



# Science 10 Course Outline

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<https://curriculum.gov.bc.ca/curriculum/science/10>

Introduction | Goals and Rationale | What's New | Curriculum Overview

## Core Competencies

**C**  
Communication

**T**  
Thinking

**PS**  
Personal & Social

## BIG IDEAS

**DNA** is the basis for the diversity of living things.

Energy change is required as atoms rearrange in **chemical processes**.

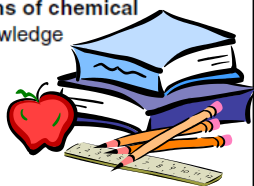
**Energy** is conserved, and its transformation can affect living things and the environment.

The formation of the **universe** can be explained by the big bang theory.

### Content

Students are expected to know the following:

- **DNA structure and function**
- **patterns of inheritance**
- mechanisms for the diversity of life:
  - **mutation** and its impact on evolution
  - **natural selection** and **artificial selection**
- **applied genetics** and **ethical considerations**
- rearrangement of atoms in **chemical reactions**
- acid-base chemistry
- law of conservation of mass
- **energy change** during chemical reactions
- **practical applications and implications of chemical processes**, including First Peoples knowledge
- **nuclear energy** and **radiation**
- law of conservation of energy
- **potential** and **kinetic energy**
- **transformation of energy**
- local and global **impacts of energy transformations** from technologies
- formation of the universe:
  - **big bang theory**
  - **components of the universe over time**
- **astronomical data** and **collection methods**



### Curricular Competencies

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 interest
- Make observations aimed at identifying their own questions, including increasingly complex 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 and those of others
- Select and use appropriate equipment, including digital technologies, to systematically and accurately collect and record data
- Ensure that safety and ethical guidelines are followed in their investigations

#### Processing and analyzing data and information

- Experience and interpret the local environment
- 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 (dependent and independent) and identifying inconsistencies

### Curricular Competencies

- Construct, analyze, and interpret graphs (including interpolation and extrapolation), 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 the 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 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 and to evaluate claims in secondary sources
- Consider social, ethical, and environmental implications of the findings from their own and others' investigations
- Critically analyze the validity of information in secondary sources and evaluate the approaches used to solve problems

#### Applying and innovating

- Contribute to care for self, others, community, and world through individual or collaborative approaches
- Transfer and apply learning to new situations

### Curricular Competencies

- Generate and introduce new or refined ideas when problem solving
- Contribute to finding solutions to problems at a local and/or global level through inquiry
- Consider the role of scientists in innovation

#### Communicating

- Formulate physical or mental theoretical models to describe a phenomenon
- Communicate scientific ideas, claims, 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**

#### Evaluation

Chem 40%

Phy 20%

Biology 20%

Astronomy 10%

Final Exam = 10%



#### Letter Grades

A= 86% - 100%

B = 73% - 85%

C+= 67% - 72%

C = 60-66%

C- = 50-59%

### Supplies:

Textbook      binder with lined paper  
Pencils/eraser    2 pens (black or blue **AND** 1 red)  
Metric ruler      Scientific calculator  
Pencil crayons    Agenda

