**Area of Learning: SCIENCE — Environmental Science Grade 11**

**BIG IDEAS**

|  |  |  |  |  |  |  |
| --- | --- | --- | --- | --- | --- | --- |
| Complex roles and relationships contribute to **diversity  of ecosystems**. |  | **Changing ecosystems** are maintained by  natural processes. |  | Human practices  affect the **sustainability  of ecosystems**. |  | Humans can play a  role in **stewardship  and restoration**  of ecosystems. |

**Learning Standards**

|  |  |
| --- | --- |
| **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   * Experience and interpret the local environment | *Students are expected to know the following:*   * abiotic characteristics:    + **aquatic**   + **atmospheric**   edaphic   * **levels** ofbiotic diversity * ecosystem complexity:   + **roles**   + **relationships**   population dynamics   * **energy flow** through ecosystems * **matter cycles** through and between living systems * **succession** * **First Peoples knowledge and other traditional ecological knowledge** in sustaining biodiversity * benefits of **ecosystem services** * **human actions** and their impact on ecosystemintegrity * **First Peoples ways of knowing and doing** * resource **stewardship**   **restoration practices** |

**Area of Learning: SCIENCE — Environmental Science Grade 11**

**Learning Standards (continued)**

|  |  |
| --- | --- |
| **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 claims in 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 — Environmental Science Grade 11**

**Learning Standards (continued)**

|  |  |
| --- | --- |
| **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 in real-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** |  |