# Stage 2 Scientific Studies – Program 1

This program articulates with LAP 1

**Term 1**

| **Week** | **Day 1**  **Single Lesson** | **Day 2**  **Double Lesson** | **Day 3**  **Single Lesson** | **Day 4**  **Single Lesson** |
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| 1 | Intro Course: Expectations, LAP and Assessment  Scientific Method vs Engineering Design Process | Practical Design Terminology Notes and Discussion on Scientific Method.  --------------------------------------------  Practical Worksheet 1-  Aim, Hypothesis, Variables, Controls, Material, Method and Conclusion | Data Collection, Recording and Presentation  Graphing Task:  different types of graphs,  consider different types of data. | Formative Research Task  ‘Factors affecting Reaction Time.’  Focus on use of peer reviewed articles and credible websites, and correctly formatted reference list.  Appropriate use of language- conventions of communication |
| 2 | Formative Practical: Deconstruct a Problem.  “Does Height Affect Reaction Time?”  Focus on design aspects of hypothesis, variables, control and method, risk assessment etc. | Undertake Practical Investigation  “Does Height Affect Reaction Time?”  Representing Data: data collection, recording in tables and calculate averages. | “Does Height Affect Reaction Time?”  Recording of results in a graph.  Identify patterns in data and discuss scatter. | “Does Height Affect Reaction Time?”  Critically analyse data to draw conclusions with justification.  Consider limitations of conclusions. |
| 3 | Formative Practical  “Effect of Detergent on Surface Tension.”  Design component and trialling of different methods.  Effectiveness of collaboration. | Undertake Practical Investigation using agreed controls.  “Effect of Detergent on Surface Tension.”  Data Collection, recording in tables and calculating averages | “Effect of Detergent on Surface Tension.”  Recording of results in a graph.  Identify patterns in data and discuss scatter.  Shape of the graph shows the relationship between variables. | “Effect of Detergent on Surface Tension.”  Analyse data to draw justified conclusions- consider limitations of the conclusion.  Identify errors and suggest possible improvements.  Reflect on the effectiveness of collaboration. |
| 4 | Sport Psychology  Notes on skill acquisition. | Skill Acquisition Laboratory   * Closed v Open Skills. * Massed v Distributed Practice.   Data collection and analysis. | Skill Acquisition Laboratory: worksheets to be completed. | Sport Psychology  Notes on skill acquisition. |
| 5 | Sport Psychology  Notes on Information Processing Model + worksheet. | Skill Acquisition Laboratory   * Signal Detection and Selective Attention.   Data Collection and Analysis. | Skill Acquisition Laboratory worksheets to be completed. | “Effect of distraction on skill execution.”  Individual research of relevant Science – factors affecting selective attention. |
| 6 | **Summative Inquiry Folio: Design Task**  “Effect of distraction on skill execution.”  Individually students design an experiment using Scientific Method. | **Summative Inquiry Folio: Design Task**  “Effect of distraction on skill execution.”  Scientific Method design component submitted for assessment.  Data Collection for experiment commenced. | **Summative Inquiry Folio: Design Task**  Data Collection continued.  Construction of data tables and graph.  Analysis of patterns in the data. | **Summative Inquiry Folio: Design Task**  Analysis of patterns in the data with reference to relevant science.  Discussion of errors, suggestions for improvement and conclusion. |
| 7 | Use of Technology in Sport  Discussion of costs and benefits of modern technology in sport.  Brainstorm + Lotus Diagram.  Consider Science as a Human Endeavour- the interaction with science and society to impact technology in sport. | Technology in sport  Use GPS (or other options, e.g. iPhone applications) to collect data.  Discuss the benefits and limitations of the technology. | Data Analysis Task (formative)  Compare sets of data and determine:  -reliability  -accuracy etc. | **Summative Inquiry Folio: Technology in Sport Debate**  In teams of 3, students research modern technology in sport and prepare to argue on the topic “Technology has/not enhanced modern sport.” |
| 8 | **Technology in Sport Debate**  In teams of 3, students research modern technology in sport and prepare to argue on the topic “Technology has/not enhanced modern sport.” | **Technology in Sport Debate**  “Technology has/not enhanced modern sport.”  Debates presented with focus on scientific advancement and application to betterment or detriment to modern sport. | **Technology in Sport Debate**  “Technology has/not enhanced modern sport” | **Technology in Sport Debate Reflection (Formative)**  Individual report to summarise findings from the debate. |
| 9 | **Physiology and Sporting Performance**  Notes and worksheet on energy systems, fitness factors and causes of fatigue. | **Summative Inquiry Folio: Games Analysis- Using Technology Assignment**  Students to wear GPS sports device (or similar) for recording of data in a game of modified AFL. | **Summative Inquiry Folio: Games Analysis-Using Technology Assignment**  Discussion/notes on energy systems, fitness factors and causes of fatigue.  Critique of own performance based on GPS data recorded. | **Summative Inquiry Folio: Games Analysis- Using Technology Assignment**  Critique of own performance based on GPS data recorded.  Discuss the accuracy of the GPS Data obtained from the equipment used. |
| 10 | **Summative Inquiry Folio: Games Analysis-Using Technology Assignment**  Critique of own performance based on GPS data recorded.  Discuss the accuracy of the GPS. Data obtained from the equipment used. | **Summative Inquiry Folio: Games Analysis-Using Technology Assignment**  Critique of own performance based on GPS data recorded + impact of fatigue on performance.  Discuss the effect if different methods/equipment were used to assess performance. | **Summative Inquiry Folio: Games Analysis-Using Technology Assignment**  Working on assignment to complete. | **Summative Inquiry Folio: Games Analysis- Using Technology Assignment**  Due Date.  Introduction to Sport and Nutrition. |

**Term 2**

| **Week** | **Day 1**  **Single Lesson** | **Day 2**  **Double Lesson** | **Day 3**  **Single Lesson** | **Day 4**  **Single Lesson** |
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| 1 | Sport and Nutrition  - Notes, discussion and worksheet. | Formative - Supplements Analysis Research Task | Formative - Supplements Analysis Research Task | Sport and Nutrition  Notes, discussion and worksheet. |
| 2 | **Science as a Human Endeavour:** Reintroduce SHE key concepts.  Watch a video clip, class discussion to identify SHE key concepts.  Students to answer questions to connect science and interaction with society. | **Summative Inquiry Folio: Science as a Human Endeavour- Nutrition in Sport Task**  Brainstorming ideas, initial research. | **Summative Inquiry Folio: Science as a Human Endeavour- Nutrition in Sport Task**  Brainstorming ideas, initial research continued. | Sport and Nutrition  Notes, discussion and worksheet |
| 3 | **Methods of Communication in Science**  Findings can be presented in multiple ways. | **Formative Task:**  Read an article, take a position and defend that position as a pitch, defence or justification using an appropriate format. | **Formative Task:**  Continue to prepare- consider your position, what information supports, what language is most suitable?  Prepare max. 90sec presentation. | **Summative Inquiry Folio: Science as a Human Endeavour- Nutrition in Sport Task**  Class Time. |
| 4 | **Formative Task:**  Class Time  Prepare max. 90 second presentation to show to class. | **Formative Task:**  Presentations. | **Summative Inquiry Folio: Science as a Human Endeavour- Nutrition in Sport Task**  Class Time. | **Summative Inquiry Folio: Science as a Human Endeavour- Nutrition in Sport Task**  Class Time. |
| 5 | **Summative Inquiry Folio: Science as a Human Endeavour- Nutrition in Sport Task**  Class Time | **Summative Inquiry Folio: Science as a Human Endeavour- Nutrition in Sport Task**  Class Time | **Summative Inquiry Folio: Science as a Human Endeavour- Nutrition in Sport Task**  Class Time | **Summative Inquiry Folio: Science as a Human Endeavour- Nutrition in Sport Task**  Due Date  Introduction to Summative Collaborative Inquiry Project. |
| 6 | **Summative Collaborative Inquiry**  **Create Your Own Sports Drink or Sporting Device to improve performance**  In groups, students brainstorm- they deconstruct the problem and consider potential requirements that need to be tested for their purposes. | **Summative Collaborative Inquiry**  **Create Your Own Sports Drink or Sporting Device to improve performance**  Introduce Personal Journal- format (maximum pages 12 pages). | **Summative Collaborative Inquiry**  **Create Your Own Sports Drink or Sporting Device to improve performance**  Method, safety. Risks. | **Summative Collaborative Inquiry**  **Create Your Own Sports Drink or Sporting Device to improve performance**  Continue the design process. |
| 7 | **Summative Collaborative Inquiry**  **Create Your Own Sports Drink or Sporting Device to improve performance**  Evaluation of initial method/design. | **Summative Collaborative Inquiry**  **Create Your Own Sports Drink or Sporting Device to improve performance**  Evaluation and trialling of method/design. | **Summative Collaborative Inquiry**  **Create Your Own Sports Drink or Sporting Device to improve performance**  Evaluation and trialling of method/design. | **Summative Collaborative Inquiry**  **Create Your Own Sports Drink or Sporting Device to improve performance**  Evaluation and trialling of method/design. |
| 8 | **Summative Collaborative Inquiry**  **Create Your Own Sports Drink or Sporting Device to improve performance**  Evaluation and trialling of method/design. | **Summative Collaborative Inquiry**  **Create Your Own Sports Drink or Sporting Device to improve performance**  Analysis and evaluation of data/personal journal. | **Summative Collaborative Inquiry**  **Create Your Own Sports Drink or Sporting Device to improve performance**  Analysis and evaluation of data/personal journal. | **Summative Collaborative Inquiry**  **Create Your Own Sports Drink or Sporting Device to improve performance**  Preparation for the pitch, defence or justification. |
| 9 | **Summative Collaborative Inquiry**  **Create Your Own Sports Drink or Sporting Device to improve performance**  Preparation for the pitch, defence or justification. | **Summative Collaborative Inquiry**  **Create Your Own Sports Drink or Sporting Device to improve performance**  Presentations. | **Summative Collaborative Inquiry**  **Create Your Own Sports Drink or Sporting Device to improve performance**  Presentations. | **Summative Collaborative Inquiry**  **Create Your Own Sports Drink or Sporting Device to improve performance**  Presentations. |

**Term 3**

| **Week** | **Day 1**  **Single Lesson** | **Day 2**  **Double Lesson** | **Day 3**  **Single Lesson** | **Day 4**  **Single Lesson** |
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| 1 | Inquiry Skills- revision and review of Term 1 and 2. | Inquiry Skills- revision and review of Term 1 and 2, leading to discussion on Individual Inquiry and Proposal. | **Summative:**  **Individual Inquiry Proposal**  Scientific Method or Engineering Design Process: review options.  Planning and ideas. | **Summative:**  **Individual Inquiry Proposal**  Planning continued. |
| 2 | “Effect of fatigue on performance”  Individual research of relevant science – factors affecting neuromuscular fatigue.  Focus on evaluation.  Consider when an experiment is a “failure”- what can we learn? | Formative Physiology Lab.  Exploration of physical tests that highlight neuromuscular function to establish a base level of strength, power, speed and endurance. | Formative Physiology Lab.  Recording of data in tables and graphs + analysis of personal performance. | “Effect of fatigue on performance.”  Individual research of relevant science – factors affecting neuromuscular fatigue. |
| 3 | **Design Task Revision: Formative Practicals- individual**  “Effect of fatigue on skill execution.”  Students design an experiment using Scientific Method. | “Effect of fatigue on skill execution.”  Scientific Method design component submitted for assessment.  Data collection for experiment commenced. | Data Collection continued.  Construction of data tables and graph.  Analysis of patterns in the data. | Data collection continued.  Construction of data tables and graph.  Analysis of patterns in the data. |
| 4 | Analysis of patterns in the data with reference to relevant science.  Discussion of errors, suggestions for improvement and justified conclusion. | Analysis of patterns in the data with reference to relevant science.  Discussion of errors, suggestions for improvement and justified conclusion. | Human Physiology.  Effect of training on physical performance.  Notes and worksheet. | Human Physiology.  Effect of training on physical performance.  Notes and worksheet. |
| 5 | Human Physiology.  Effect of training on physical performance.  Notes and worksheet.  Training for all? Limitations? | Adaptations to Exercise Laboratory.  Aerobic Performance fitness testing. | Training Methods.  Formative Research Task:  costs and benefits of altitude or heat acclimatisation training  When is this type of training suitable? Limitations? | Training Methods.  Formative Research Task:  costs and benefits of altitude or heat acclimatisation training |
| 6 | **Summative: Individual Inquiry Proposal**  Class Time. | **Summative: Individual Inquiry Proposal**  Finalise. | **Summative:**  **Individual Inquiry Proposal**  Due Date. | Review Proposal.  Order forms for equipment.  Risk Assessments. |
| 7 | Based on teacher feedback, make any necessary changes to method and risk assessment. | **Summative: Individual Inquiry** | **Summative: Individual Inquiry** | **Summative: Individual Inquiry** |
| 8 | **Summative: Individual Inquiry** | **Summative: Individual Inquiry** | **Summative: Individual Inquiry** | **Summative: Individual Inquiry** |
| 9 | **Summative: Individual Inquiry** | **Summative: Individual Inquiry** | **Summative: Individual Inquiry** | **Summative: Individual Inquiry** |
| 10 | **Summative: Individual Inquiry**  **Report- class time** | **Summative: Individual Inquiry**  **Report- class time** | **Summative: Individual Inquiry**  **Report- class time** | **Summative: Individual Inquiry**  **Report- class time** |

**Term 4**

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| **Week** | **Day 1**  **Single Lesson** | **Day 2**  **Double Lesson** | **Day 3**  **Single Lesson** | **Day 4**  **Single Lesson** |
| **1** | **Summative: Individual Inquiry**  **Report- class time** | **Summative: Individual Inquiry**  **Report – Draft Due** | **Summative: Individual Inquiry**  **Final Report- class time** | **Summative: Individual Inquiry**  **Final Report- class time** |
| **2** | **Summative: Individual Inquiry**  **Final Report- class time** | **Summative: Individual Inquiry**  **Final Report- class time** | **Summative: Individual Inquiry**  **Final Report- class time** | **Summative: Individual Inquiry**  **Final Report- Due** |