

Grade 10 Science — Course Outline

Mr. Warren

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Course Overview

This course culminates students' K–10 science learning and prepares them for optional sciences in Grades 11 and 12. Students explore six major knowledge areas — matter, force, Earth science, space science, life systems, and evolution — while strengthening their practical and investigative skills. Throughout the course, students conduct scientific investigations, develop tool and measurement skills, examine science in everyday life, and explore how science interacts with society and the environment. Students also have many opportunities to explore Indigenous ways of knowing, being, and doing, including through connections with local community and land-based learning.

Examples of guiding inquiry questions for the year:

- How do various types of matter interact?
- What do we know about the Earth and its place in the Universe?
- How are human activities affecting the environment?

Units of Study

- Matter — chemical reactions, atomic structure and bonding, ionic and molecular compounds, and chemical nomenclature
- Force — motion, Newton's laws, and pressure
- Earth Science — the ozone layer, climate systems, natural resources, and human-induced climate change
- Space Science — the origin and structure of the universe, the solar system, stars, and celestial motion
- Life Systems — ecosystems, human impacts on the environment, and sustainable alternatives
- Evolution — cosmic and biological evolution, and human influence on the evolution of species

Woven through every unit are the curriculum's cross-cutting dimensions: Indigenous Peoples within the Natural World, Science Identity, Practical Science (hands-on investigation, measurement, and instrumentation), and the Nature of Science (the purpose, methods, applications, and implications of scientific inquiry).

Inquiry, Critical Thinking, and the Nature of Science

This course places a strong emphasis on critical thinking and the inquiry method as central to how science is learned and practiced. Rather than simply memorizing facts, students are expected to gather evidence through experimentation and observation, identify patterns and correlations in data, and evaluate whether evidence supports a claim. Students learn to distinguish theories, models, hypotheses, and laws, and to understand that scientific ideas are strengthened, modified, or discarded as new evidence emerges — they are never simply "proven."

Students are expected to use strategic and effective research skills to locate reliable sources, apply scientifically valid skepticism when evaluating information for bias and relevance, and distinguish legitimate scientific information from pseudoscience, misinformation, and disinformation. They will regularly engage in inquiry-based learning experiences, experimentation, scientific observation, data analysis, measurement, and structured debate, reflecting on their conclusions from multiple perspectives and adjusting their position based on evidence and peer feedback.

Assessment Breakdown

Assessment Component	Weight
Unit Assessments	40%
Unit Work (labs, assignments, in-class tasks)	45%
Final Project	15%

Unit Assessments evaluate student understanding at the end of each unit of study. Unit Work includes ongoing labs, investigations, homework, and in-class tasks completed throughout each unit. The Final Project is a culminating, inquiry-based task completed near the end of the course.

Cell Phone Policy

This course follows the Manitoba Government’s province-wide cell phone policy for schools, effective September 2024. For students in Grades 9 to 12, cellphone use is banned during class time. Cellphone use is permitted during breaks and lunch. This class will not be using cellphones or personal devices.