



Grand River Collegiate Institute COURSE OUTLINE

For students and their families.

Course Name

Applied Grade 9 Science

Course Code

SNC1PI

Prerequisite

None

Curriculum Document <http://www.edu.gov.on.ca/eng/curriculum/secondary/>

Textbook: Science Links 9 (McGraw-Hill Ryerson)**COURSE DESCRIPTION**

This course enables students to develop their understanding of basic concepts in biology, chemistry, earth and space science, and physics, and to relate science to technology, society, and the environment. Throughout the course, students will develop their skills in the processes of scientific investigation. Students will acquire an understanding of scientific theories and conduct investigations related to sustainable ecosystems; atomic and molecular structures and the properties of elements and compounds; the study of the universe and its properties and components; and the principles of electricity.

ESSENTIAL LEARNINGS/EXPECTATIONS/SKILLS

To earn this credit, students must demonstrate their learning of the following big ideas:

A: Scientific Investigation Skills and Career Exploration

Students will be able to demonstrate scientific investigation skills (related to both inquiry and research) in the four areas of skills (initiating and planning, performing and recording, analysing and interpreting, and communicating).

Students will also be able to identify and describe a variety of careers related to the fields of science under study, and identify scientists, including Canadians, who have made contributions to those fields.

B: Biology: Sustainable Ecosystems

Students will be able to assess the impact of human activities on the sustainability of terrestrial and/or aquatic ecosystems, and evaluate the effectiveness of courses of action intended to remedy or mitigate negative impacts.

Students will be able to investigate factors related to human activity that affect terrestrial and aquatic ecosystems, and explain how they affect the sustainability of these ecosystems.

Students will be able to demonstrate an understanding of the dynamic nature of ecosystems, particularly in terms of ecological balance and the impact of human activity on the sustainability of terrestrial and aquatic ecosystems.

C: Chemistry: Atoms, Elements, and Compounds

Students will be able to assess social, environmental, and economic impacts of the use of common elements and compounds, with reference to their physical and chemical properties.

Students will be able to investigate, through inquiry, the physical and chemical properties of common elements and compounds.

Students will be able to demonstrate an understanding of the properties of common elements and compounds, and of the organization of elements in the periodic table.

D: Earth and Space Science: The Study of the Universe

Students will be able to assess some of the costs, hazards, and benefits of space exploration and the contributions of Canadians to space research and technology.

Students will be able to investigate the characteristics and properties of a variety of celestial objects visible from Earth in the night sky.

Students will be able to demonstrate an understanding of the major scientific theories about the structure, formation, and evolution of the universe and its components and of the evidence that supports these theories.

E: Physics: the Characteristics of Electricity

Students will be able to assess some of the costs and benefits associated with the production of electrical energy from renewable and non-renewable sources, and analyse how electrical efficiencies and savings can be achieved, through both the design of technological devices and practices in the home.

Students will be able to investigate, through inquiry, various aspects of electricity, including the properties of static and current electricity, and the quantitative relationships between potential difference, current, and resistance in electrical circuits.

Students will be able to demonstrate an understanding of the principles of static and current electricity.

Refer to http://www.edu.gov.on.ca/eng/curriculum/secondary/science910_2008.pdf for all of the Essential Learning Skills and Expectations.

EVALUATION

Students will provide evidence of their knowledge by completing the following items.

A: Scientific Investigation Skills and Career Exploration <ul style="list-style-type: none"> • Lab Safety Quest • Scientific Method Quest • Whirlybird lab • Know your Variables Assignment 	Term Work 70%
B: Biology: Sustainable Ecosystems <ul style="list-style-type: none"> • Food Web Assignment • Invasive Species Brochure Project • Ecology Unit Test 	
C: Chemistry: Atoms, Elements, and Compounds <ul style="list-style-type: none"> • Formal Laboratory • Element Brochure Project • Chemistry Unit Test 	
D: Earth and Space Science: The Study of the Universe <ul style="list-style-type: none"> • Space Assignment • Space Technology Spin-off Presentation Project • Space Unit Test 	
E: Physics: the Characteristics of Electricity <ul style="list-style-type: none"> • Formal Laboratory • Renewable Energy Poster Project • Static Electricity Quest • Current Electricity Unit Quest 	
Laboratory Exam	10 %
Written Exam	20 %

Refer to the GRCI Web Site www.grc.wrdsb.ca for Assessment, Evaluation and Reporting Policies as well as Academic Honesty and Late Policies.

**Checklist of Required Learning that a Student must Demonstrate
in order to Gain the Credit (50%) in SNC1PI**

Strand 1: Scientific Investigation Skills and Career Exploration

- ❖ Formulate scientific questions and develop hypotheses on relationships between variables.
- ❖ Conduct inquiries, controlling variables, following procedures, and using materials safely and effectively.
- ❖ Gather and analyse data effectively and communicate results clearly.
- ❖ Identify and locate print, electronic, and human sources that are relevant to research questions.

Strand 2: Ecology: Sustainable Ecosystems

- ❖ Compare and contrast biotic and abiotic characteristics of sustainable and unsustainable terrestrial and aquatic ecosystems.
- ❖ Assess the impact of human activity on ecosystems related to invasive species.
- ❖ Be able to use and describe important terminology related to sustainable ecosystems including but not limited to: bioaccumulation, biosphere, diversity, ecosystem, equilibrium, sustainability, and sustainable use.
- ❖ Conduct an inquiry into how humans effect water quality and explain the impact on sustainable aquatic ecosystems.
- ❖ Describe cellular respiration and photosynthesis and assess its connection to cycling of matter within ecosystems.
- ❖ Describe limiting factors of ecosystems and how they affect carrying capacity of an ecosystem.
- ❖ Identify the earths' four spheres (biosphere, hydrosphere, lithosphere, and atmosphere) and describe the connections between them in sustainable ecosystems.

Strand 3: Chemistry: Atoms, Elements, and Compounds

- ❖ Use appropriate terminology related to atoms, elements, and compounds.
- ❖ Describe the characteristics of protons, neutrons, and electrons, including charge, location, and relative mass.
- ❖ Describe the arrangement of electrons of the first 20 elements and the properties of their respective groups.
- ❖ Assess and conduct inquiries into the physical and chemical properties of elements and compounds.
- ❖ Assess physical and chemical changes in elements and compounds.
- ❖ Conduct appropriate chemical tests to identify some common gases on the basis of their properties.
- ❖ Explain how different atomic models evolved as a result of experimental evidence.
- ❖ Identify and use the symbols for common elements and formulae for compounds.

Strand 4: Earth and Space Science: The Study of the Universe

- ❖ Analyse Canadian and World contributions to the exploration of space with emphasis on technology and the ISS
- ❖ Identify common technologies that were originally developed for space exploration
- ❖ Use appropriate terminology related to the study of the universe and our solar system
- ❖ Describe the various physical features of the planets, sun, and moon and how they interact with each other
- ❖ Gather and analyse planetary data for the purpose of comparison

Strand 5: Physics: The Characteristics of Electricity

- ❖ Identify charge as static or current and determine direction of electron flow
- ❖ Analyse and describe technologies used to protect against static discharge
- ❖ Use circuit symbols to construct diagrams representing series circuits, parallel circuits or a combination of both
- ❖ Collect or measure current, voltage and resistance data and develop mathematical relationships between them
- ❖ Gather and analyse electrical data and use it to determine electrical power, energy, efficiency, and cost
- ❖ Compare and contrast sources of electrical energy (renewable vs. non-renewable)

Procedures

Late and Missing Assignments: It is important for students to develop good personal management skills (such as time management and planning). These skills will be reflected in the **learning skills** area of the report card. It is expected that students will complete and submit all essential tasks as they are the opportunity for you to demonstrate your learning to your teacher.

Attendance: Attendance in classes is an important part of learning, and absences should be avoided. When a student is absent, a parent/guardian must call the school's attendance line on the date of absence, or provide a note explaining the absence for the student to submit the following day. Students are responsible for what they missed during their absence.

Cheating and Plagiarism: It is important for students to do their own best work. Most assignments for this class are done within the classroom, observed by the teacher, and this helps to minimize the chances of cheating and plagiarism. In the event that cheating or plagiarism occurs, the following consequences may be implemented, in consultation with administration, depending on the situation:

1. The student may be required to redo all or part of the assignment or assessment.
2. The student may be required to complete an alternate assignment or assessment.
3. The student's work may be treated as a missed assignment.

There may also be other consequences that are determined to be appropriate (e.g. detention, suspension, etc.) as per the school's progressive discipline process. Parents/guardians will be informed about the infraction and the consequences.

Please refer to the school website: <http://grc.wrdsb.ca/about/policies> for more details on these policies and other academic procedures.

Signatures

Please sign below indicating you have read and understand the requirements for successful completion of this course.

Student

Parent/Guardian