Crocus Plains Regional Secondary School

Science 20F

Course Outline 2025-2026

Course Title: Science 20F **Teacher:** Ms. Christine McGorman **Room:** 206

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COURSE DESCRIPTION

Grade 10 Science is a general course designed to lay the foundations for further science courses. It contains six units covering matter, forces, earth science, life systems, evolution, and space science. The focus is on developing skills, knowledge, and attitudes within the context of science and technology. Making science meaningful and interesting is a major emphasis at this level.

***Please Note: This class will be piloting a new curriculum for Grade 10 Science. Any feedback from students and/or parents and guardians is greatly appreciated.**

LEARNING OUTCOMES

Students will be able to…

- Understand that chemical reactions involve the joining or rearrangement of atoms.
- Understand that observable properties of elements and compounds can be explained in terms of their atomic structure and bonds between atoms or molecules.
- Understand the relationship between forces, masses, and changing velocities as describe in Newton's three laws of motion.
- Understand factors which influence Earth's climate system and global efforts made to reverse environmental damage.
- Understand the vast size of the universe, its varied contents, and evidence of its formation and evolution.
- Understand the nature and functioning of resilient ecosystems.
- Understand that human activity changes environments more quickly than organisms can naturally evolve.

UNIT DESCRIPTIONS

Unit 1: Matter

Approximate Time: 20 days
Evaluation: 20% of final mark

Guiding Question: What happens during chemical reactions?
Learning Outcomes:

SCI10.SK.1 Demonstrate an understanding that chemical reactions involve the joining or rearrangement of atoms in the reacting substances resulting in the formation of new substances. Include: conservation of mass, reaction equations, balancing equations, chemical bonds

SCI.10.SK.2 Demonstrate an understanding that the observable properties and behaviors of elements and compounds can be explained in terms of the arrangement of electrons and the bonds between atoms or molecules (e.g. metals, non-metals, Bohr models, ionic compounds, molecules, solids, liquids, gases, boiling point, melting point, reactivity, etc.).

SCI.10.SK.3 Demonstrate an understanding of the nature of the formation and properties of binary ionic compounds. Include: metal, nonmetal, valence electron, ionic bond, crystal, melting point, boiling point, electrolyte

SCI.10.SK.4 Demonstrate an understanding of the nature of the formation and properties of simple molecular compounds. Include: valence shell, covalent bond, single bond, double bond, triple bond, melting point, boiling point, states of matter

SCI.10.SK.5 Demonstrate an understanding that scientists name molecular and ionic compounds systematically according to IUPAC rules. Include: prefix, suffix, Stock System

Unit 2: Forces

Approximate Time: 16 days
Evaluation: 20% of final mark

Guiding Question: How do forces affect the motion of objects?
Learning Outcomes:

10.SK.6 Demonstrate an understanding of the concepts of position, time, displacement, velocity, and constant acceleration. Include: vector, scalar, distance, speed, and correct application of related SI units

SCI.10.SK.7 Demonstrate an understanding of the relationship between forces, masses and changing velocities as described and understood through Newton's three laws of motion. Include: mass, kilogram, inertia, definition of Newton (N), vector, acceleration, friction

SCI.10.SK.8 Demonstrate an understanding that pressure is a measure of force acting on a unit of area. Include: pascal, kilo-pascal, m^2, N

SCI.10.SK.9 Demonstrate an understanding that liquids, gases and solids exert pressures, and that the amount of pressure depends on various factors. Include: density, gravity, volume, temperature, depth, height

Unit 3: Earth Science

Approximate Time: 15 days
Evaluation: 15% of final mark

Guiding Question: What causes the climate to change?
Learning Outcomes:

SCI.10.SK.10 Demonstrate an understanding of the nature and importance of the ozone layer. Include: formation from oxygen, molecular composition, blocking UV rays, CFC damage.

SCI.10.SK.11 Demonstrate an understanding of global efforts made to reverse ozone damage. Include: ozone hole, Montreal protocol.

SCI.10.SK.12 Demonstrate an understanding of factors which influence Earth's climate system (e.g. latitude, Sun energy, landscape, prevailing wind, Coriolis effect, ocean currents, etc.).

10.S.K.13 Demonstrate an understanding of the nature, importance, and extraction of natural resources contained within the Earth. Include: fossil fuels, ores, minerals, metals.

SCI.10.SK.14 Demonstrate an understanding of the mechanism and consequences (e.g. severe weather events, ocean acidification, desertification, loss of polar ice, wildfires, flooding, etc.) of human induced climate change. Include: greenhouse gas

Unit 4: Life Systems & Evolution

Approximate Time: 22 days
Evaluation: 20% of final mark

Guiding Question: What is the nature of a healthy ecosystem? How are evolution and human activity related?
Learning Outcomes:

10.SK.20 Demonstrate an understanding of the nature and functioning of resilient ecosystems. Include: food web, ecological pyramids, biogeochemical cycles, biodiversity, carrying capacity

SCI.10.SK.21 Demonstrate an understanding that many human activities have a detrimental effect on natural, healthy ecosystems (e.g. monoculture, farming, forestry, mining, lake eutrophication, invasive species, habitat destruction, bioaccumulation, climate change, urbanization, building dams, and dissemination of invasive species, etc.).

SCI.10.SK.22 Demonstrate an understanding that there are sustainable alternatives to most detrimental human activities (e.g. sustainable agriculture practices, renewable energy resources, etc.)

SCI.10.SK.23 Demonstrate an understanding that human activity changes environments more quickly than organisms can naturally evolve. Include: climate change, pollution, monoculture, biodiversity, Anthropocene extinction, pesticides, fertilization, habitat destruction.

SCI.10.SK.24 Demonstrate an understanding that humans can intentionally or unintentionally influence the evolution of species (e.g: selective breeding, domestication, genetic modification, antibiotic resistance, peppered moth

Unit 5: Space Science

Approximate Time: 9 days
Evaluation: 10% of final mark

Guiding Question: What can we learn about the Universe?
Learning Outcomes:

SCI.10.SK.15 Demonstrate an understanding of the vast size of the universe, its varied contents, and evidence for its formation in the 'big bang' and subsequent evolution. Include: light year, parsec, astronomical unit, doppler shift, galaxies

SCI.10.SK.16 Demonstrate an understanding of the formation and evolution of our solar system, and the solar system's place and time in the larger universe. Include: gravity, accretion, star, age of universe, age of solar system, age of Earth

SCI.10.SK.17 Demonstrate an understanding of varying nature of stars, including the formation, types, mechanism of energy production, and progression through a life cycle. Include: types of stars, evolution of stars, star birth, main sequence, star death, nuclear fusion

SCI.10.SK.18 Demonstrate an understanding that celestial objects, and objects on Earth, all obey relatively simple laws of gravity and motion, which lead to mainly regular and predictable motions in the night sky, and occasionally to less predictable phenomena (e.g. meteor activity).

SCI.10.SK.19 Demonstrate an understanding that evidence of life has not been found anywhere beyond the Earth.

SCI.10.SK.22 Demonstrate an understanding that evolution of living things is an aspect of a larger process called 'cosmic evolution' which has led to conditions favorable to life on Earth.

Final Exam

Evaluation: 15% of final mark

COURSE EVALUATION STRUCTURE

- **Term Work** **85%**
- **Final Exam** **15%**

***Note:** some mark allotments may change throughout the course to adjust to specific class needs.

Assessment will include a variety of activities, assignments, projects and tests to demonstrate your learning of the concepts in this course. I will provide ongoing feedback so you can improve your understanding throughout this course.

It is important to remember that you are responsible for your learning and success in any course you take. By taking the initiative to seek help and clarification when needed, you will have the opportunity to excel in 20F Science. If you are unclear of the expectations or you do not understand something, don't hesitate to ask questions and get any help that you may need

CLASSROOM EXPECTATIONS

- **Respect** Show kindness and respect to others, yourself, and our environment.
- **Responsibility** You are responsible for your learning. Be prepared for class and take the initiative to ask questions.
- **Collaboration** Work with others to develop your knowledge and understand the roles within a group.
- **Communication** Speak to others respectfully and communicate learning and needs.
- **Open-Mindedness** Be open-minded to other people's ideas and perspectives, cultures, and beliefs.

ACADEMIC POLICIES

Cell Phone Policy
Our school recognizes that cell phones and electronic devices are an integral part of daily life for students. We aim to create an environment that encourages responsible use of technology while maintaining a focus on learning.

During Instructional Time: To ensure a focused learning environment, cell phones and electronic devices should be turned off or silenced, or left in lockers unless a staff member has granted permission for their use for a class related task (or educational task related to the subject). This policy helps students engage fully in learning activities without distractions. This policy will focus on mobile devices including smartphones, smart watches, or other personal communication devices.

Encouraging Positive Behavior:
We encourage students to demonstrate responsible digital citizenship by using their devices thoughtfully and respecting the learning space of others. If students need to use their devices during instructional time, they should seek permission from a staff member.

Respectful Cooperation:
We expect students to work cooperatively and respectfully with staff when addressing any issues related to cell phones or electronic devices. Our goal is to create a positive and supportive school environment where everyone can focus on learning and personal growth.

AI (Artificial Intelligence):
To accurately assess and understand each student's ability, they must submit their original work. Any work that incorporates any form of generative AI without proper citation is Academic Dishonesty. Unless explicitly instructed to do so, students may not use generative AI to complete class work, projects, papers, and assessments for class. Material determined to be plagiarized or created by AI will result in a mark of 0 for that assessment with an opportunity to redo the assignment, and may result in a meeting with the parent and/or admin.

Disciplinary Consequences:
If students do not abide by this policy, a grade can result in a zero, parents will be contacted, and administration can be involved as well.

Student Responsibility Guidelines for Assessment and Evaluation

Students actively engaged in their learning are the essence of the Brandon School Division's mission of educating the whole child.

The assessment, evaluation and reporting of student learning and achievement involves students, teachers, principals, parents, superintendents and the Board of Trustees. It is the responsibility of professional educators to assess, evaluate, and report on each student's degree of engagement and resulting learning outcomes. Such assessment, evaluation and reporting is a continuous and fundamental part of the student's learning process. Students are responsible for:

- their own learning with the expertise, assistance and motivation of their teachers;
- engaging individually and collectively in school/community learning opportunities;
- improving their learning involvement
- playing an active role in assessing their own learning
- providing evidence of their learning within established timelines

The purpose of this document is to identify student responsibilities in assessment and evaluation practices, provide clear guidelines and consequences so students can make informed decisions, and to provide structures that improve the relationship between student learning and assessment.

Late Assignments/Test

All assessments and/or evaluations will be assigned a reasonable completion date by the classroom teacher.

When a student demonstrates negligence and/or disregard towards the assessment and/or evaluation due date, the teacher can **assign a "NHI0" ** grade for the incomplete assessment and/or evaluation**. **NHI0- Not handed in ZERO.

Further arrangements will be made for an opportunity to complete the assignment.
Once the late assessment is marked, the assessment mark will replace the "NHI0" grade that was originally assigned.

If the original or alternate assessment is not submitted by the new completion date or if the student refuses to submit a required assessment, the "0" grade assigned to it will remain on the student's evaluation records. The "0" grade(s) will be calculated into the student's final mark for the unit of study and will be used in the calculation of the final grade of the course.

For a "0" grade to remain permanent on the student's record for that unit of study, a teacher's records will demonstrate that he/she had advised the student, and the parent/guardian that there was an appropriate level of opportunity given to complete the original assessment or an alternate assessment.