Coleambally Central School	STEM Stage 4 Program
Year: 7	
Unit: Make It Work	**Duration:** 10 weeks
Unit Context Children throughout the world enjoy playing with toys. Some toys are very cheap, some are very expensive, and some are even improvised. Internationally the toy market is $84 billion per annum. Every year new toys are released, some become a fad and some remain popular. Toy companies are always looking to develop the next big thing.	**Outcomes** Science: SC4-10PW; SC4-11PW; SC4-5WS; SC4-8WS; SC4-1VA Mathematics: MA4-6NA; MA4-7NA; MA4-12MG; MA4-13MG; MA4-14MG; MA4-16MG; MA4-17MG; MA4-18MG; MA4-1WM; MA4-2WM; MA4-3WM Technology: 4.1.1; 4.1.3; 4.2.1; 4.3.1; 4.3.2; 4.5.1;4.5.2; 4.6.1

Timetable Model

Subject	Science	TAS Technology (Mandatory)	Mathematics
Periods Per Cycle (fortnight)	**5 periods** (2 additional periods to be taught by another science staff member)	**5 periods**	**7 periods**
Integration	Same teacher as Technology (Mandatory) Some lessons to be conducted in the Technology workshop	Same teacher as Science Some lessons will be conducted in the Science Laboratory	Mathematics teacher Integration of some lessons into the Technology workshop Mathematics lesson will be timetabled into the science labs
Teachers	Rodney Hughes	Rodney Hughes	Brett Burton

Assessment Task: Students are to design and make a toy for a toy company						
Learning across the Curriculum – learning experiences mapped against the learning across the curriculum areas						
Literacy	**Numeracy**	**ICT Capability**	**Critical and Creative Thinking**	**Ethical Behaviour/ Sustainability**	**Personal and Social Capability**	**Australia's Engagement with Asia**
• Writing Scientific reports • Compose explanatory texts • Communication using a range of scientific terminology • Using subject specific language and terms • Document procedures in a meaningful way • Write and evaluate a range of tasks • Read follow and interpret instructions	• Measurement • Data analysis • Create and use graphs that represent data • Derive and use equations created from graphical data • Analyse the relationships between scientific quantities	• Use data loggers or smart devices to gather data created by experimentation • Use spread sheets to obtain and create graphs • Use CAD (computer aided drafting)	• The composition of group activities and other open ended tasks • Solving problems created by a Design Brief	• Knowing that sustainability is impacted by the actions of people • Understanding some of the issues related to the use of others intellectual property	• Working collaboratively to participate in scientific investigations • Working as a team to overcome design problems	• Able to discuss issues of trade • Students gain an understanding of toy manufacturing in Asia • An awareness of work conditions in developing Asian nations

General Capabilities: *(See Teaching and Learning Program to identify links to General Capabilities)*

Learning Across the curriculum used in this document are from the Board of Studies Teaching and Educational Standards (BOSTES) NSW http://syllabus.bostes.nsw.edu.au/mathematics/mathematics-k10/learning-across-the-curriculum/

The cross-curriculum priorities:

- Aboriginal and Torres Strait Islander histories and cultures
- Asia and Australia's engagement with Asia
- Sustainability

The general capabilities:

- Critical and creative thinking
- Ethical understanding
- Information and communication technology capability
- Intercultural understanding
- Literacy
- Numeracy
- Personal and social capability

Other learning across the curriculum areas:

- Work and enterprise

Syllabus Outcomes:

The outcomes used in this document are from the Board of Studies Teaching and Educational Standards (BOSTES) NSW. http://www.boardofstudies.nsw.edu.au/syllabus_sc/

Task Outline: Students are to design and make a toy for a toy company. The toy must utilise powered movement. The toy must be visually appealing, safe and appropriate to an identified age group and gender if applicable.

Teaching and Learning Sequence

Week	Science	Mathematics	Technology (Mandatory)
1	Safety	Safety Introduction to rates and ratios	Safety Introduction to the student folio
2	Lateral thinking Vs Linear Thinking	Introduction to sketching/drawing Rates and ratios	Introduction to sketching and drawing Lateral thinking Vs Linear thinking + Six hats
3	Students to commence documenting Ongoing evaluation Testing of Materials	Ideas generation Sketching workshop Drawing sketch Properties of quadrilaterals and perimeter	Brainstorming Ideas generation Sketching workshop Work on the folio Students documenting Ongoing evaluation
4	Ongoing evaluation Student Folio Testing of materials	Ongoing evaluation Perimeter Area Costs of project	Project Management worksheets and concept continue to work on: • Designs • Practical Project • Student Folio • Ongoing Evaluation
5	Designer study will be commenced practical work	Designer study will be commenced Project management Area and volume	Continue with: • Practical Work • Student Folio • Project Management Designer study will be commenced

6	Continue with designer study. Project management audit to ensure compliance. Practical work	Continue with designer study. Project management audit to ensure compliance. Measurement of materials	Continue with: • Practical Work • Student Folio • Designer Study Project management audit to ensure compliance.
7	Class will commence testing and evaluation of the projects.	Folio Measurement of materials Perimeter, area and costs Pythagoras Theorem Angle relationships	Continue with: • Practical Work • Student Folio • Project Management
8	Testing of solutions: • Do they do as they are designed? • Will they operate in the environment in which they will be used?	Testing of projects Failure or success? Can we measure this?	Continue with: • Practical Work • Student Folio • Project Management Class will commence testing and evaluation of the projects.
9	1. Impact on society 2. Impact on environment 3. Suitability of the solution for purpose 4. PMI (Plus / Minus / Interesting) 5. What would I do differently if starting this project again?	1. Suitability of the solution for purpose 2. PMI (Plus / Minus / Interesting) 3. What would I do differently if starting this project again?	Rectification and fault finding will occur. Folios will be checked and students will ensure that all parts of the folio are up to date. Students will start to write evaluations that include: 1. impact on society 2. Impact on environment 3. Suitability of the solution for purpose 4. PMI (Plus / Minus / Interesting) 5. What would I do differently if starting this project again?
10			Students to tidy up and complete their project and Folio prior to assessment.

Science

Syllabus Outcome	Content	Teaching and learning Strategies ALARM for Learning Activity	Registration
SC4-10PW A student describes the action of unbalanced forces in everyday situations. SC4-5WS A student collaboratively and individually produces a plan to investigate questions and problems. SC4-8WS A student selects and uses appropriate strategies, understanding and skills to produce creative and plausible solutions to identified problems.	PW1Change to an object's motion is caused by unbalanced forces acting on the object. (ACSSU117) Students: a. identify changes that take place when particular forces are acting b. predict the effect of unbalanced forces acting in everyday situations c. describe some examples of technological developments that have contributed to finding solutions to reduce the impact of forces in everyday life, e.g. car safety equipment and footwear design d. analyse some everyday common situations where friction operates to oppose motion and produce heat e. Investigate factors that influence the size and effect of frictional forces PW2 The action of forces that act at a distance may be observed and related to everyday situations. Students: a. use the term 'field' in describing forces acting at a b. identify ways in which objects acquire electrostatic charge	**Strategies** • Brainstorm ideas on forces as a class – What are they? What do they do? – Examples of forces – Compare contact and non-contact forces – Tabulation of data/information • Practical activities • Electrostatic force Students move paper and a water with Perspex and ebonite rods, use electrostatics kit. Key terms – attraction, repulsion • Friction Students test effect of different surfaces on rate at which an object slides on a ramp Students use data loggers to measure time • Gravity Students measure the mass and weight of various objects Mass vs weight – students undertake calculations using F=ma • (Air) resistance Students construct parachutes and test effect on the time taken for an object to fall with a parachute against a control • Practical competition Students construct and model a 'bicycle helmet' out of a limited number of straws to save a 'brain' (egg)	

	c. describe the behaviour of charged objects when they are brought close to each other d. investigate everyday situations where the effects of electrostatic forces can be observed, e.g. lightning strikes during severe weather and dust storms i. investigate how magnets and electromagnets are used in some everyday devices or technologies used in everyday life	**ALARM** Identify/Name: • What is a force? • List common forces. Describe: • What does a force do? • What do we use forces for? Explain: • How is an unbalanced net force created? Anaylse: • Compare similarities and differences between contact and non-contact forces Assess: • What does a force lead to? • Why do forces enable change? Critically Assess: • What are the positives of a force? • What are the negatives of a force? Evaluate: • What affect does a force have? Critically Evaluate: • What are the advantages of forces? • What are the disadvantages of forces? Appreciate: • Evaluate the Impact of forces on our everyday lives.	

SC4-11PW discusses how scientific understanding and technological developments have contributed to finding solutions to problems involving energy transfers and transformations. SC4-5WS collaboratively and individually produces a plan to investigate questions and problems. SC4-8WS A student selects and uses appropriate strategies, understanding and	PW3Energy appears in different forms including movement (kinetic energy), heat and potential energy, and causes change within systems. (ACSSU155) Students: a. identify objects that possess energy because of their motion (kinetic) or because of other properties (potential) b. describe the transfer of heat energy by conduction, convection and radiation, including situations in which each occurs e. investigate some everyday energy transformations that cause change within systems, including motion, electricity, heat, sound and light Appreciates the importance of science in their lives and the role of scientific inquiry in increasing understanding of the world around them	**<u>Strategies</u>** • Brainstorm ideas on Energy as a class – What is it? What does it do? – Examples of energy • Students investigate energy transformations in everyday situations including: – Electric circuits and motors (electrical, light, sound, kinetic) Inefficiencies – heat created – Combustion – Bunsen burners used to heat water (chemical, heat) Inefficiencies – light, sound also produced by combustion of fuel in Bunsen burner • Students conduct a second-hand investigation on: – efficiencies in energy conversions in different technologies – how efficiencies have been addressed by the application of science/technology – benefits of increased efficiencies **<u>Alarm</u>** Identify/Name: • What is energy? • What does it do? Describe: • Describe examples of energy conversions Explain: • What changes take place during energy conversions? Discuss: • What are the effects of inefficiencies in a named energy transformations? - Positive - Negative Assess: • What do the inefficiencies lead to? Evaluate: • How significant are the inefficiencies?	

skills to produce creative and plausible solutions to identified problems. SC4-1VA develop an appreciation of the contribution of science to finding solutions to personal, social and global issues relevant to their lives now and in the future		Appreciate: • How do inefficiencies affect our everyday lives?	

Mathematics

Syllabus Outcome	Content	Learning Activity	Resources	Registration
MA4-6NA A student solves financial problems involving purchasing goods MA4-1WM A student communicates and connects mathematical ideas using appropriate terminology, diagrams and symbols MA4-2WM A student applies appropriate mathematical techniques to solve problems	• solve problems involving discounts, including calculating the percentage discount • evaluate special offers, such as percentage discounts, 'buy-two-get-one-free', 'buy-one get-another-at-half-price', etc., to determine how much is saved (Communicating, Problem Solving) • calculate 'best buys' by comparing price per unit, or quantity per monetary unit, e.g. 500 grams for $4.50 compared with 300 grams for $2.75 • investigate 'unit pricing' used by retailers and use this to determine the best buy (Problem Solving) • recognise that in practical situations there are considerations other than just the 'best buy', e.g. the amount required, waste due to spoilage (Reasoning)	• Use their design to find what the cost of material is to build their toy. - is it cost effective is there any other material that will reduce costs	Text book Internet Price lists	

MA4-12MG A student calculates the perimeters of plane shapes and the circumferences of circles	• find the perimeters of quadrants and semicircles • find the perimeters of simple composite figures consisting of two shapes, including quadrants and semicircles • develop and use the formulas to find the circumferences of circles in terms of the diameter d or radius r: Circumference πd Circumference 2πr	• define formulas for perimeter of plane shapes and circle • Use perimeter to aid the design process - size of toy, is it in proportion? - Is there material available	Text book Internet to research toys	
MA4-13MG A student uses formulas to calculate the areas of quadrilaterals and circles and converts between units of area MA4-1WM A student communicates and connects mathematical ideas using appropriate terminology, diagrams and symbols	• Establish the formulas for areas of rectangles, triangles and parallelograms and use these in problem solving (ACMMG159) • develop and use the formulas to find the areas of rectangles and squares: – where l is the length and b is the breadth (or width) of the rectangle – where s is the side length of the square	• define formulas area of plane shapes and circle • Use area to aid in the design process – size of toy, is it in proportion? – is there material available?	Text book Internet to research toys	

MA4-2WM A student applies appropriate mathematical techniques to solve problems	• explain the relationship that multiplying, dividing, squaring and factoring have with the areas of rectangles and squares with integer side lengths (Communicating) • explain the relationship between the formulas for the areas of rectangles and squares (Communicating) • compare areas of rectangles with the same perimeter (Problem Solving) • develop, with or without the use of digital technologies, and use the formulas to find the areas of parallelograms and triangles, including triangles for which the perpendicular height needs to be shown outside the shape: – where b is the length of the base and h is the perpendicular height – where b is the length of the base and h is the perpendicular height	• Define formulas for volume of prisms and cylinders • Use formulas to aid the design process e.g. Size of toy, is it in proportion? Is there material available?	Text book Internet to research toys	

MA4-14MG A student uses formulas to calculate the volumes of prisms and cylinders, and converts between units of volume MA4-1WM A student communicates and connects mathematical ideas using appropriate terminology, diagrams and symbols MA4-2WM A student applies appropriate mathematical techniques to solve problems	• Develop the formulas for the volumes of rectangular and triangular prisms and of prisms in general; use formulas to solve problems involving volume • develop the formula for the volume of prisms by considering the number and volume of 'layers' of identical shape: Volume of prism = base area × height leading to V=Ah • recognise the area of the 'base' of a prism as being identical to the area of its uniform cross-section (Communicating, Reasoning) • find the volumes of prisms, given their perpendicular heights and the areas of their uniform cross-sections • find the volumes of prisms with uniform cross-sections that are rectangular or triangular • solve a variety of practical problems involving the volumes and capacities of right prisms • Calculate the volumes of cylinders and solve related problems • develop and use the formula to find the volumes of cylinders: Volume of cylinder = πr2h where r is the length of the radius of the base and h is the perpendicular height			

	• recognise and explain the similarities between the volume formulas for cylinders and prisms (Communicating) • solve a variety of practical problems involving the volumes and capacities of right prisms and cylinders, e.g. find the capacity of a cylindrical drink can or a water tank			
MA4-16MG A student applies Pythagoras' theorem to calculate side lengths in right- angled triangles, and solves related problems MA4-1WM A student communicates and connects mathematical ideas using appropriate terminology, diagrams and symbols MA4-2WM A student applies appropriate mathematical techniques to solve problems MA4-3WM A student recognises and explains mathematical relationships using reasoning	• Investigate Pythagoras' theorem and its application to solving simple problems involving right-angled triangles • identify the hypotenuse as the longest side in any right-angled triangle and also as the side opposite the right angle • establish the relationship between the lengths of the sides of a right-angled triangle in practical ways, including with the use of digital technologies • describe the relationship between the sides of a right-angled triangle (Communicating) • use Pythagoras' theorem to find the length of an unknown side in a right-angled triangle • explain why the negative solution of the relevant quadratic equation is not feasible when solving problems involving Pythagoras' theorem (Communicating, Reasoning)	• Demonstrate with string how Pythagoras theory works • Cut out triangles to reinforce that they fit the formula • Define and apply formula	String Triangle work sheet	

	• write answers to a specified or sensible level of accuracy, using an 'approximately equals' sign, i.e. ≒or ≈ • Solve a variety of practical problems involving Pythagoras' theorem, approximating the answer as a decimal • apply Pythagoras' theorem to solve problems involving the perimeters and areas of plane shapes (Problem Solving) • identify a Pythagorean triad as a set of three numbers such that the sum of the squares of the first two equals the square of the third • use the converse of Pythagoras' theorem to establish whether a triangle has a right angle			
MA4-17MG A student classifies, describes and uses the properties of triangles and quadrilaterals, and determines congruent triangles to find unknown side lengths and angles	• investigate the properties of special quadrilaterals (parallelogram, rectangles, rhombuses, squares, trapeziums, and kites), including whether: – the opposite sides are parallel – the opposite sides are equal – the adjacent sides are perpendicular – the opposite angles are equal – the diagonals are equal – the diagonals bisect each other – the diagonals bisect each other at right angles – the diagonals bisect the angles of the quadrilateral	• Define properties of quadrilaterals and triangles • Use these properties to ensure that the design of the toy is accurate. • Use the properties to make sure that the end product fits the design		

MA4-1WM A student communicates and connects mathematical ideas using appropriate terminology, diagrams and symbols MA4-2WM A student applies appropriate mathematical techniques to solve problems MA4-3WM A student recognises and explains mathematical relationships using reasoning	• use techniques such as paper folding or measurement, or dynamic geometry software, to investigate the properties of quadrilaterals (Problem Solving, Reasoning) • sketch and label quadrilaterals from a worded or verbal description (Communicating) • classify special quadrilaterals on the basis of their properties • describe a quadrilateral in sufficient detail for it to be sketched (Communicating)		Textbook Toy Design	
MA4-18MG A student identifies and uses angle relationships, including those related to transversals on sets of parallel lines	• Use the language, notation and conventions of geometry • define, label and name points, lines and intervals using capital letters • use the common conventions to indicate right angles and equal angles on diagrams • Recognise the geometrical properties of angles at a point	• Define parallel and transversals Use the properties of parallel lines and traversals to aid in the development and design of the toy	Worksheet Toy Design	

	• identify and name right angles, straight angles, angels of complete revolution and vertically opposite embedded in diagrams • recognise that adjacent angles can form right angles, straight angles and angles of revolution (Communicating, Reasoning) Identify corresponding, alternate and co-interior when two straight lines are crossed by a transversal • use the common conventions to indicate parallel lines on diagrams • identify, name and measure alternate angle pairs, corresponding angle pairs and co-interior angle pairs for two lines cut by a transversal • Investigate conditions for two lines to be parallel (ACMMG164) • explain why two lines are either parallel or not parallel, giving a reason (Communicating, Reasoning) • Solve simple numerical problems using reasoning • find the sizes of unknown angles embedded in diagrams using angle relationships, including angles at a point and angles associated with parallel lines, giving reasons			

MA4-7NA A student operates with ratios and rates, and explores their graphical representation	• use ratios to compare quantities measured in the same units • write ratios using the : symbol, e.g. 4:7 • express one part of a ratio as a fraction of the whole, e.g. in the ratio 4:7, the first part is 411 of the whole (Communicating) • simplify ratios, e.g. 4:6=2:3, 12:2=1:4, 0.3:1=3:10 • Solve a range of problems involving ratios and rates, with and without the use of digital technologies • interpret and calculate ratios that involve more than two numbers • solve a variety of real-life problems involving ratios, e.g. scales on maps, mixes for fuels or concrete • use rates to compare quantities measured in different units • convert given information into a simplified rate, e.g. 150 kilometers travelled in 2 hours = 75 km/h	• Demonstrate how rates and ratios are similar to fractions • Uses rates and ratio in the design process – Students can scale down their toy, basing their toy on a bigger item e.g. car, plane		

Technology:

Syllabus Outcome	Students Learn About	Students Learn To	Learning Activity	Resources	Registration
4.1.1 A student applies design processes that respond to needs and opportunities in each design project.	• design processes including: – analysing needs, problems and opportunities – establishing criteria for success – researching generating creative ideas – communicating ideas experimenting and testing ideas – risk management managing resources producing design solutions – evaluating ideas and Solutions, needs and opportunities in – the areas of study	• establish a design process that responds to an identified need and opportunity •apply a design process when developing quality solutions for each design project •establish criteria for successful achievement of needs and opportunities •record design processes and decision making in a design folio for each design project. •consider short-term and long-term consequences of design in the design process •evaluate design processes •identify needs and opportunities that require solutions in the areas of study	• Introduction to designing "A Simple Bottle Opener", Brainstorming, Introduction to sketching and drawing skills. • Linear Vs Lateral thinking / Six Hats theory. • Groups work-ideas onto butchers paper Sketching, drawing and documenting ideas	Butchers paper, internet images, Coloured paper to make hats from. Folio Workbook.	

4.1.3 A student identifies the roles of designers and their contribution to the improvement of the quality of life.	• relationship of design to the areas of study of Built Environments, Products, and Information and Communications • different design specialisations • the nature of the work of designers as individuals and as collaborators • the contributions of females and males who engage in • design and technology • work and training opportunities for people who engage in design and technology in each area of study	• identify relationships of design to each area of stud • describe the nature of each of the areas of study of Built Environments, Products, and Information and Communications • identify a range of design specialisations relevant to each area of study • apply group work and collaborative strategies to project development • identify the contribution the • designer makes to the improvement of everyday life • explore work and training opportunities for people who engage in design and technology relevant to each area of study	• Study of a known designer/entrepreneur to gain knowledge, understanding and appreciation of the design processes, design theory and the work that designers do. – The internet will provide ample information. At this stage we will look at Elon Musk and his companies and products. Tesla motors, Tesla Power-Wall, Space X, and Solar City.	The internet and appropriate work sheets for the mentioned organisations.	

4.2.1 A student generates and communicates creative design ideas and solutions.	• methods used to generate creative design ideas including – mind mapping – brain storming – sketching and drawing – modelling – experimenting and testing • use of design folio to record and reflect on design ideas and decisions • communication methods including – drawings, sketches and models – written reports – oral presentations – digital presentations • communication methods suitable for specific audiences including – users and clients – technical experts – peers • using ICTs to plan, develop and document design projects	• use a variety of methods to generate creative design ideas for each design project • use a design folio to record and reflect on design ideas and decisions • sketch, draw and model to aid design development •manipulate images with tools such as editing, resizing, grouping, aligning and positioning • communicate information appropriate to specified audiences • compose a design folio for a specific audience in electronic format including features such as tabs, indents, headers and footers, margins and line and paragraph spacing and using appropriate layout and graphic design	• Skills in researching in using books and the Internet • Groups work-ideas onto butchers paper Sketching, drawing and documenting ideas • Testing materials for suitability, strength, durability etc., etc.	The Internet, Library books, Text books, butchers paper, and sample materials. Folio workbook.	

		• use ICTs to communicate information including saving a document in various file types and storage locations from within the application •use word processing features including page numbering and page breaks, find and replace, word count, spell check and thesaurus, columns and sections, inserting text/objects/images			
4.3.1 A student applies a broad range of contemporary and appropriate tools, materials and techniques with competence in the development of design projects.	For outcome 4.3.1 refer to pp 26–40 of the syllabus (Essential technologies-specific content)	For outcome 4.3.1 refer to pp 26–40 of the syllabus (Essential technologies-specific content)	• Select and use materials suitable to the students nominated toy design. • Select and use tools appropriate to the nominated design. • Read and interpret a range of sketches, drawings, plans and other graphical images and representations. • Work safely with a range of equipment. • Utilise appropriate techniques when making. • Use PPE appropriately.	Materials suitable for making toys. Tools. Workshop equipment. Plans, sketches and drawings. Folio workbook.	

4.3.2 A student demonstrates responsible and safe use of a range of tools, materials and techniques in each design project.	• risk management strategies • responsible • behaviour in working environments • Occupational Health and Safety practices the safe and responsible use of materials, tools and techniques in each design project • maintenance of tools and equipment	• manage risk when developing design projects • use tools, materials and techniques in a responsible and safe manner in each design project. • maintain tools and equipment including computer equipment	• Use safety books to teach and assess safety rules and understanding of the issues related to safety. • Demonstrate and model the correct use of PPE and why it is important. • Demonstrate the correct use of hand and simple power tools, involve students in these demonstrations. • knowledge and understanding of and skills in the responsible selection and safe use of materials, tools and techniques	Safety Booklets YouTube Safety Video (Singapore Education Department) PPE Tools and machinery. Folio workbook.	
4.5.1 A student applies management processes to successfully complete design projects.	• resource availability including – time – money – materials, tools and techniques – human resources including skills and expertise – other resources • management techniques including action, time and budget planning	• identify resource availability and apply realistic limitations to each project design • develop and apply action, time and budget plans in design projects	Teach students about the importance of managing materials in an efficient manner through the use of a materials cutting list and other lists related to materials. Students can learn to create charts that are designed to make the best use of - time- resources - materials. Students taught the importance of time management in the completion of projects.	Teacher generated worksheets and folio workbook.	

4.5.2 A student produces quality solutions that respond to identified needs and opportunities in each design project	• suitable materials, tools and techniques for design projects • skill development and refinement • construction steps that contribute to a quality solution • relationship of quality solutions to needs and opportunities and the criteria for success for each design project	• identify suitable materials, tools and techniques for each design project • practice and refine skills needed for design projects • apply a design process that responds to needs and opportunities for each design project • produce solutions reflecting quality standards appropriate to each design project	Students use the designing and making process to design and manufacture a complete and finished project that meets the requirements of Design Situation and Brief.	Using the stem processes and all of the resources contained within this program.	
4.6.1 A student applies appropriate evaluation techniques throughout each design project	• developing criteria for success as a tool for assessing design development and production • ongoing evaluation of design ideas and decisions	• apply criteria for success in decision making during the development of each design project • use criteria for success to reflect on the design process used and the solutions	• Evaluation is broken into multiple pieces: – Student self-evaluation. This occurs as the student progresses through their folio. Students need to asses each aspect of their project and then assess their projects based on a final assessment of the finished project.	Completed solutions and student folios	

	• final evaluation considering – design process used – design solutions – reflection on learning	• evaluate prior to, during and at completion of each design solution • self-assess and peer-assess design solutions	– The teacher will also assess the student's project and folio as separate pieces of work that are products of the design and making process.		

Unit Evaluation
Registration:
Class:
Signature:
Date:
Adjustments: