rebate jointing and fitting plywood using the router, disc sander and planer jointer.
WEEK 4				
WEEK 5				
WEEK 6				
WEEK 7				
WEEK 8				
WEEK 9				**Unit 3: Design Task - Coffee Table** In this unit students produce a design folio and address specific criteria relating to product design and function. They investigate and evaluate existing concepts and devise solutions through production drawings leading towards a final design concept.
WEEK 10	**Unit 2: House Design** In this unit, students will explore key components of modern house design. taking into consideration factors such as cost, sustainability and functionality. Students will make digital scale model of their own house, developing spatial awareness, scale and measurement skills. Students then design a dream home based on the various factors covered earlier in the unit.			
WEEK 11		**Unit 3: Toy Train Balance Toy DFE** This unit focuses on understanding how the selection and use of different manufacturing technologies can manipulate and influence the design of artefacts. Students develop safe workshop practices and a degree of proficiency in jointing.		
TERM 2 WEEK 1			**Unit 3: Sheetmetal - Hinged Tipper Construction Task** Students produce a sheet metal tipper design with a tailgate. Practical skills involve using marking out techniques, the Panbrake and guillotine for cutting and bending operations.	
WEEK 2				**Unit 4: Design Production Realisation - Coffee table** Students are to produce the product designed in Unit 3.This will involve working independently to utilise machinery available using the practical skills developed during the previous 2 skills tasks. Students are expected to set machinery and work safely and to a high standard in the development of the design solution. Evaluation and reflection will form part of the realisation assessment.
WEEK 3		**Unit 4: Digital Technologies** Students' skills in a general-purpose programming language to build the necessary skills to design and produce a simple computer game or quiz. Students develop necessary skills in sequence, selection and iteration as well as how to use Boolean operators. Students will design and produce a solution that meets user requirements. Students will also develop the necessary understanding of why protocols are important for communication between devices on a network, how data is represented for text, images, and sound.		
WEEK 4			**Unit 4: Truck and Trailer Construction Task** Students produce a wooden truck from the teaching aid provided. Students prepare materials to size and use modern techniques to construct the project. Use of the holesaw and Forstner bit for drilling operations and impact driver, screws and PVA glue for the major construction. Students then design and produce a trailer to suit the truck project using the skills developed	
WEEK 5				
WEEK 6	**Unit 3: Designing and Printing a Phone Dock** Students will comprehensively engage in the design cycle to meet an established need, generate ideas using CAD software, 3D print their designed solution and evaluate. Student' s will research three existing products to clarify their design thinking, before suggesting three design ideas and discuss these alternatives with their peers and teacher. Students design their final design using CAD software (Fusion360, Solidworks, TinkerCAD, Sketchup) and create a .stl file in preparation for printing. Students then print and evaluate their product against their design (success) criteria. Students may make changes to their file after evaluation and reprint as required.			
WEEK 7				
WEEK 8				
WEEK 9				
WEEK 10				
TERM 3 WEEK 1			**YEAR 9 (B)** **Unit 1: Sheetmetal** In this unit students are introduced to safety with specific attention to specialised equipment. Students are expected to complete Machine. Safety Sheets after being introduced to each machine. Projects include a dust pan.	**YEAR 10** (Metal) **Unit 1: Introduction to Machines and Safety**
WEEK 2			**Unit 2: CAD Design - Bottle Opener** In this Unit students produce a design brief with unique criteria specified to their needs. They produce a design folio and investigate existing designs and analyse for effectiveness. Students then develop concept drawing leading towards a final design solution. They produce a 3D printed prototype of their design.	**Unit 2: Vice Practical** In this unit students explore modern fabrication methods to join mild steel. Students will learn how to use stationary machines to prepare material to size while constructing a small Engineers Vice Project. Specific machines include the Horizontal Bandsaw, Drill Press, MIG welder, Lathe and Spray Gun
WEEK 3				
WEEK 4				**Unit 3: BBQ Practical** In this unit students will produce a small camping BBQ with a grill. Students will have a set size plate and they are to use Angle Iron and flat steel to frame the project. They are to use tack and stitch welding techniques to hold the project square. Students have design control for the manufacture of the carry handles and folding leg mechanism.
WEEK 5				
WEEK 6			**Unit 3: Metal Work** In this unit students are introduced to workshop safety with specific attention to specialised equipment. Students are expected to complete Machine Safety Sheets after being introduced to each machine. Students produce a bottle opener and metal components to compliment projects made in other units	
WEEK 7				**Unit 4: Shovel Design Task** In this unit students establish criteria to include into a Design Brief in the form of constraints. They investigate existing concepts and analyse their effectiveness. Students then investigate appropriate materials, tooling available and potential fabrication processes. Working drawings then lead towards a final CAD concept and production flow chart. role of kitchen technologies to enhance the
WEEK 8				
WEEK 9				
WEEK 10				
TERM 4 WEEK 1			**Unit 4:Model making - Wood/Metal Components** In this unit students are introduced to workshop safety with specific attention to specialised equipment. Students are expected to complete Machine Safety Sheets after being introduced to each machine. Students combine skills learnt in previous units to produce toy models from both timber, steel & 3D printing.	**Unit 5: Shovel Production Component** Students produce the shovel concept designed in Task 3. Students use tube steel and sheet metal for the majority of the design. Machinery includes the use of the Metalmaster Guillotine and Panbrake to produce strength fold bends and the MIG welder for fabrication.Students will analyse the final concept against the additional design criteria in the form of a written evaluation.
WEEK 2				
WEEK 3				**Unit 6: Car Investigation Task** In this unit students investigate the costs associated with the purchase and running of a vehicle for 12 months in South Australia. Students analyse advertainments, identify criteria required for insurance, investigate government charges and maintenance schedules. Students then form a report with recommendations
WEEK 4				
WEEK 5			**Unit 5: Wine Rack Design and Construction Task** Students produce a design folio for a Wine bottle holding system. Students develop a solution that is unique and custom to their needs using tools and equipment they re familiar with. Students also learn to use different jointing techniques and incorperate the CNC Router	**Unit 7: Engine Rebuild Task** In this unit students are introduced to the 4-stroke engine cycle. Students then rebuild small engines to gain a further understanding of how systems work. Students are expected to follow workshop safety procedures during practical sessions. Students then reflect on learning experiences through an evaluation process. d
WEEK 6				
WEEK 7				**Unit 8: Automotive Components Task**
WEEK 8				**Unit 9: Automotive Service Unit**
WEEK 9				