**Area of Learning: SCIENCE — Science for Citizens Grade 11**

**BIG IDEAS**

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| **Scientific processes and knowledge** inform our decisions and impact our daily lives. |  | Scientific knowledge can be used to develop procedures, techniques, and technologies that have implications for **places of employment**. |  | Scientific understanding enables humans to **respond and adapt to changes** locally and globally. |

**Learning Standards**

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| **Curricular Competencies** | **Content** |
| *Students are expected to be able to do the following:*  Questioning and predicting   * Demonstrate a sustained intellectual curiosity about a scientific topic  or problem of personal, local, or global interest * Make observations aimed at identifying their own questions, including increasingly abstract ones, about the natural world * Formulate multiple hypotheses and predict multiple outcomes   Planning and conducting   * Collaboratively and individually plan, select, and use appropriate investigation methods, including field work and lab experiments, to collect reliable data  (qualitative and quantitative) * Assess risks and address ethical, cultural, and/or environmental issues  associated with their proposed methods * Use appropriate SI units and appropriate equipment, including digital technologies,  to systematically and accurately collect and record data * Apply the concepts of accuracy and precision to experimental  procedures and data:   + significant figures   + uncertainty   + scientific notation   Processing and analyzing data and information   * Use local knowledge to experience and interpret the local environment | *Students are expected to know the following:*   * **evidence-based decision making** through science * **personal and public health practices**, including First Peoples traditional health and healing practices * impact of **technologies** * **personal safety** and awareness * **workplace safety** * **certifications** * **practical applications of science** in the workplace * **impacts of technology** in the workplace * **applications of materials science** * **beneficial scientific innovations** * **natural hazards and responses** * human impact on Earth’s systems:   + **natural resources**   + **effects of climate change** * **actions and decisions** affecting the local and  global environment, including those of First Peoples |

**Area of Learning: SCIENCE — Science for Citizens Grade 11**

**Learning Standards (continued)**

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| **Curricular Competencies** | **Content** |
| * Apply First Peoples perspectives and knowledge, other ways of knowing,  and local knowledge as sources of information * Seek and analyze patterns, trends, and connections in data, including describing relationships between variables, performing calculations,  and identifying inconsistencies * Construct, analyze, and interpret graphs, models, and/or diagrams * Use knowledge of scientific concepts to draw conclusions that are consistent  with evidence * Analyze cause-and-effect relationships   Evaluating   * Evaluate their methods and experimental conditions, including identifying sources  of error or uncertainty, confounding variables, and possible alternative explanations  and conclusions * Describe specific ways to improve their investigation methods and  the quality of their data * Evaluate the validity and limitations of a model or analogy in relation  to the phenomenon modelled * Demonstrate an awareness of assumptions, question information given,  and identify bias in their own work and in primary and secondary sources * Consider the changes in knowledge over time as tools and technologies  have developed * Connect scientific explorations to careers in science * Exercise a healthy, informed skepticism and use scientific knowledge and  findings to form their own investigations to evaluate claimsin  primary and secondary sources * Consider social, ethical, and environmental implications of the findings from  their own and others’ investigations * Critically analyze the validity of information in primary and secondary sources  and evaluate the approaches used to solve problems * Assess risks in the context of personal safety and social responsibility |  |

**Area of Learning: SCIENCE — Science for Citizens Grade 11**

**Learning Standards (continued)**

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| **Curricular Competencies** | **Content** |
| Applying and innovating   * Contribute to care for self, others, community, and world through individual or collaborative approaches * Co-operatively design projects with local and/or global connections  and applications * Contribute to finding solutions to problems at a local and/or global  level through inquiry * Implement multiple strategies to solve problems inreal-life, applied,  and conceptual situations * Consider the role of scientists in innovation   Communicating   * Formulate physical or mental theoretical models to describe a phenomenon * Communicate scientific ideas and information, and perhaps a suggested  course of action, for a specific purpose and audience, constructing  evidence-based arguments and using appropriate scientific language,  conventions, and representations * Express and reflect on a variety of experiences, perspectives, and worldviews  through **place** |  |