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| C:\Users\NELBATOORY\Desktop\2353_NSWED_STEM_LOGO.png**Integrated STEM Program**  **Rooty Hill High School Institute of Sport** |
| **School: Rooty Hill High School Class: Year 8 Term: 1 Year: 2016** |
| **UNIT TITLE** Rooty Hill High School Institute of Sport  **UNIT LENGTH** Term 1 - 75 minute periods, Fortnight Cycles - 6 per cycle Science, 1 Per Cycle Mathematics, 4 Per Cycle in Selected Technology Classes (ICT, Graphics) 2 per cycle in designated STEM classes where product will be collated.  **UNIT DESCRIPTION**  With rapid and continuing changes in the prominence of sport in Western Sydney, like the GWS Giants and Western Sydney Wanderers, as well as many NRL Teams, it is important that there are experts and understanding of best practice in the areas of Fitness, Sport Management and Sport Development.  This group task is to create a showcase and portfolio that includes a minimum of three products for the Rooty Hill Institute of Sport regarding their chosen topic/issue. At least 1 product will be incorporated from each of the areas:  - Fitness  - Sport Management  - Sport Development  **AREA OF STUDY** Information and communications  **DESIGN PROJECT** Design, produce and evaluate a portfolio of products towards an institute of sport. Students have great voice and choice about component units. |

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| **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/>  **Focus Outcomes**  ***Technology***  4.1.1 applies design processes that respond to needs and opportunities in each design project  4.3.2 demonstrates responsible and safe use of a range of tools, materials and techniques in each design project  4.6.1 applies appropriate evaluation techniques throughout each design project  **Contributing Outcomes**  ***Technology***  4.2.1 generates and communicates creative design ideas and solutions  4.3.1 applies a broad range of contemporary and appropriate tools, materials and techniques with competence in the development of design projects  ***Science***  SC4-4WS identifies questions and problems that can be tested or researched and makes predictions based on scientific knowledge  SC4-5WS collaboratively and individually produces a plan to investigate questions and problems  SC4-6WS follows a sequence of instructions to safely undertake a range of investigation types, collaboratively and individually  SC4-7WS processes and analyses data from a first-hand investigation and secondary sources to identify trends, patterns and relationships, and draw conclusions  SC4-8WS selects and uses appropriate strategies, understanding and skills to produce creative and plausible solutions to identified problems  SC4-9WS presents science ideas, findings and information to a given audience using appropriate scientific language, text types and representations  SC4-10PW describes the action of unbalanced forces in everyday situations  SC4-14LW relates the structure and function of living things to their classification, survival and reproduction  SC4-16CW describes the observed properties and behaviour of matter, using scientific models and theories about the motion and arrangement of particles  **Mathematics**  MA3-2WM selects and applies appropriate problem-solving strategies, including the use of digital technologies, in undertaking investigations  MA3-5NA selects and applies appropriate strategies for addition and subtraction with counting numbers of any size  MA4-3WM recognises and explains mathematical relationships using reasoning  MA4-13MG uses formulas to calculate the areas of quadrilaterals and circles, and converts between units of area  MA4-14MG uses formulas to calculate the volumes of prisms and cylinders, and converts between units of volume  MA4-19SP collects, represents and interprets single sets of data, using appropriate statistical displays |

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| **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/>   |  |  | | --- | --- | | **Cross-curriculum priorities** | | | AHC-ICON-Aboriginal Torres Strait Islander histories-300dpi | Aboriginal and Torres Strait Islander histories and cultures | | A-ICON-Asia Australias engagement with Asia-300dpi | Asia and Australia’s engagement with Asia | | S-ICON-Sustainability-300dpi | Sustainability | | **General capabilities** | | | CCT-ICON-critical creative thinking-300dpi | Critical and creative thinking | | EU-ICON-ethical understanding-300dpi | Ethical understanding | | ICT-ICON-300dpi | Information and communication technology capability | | IU-ICON-intercultural understanding-300dpi | Intercultural understanding | | L-ICON-literacy 300dpi | Literacy | | N-ICON-numeracy-300dpi | Numeracy | | PSC-ICON-personal social capability-300dpi | Personal and social capability | | **Other learning across the curriculum areas** | | | WE-work and enterprise-300dpi | Work and enterprise | |

| SCIENCE | | | | | |
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| Week | Outcome | Content | Integrated learning experiences | Evidence of learning/assessment strategies | Register/ **Evaluation** |
| **1** | SC4-10PW | PW1 Change to an object's motion is caused by unbalanced forces acting on the object.  a. identify changes that take place when particular forces are acting | **Do Now:** Using the video, Briefly explain Newton’s 3 laws of motion and give an example for each.  **Learning Activities:**   * 1. Do now activity   2. Deliver PowerPoint and discussion on Newton’s 3 laws of motions   3. Complete the ‘Finding the force’ and ‘Balanced and Unbalanced Forces’ worksheet   4. Re-cap the laws of motion | LESSON 1.  **Lesson Title:** Forces introduction  **Learning Intention:** Outline Newton’s 3 laws of motion and how they inform our knowledge of forces  **Success Criteria:**   * Draw arrows to represent the direction of forces * Classify examples of forces as balanced or unbalanced * Identify a force in everyday situations * Define Newton’s 3 laws of motion |  |
| **1** | SC4-10PW    SC4-7WS | PW1 Change to an object's motion is caused by unbalanced forces acting on the object.  b. predict the effect of unbalanced forces acting in everyday situations  e. [investigate](http://syllabus.bos.nsw.edu.au/glossary/sci/investigate/?ajax" \t "_blank" \o "Click for more information about 'investigate') factors that influence the size and effect of frictional forces  WS7.1 Students process data and information by:  b. using a range of representations to organise data, including graphs, keys, models, diagrams, tables and spreadsheets N-ICON-numeracy-300dpi | **Do Now:** - Complete the statements (in student worksheet)  **Learning Activities:**   1. Complete Do now activity 2. Power Point Teaching- Students should summarise their learning from this teaching by completing a Venn diagram on balanced and unbalanced forces 3. Tug ‘O’ war practical. This activity is focused on demonstrating balanced and unbalanced forces 4. Reflection- How does Tug ‘O’ war relate to Newtons Law of motion? | LESSON 2.  **Lesson Title:** Balanced and Unbalanced Forces  **Learning Intention:** Relate Newton’s laws of motion to a game of Tug ‘O’ War  **Success Criteria:**   * Compare and contrast balanced and unbalanced forces using a Venn diagram * Illustrate examples of balanced and unbalanced forces from a game of tug ‘O’ war * Define balanced and unbalanced forces |  |
| **1** | SC4-10PW  SC4-6WS | PW1 Change to an object's motion is caused by unbalanced forces acting on the object.  b. predict the effect of unbalanced forces acting in everyday situations  e. [investigate](http://syllabus.bos.nsw.edu.au/glossary/sci/investigate/?ajax" \t "_blank" \o "Click for more information about 'investigate') factors that influence the size and effect of frictional forces  WS6 Students conduct investigations by:  a. collaboratively and individually conducting a range of investigation types, including fieldwork and experiments, ensuring safety and ethical guidelines are followed (ACSIS125, ACSIS140)  e. recording observations and measurements accurately, using appropriate units for physical quantities | **Do Now:** During the game of tug ‘o’ war, how did friction play a role?  **Learning Activities:**   1. Do Now 2. Present Power Point- Balanced and unbalanced forces. Discuss the links between previous lesson and current lesson content 3. Complete Friction practical- Investigating the effect of surface type on the force required to slide an object across the surface 4. Reflection- give an example of an everyday activity that requires friction to function | LESSON 3.  **Lesson Title:** Balanced and Unbalanced Forces Continued  **Learning Intention:** Explain the effect of friction on the speed at which an object moves using observations from a practical investigation  **Success Criteria:**   * Explain the results of the investigation using ‘claim, support, question’ * Follow a series of steps to complete a practical investigation on friction and record accurate measurements and observations * Identify different forces that act on objects to keep them balanced |  |
| **2** | SC4-10PW  SC4-7WS | PW1 Change to an object's motion is caused by unbalanced forces acting on the object.  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  WS7.1 Students process data and information by:  a. summarising data from students' own investigations and secondary sources (ACSIS130, ACSIS145) | **Do Now:** Forces play a role in everyday life. Identify a situation or area where reducing the impact of a force can be beneficial and give a reason why?  **Learning Activities:**   1. Do Now 2. Think Pair Share activity. Students are required to answer thinking questions about basketball. Give students approximately 10 minute think about their answer/ discuss it with the person next to them and then share it with the class. 3. Present PowerPoint- This includes watching the controversial swimsuit video. Students organise the advantages and disadvantages of sport technologies into a table 4. Basketball practical- Take class out onto the basketball court and complete the basketball practical 5. Reflection- discuss the use of technology in sport and how it helps to improve performance using examples | LESSON 4.  **Lesson Title:** Reducing Forces  **Learning Intention:** Discuss the use of technology in sport and how it helps to improve performance  **Success Criteria:**   * Investigate the forces and technology used in basketball by following a scientific method and using the ‘claim, support, question’ routine * Explain the use and design of a basketball shoe using think-pair-share * Identify advantages and disadvantages of sporting technologies * Identify the forces being used during a basketball game using think-pair-share * Define sporting technologies |  |
| **2** | SC4-10PW  SC4-7WS | PW1 Change to an object's motion is caused by unbalanced forces acting on the object.  b. analyse some everyday common situations where friction operates to oppose motion and produce heat  WS7.1 Students process data and information by:  a. summarising data from students' own investigations and secondary sources (ACSIS130, ACSIS145) | **Do Now:** Identify 2 everyday situations where friction occurs. Give a brief description as to why it is very important.  **Learning Activities:**   1. Do Now 2. Present PowerPoint 3. Friction video- Students summarise learning using 3, 2, 1 (3 important pieces of information, 2 things that were interesting, 1 question I have) 4. Friction Close Passage- Students can use word bank to complete the close passage on friction 5. Friction worksheet- Students answer questions on worksheet in student worksheet 6. Creative writing task- Imagine a world without friction. Write a story about how your life would be different without friction 7. Exit Slip- Explain what is happening in the video using your knowledge of friction | LESSON 5.  **Lesson Title:** Friction  **Learning Intention:** Explain the importance of friction in helping people to carry out everyday activities  **Success Criteria:**   * Create a narrative to explain a life without friction * Propose reasons why friction might be important in specific situations * Identify examples of friction in everyday life * Define friction and traction |  |
| **2** |  | Project Launch | **Do Now:** Identify a key skill required in NRL. Give a brief description why the skill is important to the sport.  **Learning Activities:**   1. Do Now 2. Hand out assessment notification and go through it with the class. 3. Students start working in their groups to discuss their choices | LESSON 6.  **Lesson Title:** Project Launch |  |
| **3** | SC4-10PW  SC4-6WS | PW3 Energy appears in different forms including movement (kinetic energy), heat and potential energy, and causes change within systems. (ACSSU155)  a. identify objects that possess energy because of their motion (kinetic) or because of other properties (potential)  WS6 Students conduct investigations by:  a. collaboratively and individually conducting a range of investigation types, including fieldwork and experiments, ensuring safety and ethical guidelines are followed (ACSIS125, ACSIS140)  e. recording observations and measurements accurately, using appropriate units for physical quantities | **Do Now:** Watch the video clip and write a brief summary  **Learning Activities:**   1. Do Now 2. Transformed Text- Energy Types. This text contains information on potential and kinetic energy. This should be read as a class. Students record 3 points they want to remember from the text. Students complete the vocab grid to organise the metalanguage 3. Practical- The body’s reaction to exercise- Take student to the oval to complete the practical and record changes in temperature 4. Exit Slip- Explain how our bodies react to participation in sport. Construct your answer using the GOAL model (template in student worksheet) | LESSON 7.  **Lesson Title:** Energy  Learning Intention: Explain how bodies react to participation in sport  **Success Criteria:**   * Explain how our bodies react to participation in sport using the GOAL model * Observe and record changes in the body after exercise through completing a scientific investigation * Read and summarise an academic text to differentiate between potential and kinetic energy |  |
| **3** | SC4-14LW    SC4-5WS | LW3 Multicellular organisms contain systems of organs that carry out specialised functions that enable them to survive and reproduce. (ACSSU150)  e. describe the role of the digestive, circulatory, excretory, skeletal/muscular and respiratory systems in maintaining a human as a functioning multicellular organism L-ICON-literacy 300dpi  WS5.2 Students plan first-hand investigations by:  a. collaboratively and individually planning a range of investigation types, including fieldwork, experiments, surveys and research (ACSIS125, ACSIS140) | **Do Now:** Suggest ways in which your body produces the energy you need to survive  **Learning Activities:**   1. Do Now 2. Present PowerPoint- Energy Conversions and Cellular Respiration 3. Digestive System Research- Students complete research to answer questions on student worksheet 4. Learning Checkpoint Question using the GOAL Model- Explain how the digestive system plays an important role in keeping humans alive and functioning | LESSON 8  **Lesson Title:** Energy and the Digestive System  Learning Intention: Explain how the digestive system plays an important role in keeping humans alive and functioning  **Success Criteria:**   * Explain how the digestive system plays an important role in keeping humans alive and functioning through the use of the GOAL model * Describe the chemical reaction that takes place to produce energy for the body * Identify the main parts of the digestive system through labelling and outline their function * Define digestion |  |
| **3** | SC4-4WS | WS4 Students question and predict by:  a. identifying questions and problems that can be investigated scientifically (ACSIS124, ACSIS139)  b. making predictions based on scientific knowledge and their own observations (ACSIS124, ACSIS139) | **Do Now:** What should be taken into consideration when beginning an exercise program? (think about the capability and restriction the team or individual may have)  **Learning Activities:**   1. Do Now 2. Log onto look at their website, students are to follow the links and complete the lesson online and submit it to the teacher.   **Assessment tasks/events:** Submit work to teacher | LESSON 9.  **Lesson Title:** Project Work |  |
| **4** | SC4-14LW  SC4-7WS | LW3 Multicellular organisms contain systems of organs that carry out specialised functions that enable them to survive and reproduce. (ACSSU150)  e. describe the role of the digestive, circulatory, excretory, skeletal/muscular and respiratory systems in maintaining a human as a functioning multicellular organism L-ICON-literacy 300dpi  WS7.1 Students process data and information by:  b. using a range of representations to organise data, including graphs, keys, models, diagrams, tables and spreadsheets N-ICON-numeracy-300dpi | **Do Now:**  What would our body look like if we didn’t have a skeleton? List some things that we wouldn’t be able to do  **Learning Activities:**   1. Do Now 2. Present PowerPoint- Appendicular and axial skeleton. Students compare types of skeleton using a Venn diagram 3. Present PowerPoint- Bone types. Students complete bone classification table 4. Video- Bone Dance 5. Present PowerPoint- Joint and Muscle types. Students complete muscle classification table 6. Video- Muscular System 7. Quiz 8. Optional- Building a human skeleton | LESSON 10.  **Lesson Title:** The Musculoskeletal System  Learning Intention: Identify the structure and function of the muscular and skeletal system  **Success Criteria:**   * Compare and contrast the axial and appendicular skeletal systems * Identify a pair of muscles that act in an antagonistic way * Define the different types of muscles found in the human body, using an example * Define the different types of bones found in the human body, using an example * Write in missing words (close passage) using the PowerPoint slides |  |
| **4** | SC4-14LW | LW3 Multicellular organisms contain systems of organs that carry out specialised functions that enable them to survive and reproduce. (ACSSU150)  e. describe the role of the digestive, circulatory, excretory, skeletal/muscular and respiratory systems in maintaining a human as a functioning multicellular organism L-ICON-literacy 300dpi | **Do Now:** Briefly explain the role of the heart. Describe how you think the heart may be structured  **Learning activities:**   1. Do Now 2. Present PowerPoint – Students complete structure and function table 3. Worksheets- Complete worksheets ‘Moving Oxygen Around the Body’ and Label the heart, (found in student worksheet) 4. Present PowerPoint- Blood- Students complete components of blood table 5. Reflection: students are to write 3 quiz questions in relations to what they have just learnt and swap it with the person next to them. | LESSON 11.  **Lesson Title:** The Circulatory System  Learning Intention: Create a pictorial representation of the oxygen levels of blood as it flows around the body  **Success Criteria:**   * Differentiate between arteries, capillaries and veins * Label a diagram of the heart with the correct structures * Identify places in the body that have oxygenated and deoxygenated blood * Measure and calculate pulse |  |
| **4** | SC4-14LW  SC4-6WS | LW3 Multicellular organisms contain systems of organs that carry out specialised functions that enable them to survive and reproduce. (ACSSU150)  e. describe the role of the digestive, circulatory, excretory, skeletal/muscular and respiratory systems in maintaining a human as a functioning multicellular organism L-ICON-literacy 300dpi  WS6 Students conduct investigations by:  a. collaboratively and individually conducting a range of investigation types, including fieldwork and experiments, ensuring safety and ethical guidelines are followed (ACSIS125, ACSIS140)  e. recording observations and measurements accurately, using appropriate units for physical quantities | **Do Now:** With circulation, the heart provides your body with? Explain how you can keep your heart strong.  **Learning Activities:**   1. Do Now 2. Recap- Structure of the heart 3. Practical- Heart dissection 4. Worksheet- Complete the work sheet on the heart dissection practical | LESSON 12.  **Lesson Title:** The Circulatory System  Learning Intention: Relate the function of the heart to the structure by completing a dissection  **Success Criteria:**   * Construct a flow chart to summarise the process of blood flow through the body and heart * Safely follow a scientific procedure to dissect a heart specimen * Identify the various structures of the heart present in a heart specimen |  |
| **5** | SC4-14LW  SC4-7WS  SC4-4WS | LW2 Cells are the basic units of living things and have specialised structures and functions. (ACSSU149)  Students:  c. outline the role of respiration in providing energy for the activities of cells  WS7.1 Students process data and information by:  b. using a range of representations to organise data, including graphs, keys, models, diagrams, tables and spreadsheets N-ICON-numeracy-300dpi  WS4 Students question and predict by:  b. making predictions based on scientific knowledge and their own observations (ACSIS124, ACSIS139) | **Do Now:** Identify 2 main functions of the respiratory system. Why is the respiratory system important?  **Learning Activities:**   1. Do Now 2. Present PowerPoint- Structure and Function of the respiratory system. Students complete inputs and outputs table, metalanguage and Venn diagram 3. Worksheet- Students complete worksheet in student work book 4. Checkpoint question- infer why athletes may breathe more when they are exercising 5. Exit Question- Students answer past ESSA question; describe the changes inside Jo’s body as she begins to exercise. How would a scientist explain the changes in her body? | LESSON 13  **Lesson Title:** Respiratory System  Learning Intention: Infer why athletes may breathe more when they are exercising  **Success Criteria:**   * Describe the changes inside the human body as they begin to exercise- past ESSA question that can be answered using the GOAL model * Describe the body’s oxygen requirements during physical activity * Explain the process of breathing * Label a diagram of a respiratory system * Define inhalation and exhalation |  |
| **6-8** | SC4-8WS  SC4-9WS |  | Students complete both group and individual sections of the assessment task during these lessons. ALL assessment work can be found in the Lesson 14-17 Project Work folder. | Lesson 14 – 17: Project work.  By the end of lesson 16 all project work is complete and put into Portfolio in STEM classes. |  |
| **8-9** | SC4-14LW  SC4-16CW | LW3 Multicellular organisms contain systems of organs that carry out specialised functions that enable them to survive and reproduce. (ACSSU150)  a. identify the materials required by multicellular organisms for the processes of respiration and photosynthesis  b. explain that the systems in multicellular organisms work together to provide cell requirements, including gases, nutrients and water, and to remove cell wastes L-ICON-literacy 300dpi  CW4 In a chemical change, new substances are formed, which may have specific properties related to their uses in everyday life.  Students:  c. investigate some examples of chemical change that occur in everyday life, eg photosynthesis, respiration and chemical weathering | **Do Now:** Watch the short video and record 3 interesting pieces of information  **Learning Activities:**   1. Do Now 2. Present PowerPoint- body systems and cell structure and function 3. Worksheets- ‘Living things are made of cells’, ‘cells and life processes’ and ‘compare and contrast’. 4. Think!- Why are there so many varieties of shoes, even though they are all designed for people to use while exercising? 5. Processes- Students summarise information on cellular respiration and photosynthesis into a table | LESSON 18 and 19  **Lesson Title:** Cells  Learning Intention: Compare plant and animal cells by investigating the life processes they sustain  **Success Criteria:**   * Identify the chemical reactions which take place in plant and animal cells * Identify one structure of a cell and outline its function * Outline one way to differentiate between an animal and a plant cell * Identify that living things are made of cells |  |
| **9** | SC4-14LW    SC4-7WS | LW3 Multicellular organisms contain systems of organs that carry out specialised functions that enable them to survive and reproduce. (ACSSU150)  Students:  c. outline the role of cell division in growth, repair and reproduction in multicellular organisms  WS7.1 Students process data and information by:  b. using a range of representations to organise data, including graphs, keys, models, diagrams, tables and spreadsheets N-ICON-numeracy-300dpi | **Do Now:** What does the words “specialised cells” mean to you? (think: body systems)  **Learning Activities:**   1. Do Now 2. Present PowerPoint- Students organise information into a Venn diagram 3. Worksheet- Multicellular Cell Organisation- reading and close passage. Students must use a visual organiser to show the hierarchy of organisation of multicellular organisms 4. Worksheet “special cells for special purposes”- Students read information and complete questions 5. Practical- Specialised Cells under a microscope- Students complete practical and answer the discussion questions 6. Exit Slip- Create a mnemonic to remember the multicellular cell organisation hierarchy | LESSON 20.  **Lesson Title:** Specialised Cells  Learning Intention: Differentiate between unicellular and multicellular organisms  **Success Criteria:**   * Create a mnemonic to remember the hierarchy of multicellular cell organisation * Differentiate between unicellular and multicellular organisms using a Venn diagram * Organise multicellular cell organisation by increasing complexity using a visual organiser * Observe different cell types under a microscope * Extract information from TWO secondary sources |  |
| **9-10** | SC4-14LW  SC4-5WS | LW2 Cells are the basic units of living things and have specialised structures and functions. (ACSSU149)  Students:  e. distinguish between unicellular and multicellular organisms  WS5.2 Students plan first-hand investigations by:  a. collaboratively and individually planning a range of investigation types, including fieldwork, experiments, surveys and research (ACSIS125, ACSIS140) | **Do Now:** Why is it important that our body continues to reproduce dead cells? Explain how you think the process occurs  **Learning Activities:**   1. Do Now 2. Poster research- Research activity- Create a poster with the following headings (this will be placed in their portfolio)    * What is cell division?    * Explain the difference between Multicellular and unicellular    * Outline the process of development of a cancer cell    * How does cancer cells affect the body 3. Poster construction- Students should be reminded to write information in their own words and reference the source of the information   **Assessment tasks/events:** Add research poster to portfolio | LESSON 21.  **Lesson Title:** Specialised Cells  Learning Intention: Create a poster outlining cancer cell development  **Success Criteria:**   * Create an informative and appealing poster, appropriate for the wider community * Outline the effect of cancer cells on the body * Outline the process of development of a cancer cell * Explain the difference between the terms ‘multicellular’ and ‘unicellular’ * Define the process of cell division |  |
| **10** | SC4-14LW | LW3 Multicellular organisms contain systems of organs that carry out specialised functions that enable them to survive and reproduce. (ACSSU150)  e. describe the role of the digestive, circulatory, excretory, skeletal/muscular and respiratory systems in maintaining a human as a functioning multicellular organism L-ICON-literacy 300dpi | **Do Now:** Why is it important for us to have a balanced diet?  **Learning Activities:**   1. Do Now 2. Present PowerPoint- Excretory system and the kidney. Students should label the diagram of the excretory system and the kidney 3. Worksheet- Students complete close passage and questions from student worksheet 4. Healthy eating pyramid and thinking question- Propose how diets would have changed from the 20th to the 21st century 5. Exit Slip- What would be the ideal meal for an athlete to consume before a competition? | LESSON 22.  **Lesson Title:** Excretory System  Learning Intention: Identify the structure and function of the excretory system  **Success Criteria:**   * Propose how diets would have changed from the 20th to the 21st century * Identify the 5 main food groups found in the healthy eating pyramid * Label the structure of the excretory system and the kidneys * Complete the fill in the blanks work sheet and close reading activity |  |
| **10** | SC4-14LW | LW3 Multicellular organisms contain systems of organs that carry out specialised functions that enable them to survive and reproduce. (ACSSU150)  e. describe the role of the digestive, circulatory, excretory, skeletal/muscular and respiratory systems in maintaining a human as a functioning multicellular organism L-ICON-literacy 300dpi | **Do Now:** List the 5 different senses that we require to function.  **Learning activities:**   1. Do Now 2. Think-Pair-Share- Students answer the following questions using the TPS method. Why do you blink when an object approaches your face? Why do you move your hand when you touch something that is burning hot? 3. Present PowerPoint- The Nervous System 4. Worksheet- Fast Control! 5. Practical- Reflexes and Reaction Rate | LESSON 23.  **Lesson Title:** Nervous System  Learning Intention: Identify the structure and function of the nervous system  **Success Criteria:**   * Describe the stimulus-response evident in a range of practical activities * Identify a reflex action and the reflex arc * Identify the central and peripheral nervous system * Define lesson metalanguage including nerve, synapse, neuron |  |

| MATHEMATICS | | | | | |
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| Week | Outcome | Content | Integrated learning experiences | Evidence of learning/assessment strategies | Register/ Evaluation |
| **1 - 2** | MA3-5NA  MA3-2WM | Create simple financial plans (ACMNA106)   * use knowledge of addition and subtraction facts to create a financial plan, such as a budget, eg organise a class celebration on a budget of $60 for all expenses * record numerical data in a simple spreadsheet (Communicating) * give reasons for selecting, prioritising and deleting items when creating a budget (Communicating, Reasoning) | LESSON 1. Budgeting  Lesson Activities:   1. Do Now 2. Students use online budgeting tool to analyse and track spending on the RHHSIS 3. Reflection. | **Lesson Intention:**   * Students use the budgeting tool to analyse their costing for the Rooty Hill High School institute of Sport. |  |
| **3 - 4** | MA4-19SP  MA4-3WM | Explore the practicalities and implications of obtaining data through sampling using a variety of investigative processes (ACMSP206)   * identify issues that may make it difficult to obtain representative data from either primary or secondary sources     + discuss constraints that may limit the collection of data or result in unreliable data, eg lack of proximity to the location where data could be collected, lack of access to digital technologies, or cultural sensitivities that may influence the results (Communicating, Reasoning) * investigate and question the selection of data used to support a particular viewpoint, eg the selective use of data in product advertising | LESSON 2. Obtaining data and Analysing  Lesson Activities:   1. Do Now 2. Class discussion that covers how representative a sample is (Resource 2). Include constraints that limit the collection of data or result in unreliable data, e.g. lack of proximity to the location where data could be collected, lack of access to digital technologies, or cultural sensitivities that may influence the results. 3. Activity that investigates and questions the selection of data used to support a particular viewpoint, e.g. the selective use of data in product advertising. 4. Data from STEM class is analysed and graphed electronically 5. Reflection. | **Lesson Intention:**  Students explore various ways of collecting data and the implications of using primary or secondary sources of data.  **Success Criteria:**   * Students analyse data question its validity. * Students understand the importance of obtaining representative samples. * Students can generate data using a random process. |  |
| **5 - 10** | MA4-13MG  MA4-14MG | Establish the formulas for areas of rectangles, triangles and parallelograms and use these in problem solving (ACMMG159) CCT-ICON-critical creative thinking-300dpi L-ICON-literacy 300dpi  Investigate the relationship between features of circles, such as the area and the radius; use formulas to solve problems involving area (ACMMG197) CCT-ICON-critical creative thinking-300dpi L-ICON-literacy 300dpi  Choose appropriate units of measurement for volume and convert from one unit to another (ACMMG195)  Develop the formulas for the volumes of rectangular and triangular prisms and of prisms in general; use formulas to solve problems involving volume (ACMMG198)  Calculate the volumes of cylinders and solve related problems (ACMMG217) | LESSON 3 – 5. Surface Area and Volume  Lesson Activities:   1. Do Now 2. Students Design a water bottle for the GWS Giants with a volume of 750mL 3. Calculating Surface area of their bottle to ensure logo designs will fit 4. Students will reflect and analyse these for the coming lessons. 5. Reflection. | **Lesson Intention:**  Students design a drink bottle with specific volume and different shapes. These will be prototyped on a 3D Printer after analysis done. |  |

| TAS (ICT) | | | | | | |
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| Week | Outcome | Students learn about | Students learn to | Integrated learning experiences | Evidence of learning/assessment strategies | Register /  Evaluation |
| **1** | 4.1.1, 4.2.1 | * design processes including   + analysing needs * Methods to generate creative design ideas including   + mind mapping   + brain storming | * apply a design process when developing quality solutions for each design project * use a variety of methods to generate creative design ideas for each design project | 1. Present scenario and PBL. 2. Generate, sort, connect, elaborate: map 3 Institute areas to STEM principles 3. Individual activity – List interests, technology skills, 4. Form groups based on similar interests. | Learning intention:  Have some understanding of the scenario and the scope for project ideas  **Success Criteria:**   * Create a list of possible areas of investigation and ICT that can be used to show your investigation. |  |
|  | 4.1.1, 4.2.1 | * design processes including   + generating creative ideas * use of design folio to record and reflect on design ideas and decisions * Methods to generate creative design ideas including   + mind mapping   + brain storming | * apply a design process when developing quality solutions for each design project * record design processes and decision making in a design folio for each design project. * use a variety of methods to generate creative design ideas for each design project | 1. Team members to research the area of investigation. 2. Group activity: I used to think, now I think. Change driving question if necessary. 3. Complete research pages of the Design portfolio. 4. Enter ideas for possible solutions in Design portfolio. | Learning Intention:  Share ideas in progress  **Success Criteria:**   * Complete design brief and design situation page of portfolio based on key driving question. |  |
| **2** | 4.1.1, 4.2.1, 4.3.1 | * design processes including   + researching   + generating creative ideas * the internet as a source of information      * using ICTs to plan, develop and document design projects | * use a variety of methods to generate creative design ideas for each design project * identify needs and opportunities that require solutions in the area of study | 1. Team members to research the area of investigation. 2. Group activity: I used to think, now I think. Change driving question if necessary. 3. Complete research pages of the Design portfolio. 4. Enter ideas for possible solutions in Design portfolio. | Learning Intention:  Learn about the internet as a source of information for project ideas.  **Success Criteria:**   * Show evidence of ideas. * Document ideas in portfolio. |  |
|  | 4.1.1 | * design processes including   + communicating ideas | * apply a design process when developing quality solutions for each design project * record design processes and decision making in a design folio for each design project. | 1. Round robin activity - share ideas about project. Return to team and share ideas. 2. 4C’s - how do your project ideas support the objectives of the RHHS institute of sport. 3. Plan roles 4. Enter ideas for best solutions in design portfolio. | Learning Intention:  Share ideas in progress  **Success Criteria:**   * Show evidence of ideas. Revise ideas if necessary. * Document ideas in portfolio. |  |
| **3** | 4.3.1, 4.3.2 | * software tools suitable for selected projects * responsible behaviour in working environments | * select and use software for a specific purpose in a design project * select and correctly use the appropriate tools of information technology for a design project * select and use techniques appropriate for the purposes of a design project. * use tools, materials and techniques in a responsible and safe manner in each design project * maintain tools and equipment | 1. Outline strategies for working together. How to deal with conflict. 2. Develop ICT skills for project (NOTE: This project uses inquiry based learning where students choose an ICT project to improve sports management, sport development and fitness. Possible ICT skills development for sports management projects may include: graphics editing programs to create logos, web design/html editors to create promotional websites, video editing programs to create promotional videos, spreadsheet programs to develop budgets, database programs to develop database management systems. Possible ICT skills development for sports development projects may include: use of Xbox Kinect to track virtual performance, video editing to document performance, Arduino boards to record movement, spreadsheet programs to track progress. Possible ICT skills for fitness projects may include: desktop publishing programs to develop fitness programs.) | Learning Intention:  Select software programs.  Complete tutorials in appropriate software programs.  **Success Criteria:**   * Develop software skills appropriate for project. |  |
|  | 4.3.1, 4.3.2, 4.6.1 | * software tools suitable for selected projects      * responsible behaviour in working environments * ongoing evaluation of design ideas and decisions | * select and use software for a specific purpose in a design project      * select and correctly use the appropriate tools of information technology for a design project      * select and use techniques appropriate for the purposes of a design project * use tools, materials and techniques in a responsible and safe manner in each design project * maintain tools and equipment * evaluate during the development of the design solution. | 1. Work on ICT skills for project (skills identified above) 2. SOLO self-reflection at end of lesson | Learning Intention:   * Select software programs. * Complete tutorials in appropriate software programs. * Reflect on work in progress   **Success Criteria:**   * Develop software skills appropriate for project * Analyse current performance, reflect on progress and understanding, make suggestions for improvement |  |
| 4 - 7 | 4.1.1, 4.3.1, 4.3.2, 4.6.1 | * design processes including   + producing design solutions * software tools suitable for selected projects      * responsible behaviour in working environments * ongoing evaluation of design ideas and decisions | * select and use software for a specific purpose in a design project      * select and correctly use the appropriate tools of information technology for a design project      * select and use techniques appropriate for the purposes of a design project.      * record decision processes and decision making in a design folio for each design project. * evaluate during the development of the design solution | 1. Work on project (see notes above for scope for inquiry based learning and possible ICT solutions that could support those projects) 2. End of lesson reflection: Alternate between individual SOLO reflection and group reflection. | Learning Intention:   * Begin producing design solution * Perform a team evaluation   **Success Criteria:**   * Show work in progress on design solution * Analyse current performance, reflect on progress and understanding, make suggestions for improvement |  |
| 8 | 4.1.1, 4.2.1, | * design processes including   + communicating ideas      * use of portfolio to record and reflect on design ideas and decisions | * record decision processes and decision making in a design folio for each design project. * use a portfolio to record and reflect on design ideas and decisions | 1. Work on portfolio – write procedures to demonstrate understanding of tools used. 2. Catch up on missing portfolio information. | Learning Intention:   * Work on design portfolio   **Success Criteria:**   * Catch up on missing portfolio elements |  |
|  | 4.2.1 | * methods used to generate creative design ideas including   + testing | * use a variety of methods to generate creative design ideas for each project | 1. Round robin activity – each person to ask one question at each table. 2. Return to groups, share questions asked. Rethink possibilities based on class questions. 3. Work on project. 4. SOLO self-reflection at end of lesson - including how I have integrated feedback from previous sessions | Learning Intention:   * Reflect on possible changes to project ideas   **Success Criteria:**   * Consider alternative may be incorporated into your project design. |  |
| 9 | 4.2.1 | * methods used to generate creative design ideas including   + testing | * use a variety of methods to generate creative design ideas for each project | 1. Team reflection: how do we know we are being innovative? Can we do something better? How? 2. Working on project. | Learning Intention:   * Reflect on possible changes to project ideas   **Success Criteria:**   * Consider alternative may be incorporated into your project design. |  |
|  | 4.1.1, 4.3.1, 4.3.2, 4.6.1 | * design processes including   + producing design solutions * software tools suitable for selected projects      * responsible behaviour in working environments * ongoing evaluation of design ideas and decisions | * select and use software for a specific purpose in a design project * select and correctly use the appropriate tools of information technology for a design project * select and use techniques appropriate for the purposes of a design project. * record decision processes and decision making in a design folio for each design project. * evaluate during the development of the design solution | 1. Work on project 2. SOLO self-reflection at end of lesson - including how I have integrated feedback from previous sessions | Learning Intention:   * Start finalising design solution * Perform a team evaluation   **Success Criteria:**   * Ensure design solution can be completed within required time-frame * Analyse current performance, reflect on progress and understanding, make suggestions for improvement |  |
| **10** | 4.1.1, 4.3.1, 4.3.2, 4.6.1 | * design processes including   + producing design solutions * software tools suitable for selected projects      * responsible behaviour in working environments * ongoing evaluation of design ideas and decisions | * select and use software for a specific purpose in a design project      * select and correctly use the appropriate tools of information technology for a design project      * select and use techniques appropriate for the purposes of a design project.      * record decision processes and decision making in a design folio for each design project. * evaluate during the development of the design solution | Work on project. | Learning Intention:   * Start finalising design solution * Perform a team evaluation   **Success Criteria:**   * Ensure design solution can be completed within required time-frame * Analyse current performance, reflect on progress and understanding, make suggestions for improvement |  |
|  | 4.6.1 | * final evaluation considering   + design process used   + design solutions   + reflected on learning | * evaluate at the completion of the design solution | Prepare work for presentation  Evaluate project, process, team and individual contribution | Learning Intention:   * Identify aspects of work to include in final STEM presentation * Evaluate final design solution   **Success Criteria:**   * Export work into final STEM presentation document * Evaluate the project, the process undertaken, team roles and individual contribution |  |