

Main Criteria: Forward Education
Secondary Criteria: Ontario Curriculum
Subjects: Mathematics, Science, Technology Education
Grades: 9, 10, Key Stage 3, Key Stage 4

Forward Education

Replanting our Forests with Automated Tree Seeders

Ontario Curriculum
Mathematics
Grade 9 - Adopted: 2021

STRAND / COURSE	MTH1W.	Mathematics GRADE 9 (MTH1W) - OVERALL AND SPECIFIC EXPECTATIONS
STRAND / OVERALL EXPECTATION	MTH1W. AA:	Social-Emotional Learning (SEL) Skills in Mathematics

STAGE / SKILLS MTH1W. AA1. develop and explore a variety of social-emotional learning skills in a context that supports and reflects this learning in connection with the expectations across all other strands

STRAND / COURSE	MTH1W.	Mathematics GRADE 9 (MTH1W) - OVERALL AND SPECIFIC EXPECTATIONS
STRAND / OVERALL EXPECTATION	MTH1W. A:	Mathematical Thinking and Making Connections

STAGE / SKILLS MTH1W. A1. apply the mathematical processes to develop a conceptual understanding of, and procedural fluency with, the mathematics they are learning

STAGE / SKILLS MTH1W. A2. make connections between mathematics and various knowledge systems, their lived experiences, and various real-life applications of mathematics, including careers

STRAND / COURSE	MTH1W.	Mathematics GRADE 9 (MTH1W) - OVERALL AND SPECIFIC EXPECTATIONS
STRAND / OVERALL EXPECTATION	MTH1W. C:	Algebra
STAGE / SKILLS	MTH1W. C3.	represent and compare linear and non-linear relations that model real-life situations, and use these representations to make predictions

SUB-ORGANIZER / SPECIFIC EXPECTATION
Application of Linear and Non-Linear Relations

EXPECTATION MTH1W. C3.2. represent linear relations using concrete materials, tables of values, graphs, and equations, and make connections between the various representations to demonstrate an understanding of rates of change and initial values

STRAND / COURSE	MTH1W.	Mathematics GRADE 9 (MTH1W) - OVERALL AND SPECIFIC EXPECTATIONS
STRAND / OVERALL EXPECTATION	MTH1W. D:	Data
STAGE / SKILLS	MTH1W. D1.	describe the collection and use of data, and represent and analyse data involving one and two variables
SUB-ORGANIZER / SPECIFIC EXPECTATION		Representation and Analysis of Data

EXPECTATION	MTH1W. D1.2.	represent and statistically analyse data from a real-life situation involving a single variable in various ways, including the use of quartile values and box plots
-------------	-----------------	---

Ontario Curriculum

Mathematics

Grade 10 - Adopted: 2006

STRAND / COURSE		Foundations of Mathematics, Grade 10, Applied (MFM2P)
STRAND / OVERALL EXPECTATION	MFM2P. B.	Modelling Linear Relations
STAGE / SKILLS	MFM2P. B.SE.	Specific Expectations
SUB-ORGANIZER / SPECIFIC EXPECTATION	MFM2P. B.2.	Graphing and Writing Equations of Lines: By the end of this course, students will:

EXPECTATION	MFM2P.B .2.1.	Connect the rate of change of a linear relation to the slope of the line, and define the slope as the ratio $m = \text{rise/run}$; identify, through investigation, $y = mx + b$ as a common form for the equation of a straight line, and identify the special cases $x = a$, $y = b$;
-------------	------------------	--

Ontario Curriculum

Science

Grade 9 - Adopted: 2008

STRAND / COURSE	ON.SNC1 D.	Science, Grade 9, Academic SNC1D
STRAND / OVERALL EXPECTATION	SNC1D. A.	Scientific Investigation Skills and Career Exploration
STAGE / SKILLS	SNC1D. A.OE.	Overall Expectations: Throughout this course, students will:

SUB-ORGANIZER / SPECIFIC EXPECTATION	SNC1D.A 1.	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);
--------------------------------------	---------------	--

STRAND / COURSE	ON.SNC1 D.	Science, Grade 9, Academic SNC1D
STRAND / OVERALL EXPECTATION	SNC1D. A.	Scientific Investigation Skills and Career Exploration
STAGE / SKILLS	SNC1D. A.SE.	Specific Expectations
SUB-ORGANIZER / SPECIFIC EXPECTATION	SNC1D. A1.	Scientific Investigation Skills: Throughout this course, students will:

EXPECTATION	SNC1D.A 1.2.	Initiating and Planning [IP]: Select appropriate instruments (e.g., sampling instruments, laboratory glassware, magnifying lenses, an electroscope) and materials (e.g., ebonite rods, star charts, a ball and spring apparatus, pH paper) for particular inquiries
-------------	-----------------	---

EXPECTATION	SNC1D.A 1.5.	Performing and Recording [PR]: Conduct inquiries, controlling some variables, adapting or extending procedures as required, and using standard equipment and materials safely, accurately, and effectively, to collect observations and data
-------------	-----------------	--

EXPECTATION	SNC1D.A 1.11.	Communicating [C]: Communicate ideas, plans, procedures, results, and conclusions orally, in writing, and/or in electronic presentations, using appropriate language and a variety of formats (e.g., data tables, laboratory reports, presentations, debates, simulations, models)
-------------	------------------	--

STRAND / COURSE	ON.SNC1D.	Science, Grade 9, Academic SNC1D
STRAND / OVERALL EXPECTATION	SNC1D.B.	Biology: Sustainable Ecosystems
STAGE / SKILLS	SNC1D.B.OE.	Overall Expectations: By the end of this course, students will:

SUB-ORGANIZER / SPECIFIC EXPECTATION	SNC1D.B 1.	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;
--------------------------------------	---------------	--

SUB-ORGANIZER / SPECIFIC EXPECTATION	SNC1D.B 2.	Investigate factors related to human activity that affect terrestrial and aquatic ecosystems, and explain how they affect the sustainability of these ecosystems;
--------------------------------------	---------------	---

SUB-ORGANIZER / SPECIFIC EXPECTATION	SNC1D.B 3.	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.
--------------------------------------	---------------	---

STRAND / COURSE	ON.SNC1D.	Science, Grade 9, Academic SNC1D
STRAND / OVERALL EXPECTATION	SNC1D.B.	Biology: Sustainable Ecosystems
STAGE / SKILLS	SNC1D.B.SE.	Specific Expectations

SUB-ORGANIZER / SPECIFIC EXPECTATION	SNC1D.B1.	Relating Science to Technology, Society, and the Environment: By the end of this course, students will:
---	------------------	--

EXPECTATION	SNC1D.B 1.1.	Assess, on the basis of research, the impact of a factor related to human activity (e.g., urban sprawl, introduction of invasive species, overhunting/overfishing) that threatens the sustainability of a terrestrial or aquatic ecosystem [IP, PR, AI, C]
-------------	-----------------	--

EXPECTATION	SNC1D.B 1.2.	Evaluate the effectiveness of government initiatives in Canada (federal, provincial, municipal), and/or the efforts of societal groups or non-governmental organizations, such as Aboriginal communities, environmental groups, or student organizations, with respect to an environmental issue that affects the sustainability of terrestrial or aquatic ecosystems (e.g., wetland restoration, recycling programs, Canada- Ontario Environmental Farm Plans, stewardship of national and provincial parks) [AI, C]
-------------	-----------------	---

STRAND / COURSE	ON.SNC1D.	Science, Grade 9, Academic SNC1D
STRAND / OVERALL EXPECTATION	SNC1D.B.	Biology: Sustainable Ecosystems
STAGE / SKILLS	SNC1D.B.SE.	Specific Expectations

SUB-ORGANIZER / SPECIFIC EXPECTATION	SNC1D. B2.	Developing Skills of Investigation and Communication: By the end of this course, students will:
EXPECTATION	SNC1D.B 2.1.	Use appropriate terminology related to sustainable ecosystems, including, but not limited to: bioaccumulation, biosphere, diversity, ecosystem, equilibrium, sustainability, sustainable use, protection, and watershed [C]
EXPECTATION	SNC1D.B 2.2.	Interpret qualitative and quantitative data from undisturbed and disturbed ecosystems (terrestrial and/or aquatic), communicate the results graphically, and, extrapolating from the data, explain the importance of biodiversity for all sustainable ecosystems [PR, AI, C]
EXPECTATION	SNC1D.B 2.5.	Analyse the effect of human activity on the populations of terrestrial and aquatic ecosystems by interpreting data and generating graphs (e.g., data from Statistics Canada, Parks Canada, and other websites on: the concentration in water of chemicals from fertilizer run-off and their effect on the growth of algae; stressors associated with human use of natural areas, such as trampled vegetation, wildlife mortality from motor vehicles, and the removal of plants, animals, and/or natural objects; suburban developments and their impact on the food supply for animals such as foxes and racoons) [PR, AI, C]

STRAND / COURSE	ON.SNC1 D.	Science, Grade 9, Academic SNC1D
STRAND / OVERALL EXPECTATION	SNC1D. B.	Biology: Sustainable Ecosystems
STAGE / SKILLS	SNC1D. B.SE.	Specific Expectations
SUB-ORGANIZER / SPECIFIC EXPECTATION	SNC1D. B3.	Understanding Basic Concepts: By the end of this course, students will:

EXPECTATION	SNC1D.B 3.2.	Describe the complementary processes of cellular respiration and photosynthesis with respect to the flow of energy and the cycling of matter within ecosystems (i.e., carbon dioxide is a by-product of cellular respiration and is used for photosynthesis, which produces oxygen needed for cellular respiration), and explain how human activities can disrupt the balance achieved by these processes (e.g., automobile use increases the amount of carbon dioxide in the atmosphere; planting more trees decreases the amount of carbon dioxide in the atmosphere)
EXPECTATION	SNC1D.B 3.5.	Identify various factors related to human activity that have an impact on ecosystems (e.g., the introduction of invasive species; shoreline development; industrial emissions that result in acid rain), and explain how these factors affect the equilibrium and survival of ecosystems (e.g., invasive species push out native species and upset the equilibrium in an ecosystem; shoreline development affects the types of terrestrial and aquatic life that can live near lake shores or river banks; acid rain changes the pH of water, which affects the type of aquatic life that can survive in a lake)

STRAND / COURSE	ON.SNC1 P.	Science, Grade 9 Applied SNC1P
STRAND / OVERALL EXPECTATION	SNC1P. A.	Scientific Investigation Skills and Career Exploration
STAGE / SKILLS	SNC1P. A.OE.	Overall Expectations: Throughout this course, students will:

SUB-ORGANIZER / SPECIFIC EXPECTATION	SNC1P.A 1.	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);
--------------------------------------	------------	--

STRAND / COURSE	ON.SNC1 P.	Science, Grade 9 Applied SNC1P
------------------------	-------------------	---------------------------------------

STRAND / OVERALL EXPECTATION	SNC1P.A.	Scientific Investigation Skills and Career Exploration
STAGE / SKILLS	SNC1P.A.SE.	Specific Expectations
SUB-ORGANIZER / SPECIFIC EXPECTATION	SNC1P.A1.	Scientific Investigation Skills: Throughout this course, students will:
EXPECTATION	SNC1P.A 1.2.	Initiating and Planning [IP]: Select appropriate instruments (e.g., soil sampling instruments, a pneumatic trough and test tubes, magnifying lenses, an electroscope) and materials (e.g., ebonite rods, star charts, oxygen testing splints, pH paper) for particular inquiries
EXPECTATION	SNC1P.A 1.5.	Performing and Recording [PR]: Conduct inquiries, controlling some variables, adapting or extending procedures as required, and using standard equipment and materials safely, accurately, and effectively, to collect observations and data
EXPECTATION	SNC1P.A 1.11.	Communicating [C]: Communicate ideas, plans, procedures, results, and conclusions orally, in writing, and/or in electronic presentations, using appropriate language and a variety of formats (e.g., data tables, laboratory reports, presentations, debates, simulations, models)
STRAND / COURSE	ON.SNC1P.	Science, Grade 9 Applied SNC1P
STRAND / OVERALL EXPECTATION	SNC1P.B.	Biology: Sustainable Ecosystems and Human Activity
STAGE / SKILLS	SNC1P.B.OE.	Overall Expectations: By the end of this course, students will:
SUB-ORGANIZER / SPECIFIC EXPECTATION	SNC1P.B 1.	Analyse the impact of human activity on terrestrial or aquatic ecosystems, and assess the effectiveness of selected initiatives related to environmental sustainability;
SUB-ORGANIZER / SPECIFIC EXPECTATION	SNC1P.B 2.	Investigate some factors related to human activity that affect terrestrial or aquatic ecosystems, and describe the consequences that these factors have for the sustainability of these ecosystems;
SUB-ORGANIZER / SPECIFIC EXPECTATION	SNC1P.B 3.	Demonstrate an understanding of characteristics of terrestrial and aquatic ecosystems, the interdependence within and between ecosystems, and the impact humans have on the sustainability of these ecosystems.
STRAND / COURSE	ON.SNC1P.	Science, Grade 9 Applied SNC1P
STRAND / OVERALL EXPECTATION	SNC1P.B.	Biology: Sustainable Ecosystems and Human Activity
STAGE / SKILLS	SNC1P.B.SE.	Specific Expectations
SUB-ORGANIZER / SPECIFIC EXPECTATION	SNC1P.B1.	Relating Science to Technology, Society, and the Environment: By the end of this course, students will:

EXPECTATION	SNC1P.B 1.1.	Analyse, on the basis of research, how a human activity (e.g., urban sprawl, use of pesticides and fertilizers, creation of pollution, human interaction with wildlife) threatens the sustainability of a terrestrial or aquatic ecosystem [IP, PR, AI, C]
-------------	-----------------	--

EXPECTATION	SNC1P.B 1.2.	Assess the effectiveness of a local initiative of personal interest that seeks to ensure the sustainability of a terrestrial or aquatic ecosystem (e.g., greening their school grounds; conservation efforts of local Aboriginal communities; naturalizing banks of local rivers or ponds with native vegetation; adoption of an integrated pest management strategy to combat pests in a local garden), and explain why the initiative is important to the sustainability of the ecosystem [AI, C]
-------------	-----------------	---

STRAND / COURSE	ON.SNC1 P.	Science, Grade 9 Applied SNC1P
STRAND / OVERALL EXPECTATION	SNC1P.B.	Biology: Sustainable Ecosystems and Human Activity
STAGE / SKILLS	SNC1P.B.SE.	Specific Expectations
SUB-ORGANIZER / SPECIFIC EXPECTATION	SNC1P.B2.	Developing Skills of Investigation and Communication: By the end of this course, students will:

EXPECTATION	SNC1P.B 2.1.	Use appropriate terminology related to sustainable ecosystems and human activity, including, but not limited to: biodiversity, biotic, ecosystem, equilibrium, species diversity, sustainability, and watershed [C]
-------------	-----------------	---

EXPECTATION	SNC1P.B 2.4.	Plan and conduct an inquiry into how a factor related to human activity affects a terrestrial or aquatic ecosystem (e.g., how changes to soil composition from the use of different compostable materials or organic or inorganic fertilizers affect the types of plants that can be grown; how lower water levels resulting from water diversion affect waterfowl nesting areas and fish reproduction), and describe the consequences that this factor has for the sustainability of the ecosystem [IP, PR, AI, C]
-------------	-----------------	---

EXPECTATION	SNC1P.B 2.5.	Analyse the effect of factors related to human activity on terrestrial or aquatic ecosystems by interpreting data and generating graphs (e.g., data on the concentration in water of chemicals from fertilizer run-off and their effect on the growth of algae) [AI, C]
-------------	-----------------	---

STRAND / COURSE	ON.SNC1 P.	Science, Grade 9 Applied SNC1P
STRAND / OVERALL EXPECTATION	SNC1P.B.	Biology: Sustainable Ecosystems and Human Activity
STAGE / SKILLS	SNC1P.B.SE.	Specific Expectations
SUB-ORGANIZER / SPECIFIC EXPECTATION	SNC1P.B3.	Understanding Basic Concepts: By the end of this course, students will:

EXPECTATION	SNC1P.B 3.3.	Describe the complementary processes of cellular respiration and photosynthesis with respect to the flow of energy and the cycling of matter within ecosystems (e.g., carbon dioxide is a by-product of cellular respiration and is used for photosynthesis, which produces oxygen needed for cellular respiration), and explain how human activities can disrupt the balance achieved by these processes (e.g., automobile use increases the amount of carbon dioxide in the atmosphere; planting trees reduces the amount of carbon dioxide in the atmosphere)
-------------	-----------------	--

EXPECTATION	SNC1P.B 3.5.	Identify some factors related to human activity that have an impact on ecosystems (e.g., the use of fertilizers and pesticides; altered shorelines; organic and conventional farming; urban sprawl), and explain how these factors affect the equilibrium and survival of populations in terrestrial and aquatic ecosystems (e.g., fertilizers change the fertility of soil, affecting what types of plants can grow in it; pesticides leach into water systems, affecting water quality and aquatic life; shoreline development affects the types of aquatic life and terrestrial vegetation that can live by lake shores or river banks; urban sprawl wipes out fields and woods, destroying wildlife habitats)
-------------	-----------------	---

**Ontario Curriculum
Science**

Grade 10 - Adopted: 2008

STRAND / COURSE	ON.SNC2 D.	Science, Grade 10 Academic SNC2D
STRAND / OVERALL EXPECTATION	SNC2D. A.	Scientific Investigation Skills and Career Exploration
STAGE / SKILLS	SNC2D. A.OE.	Overall Expectations: Throughout this course, students will:

SUB-ORGANIZER / SPECIFIC EXPECTATION	SNC2D.A 1.	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);
--------------------------------------	---------------	--

STRAND / COURSE	ON.SNC2 D.	Science, Grade 10 Academic SNC2D
STRAND / OVERALL EXPECTATION	SNC2D. A.	Scientific Investigation Skills and Career Exploration
STAGE / SKILLS	SNC2D. A.SE.	Specific Expectations
SUB-ORGANIZER / SPECIFIC EXPECTATION	SNC2D. A1.	Scientific Investigation Skills: Throughout this course, students will:

EXPECTATION	SNC2D.A 1.2.	Initiating and Planning [IP]: Select appropriate instruments (e.g., a microscope, laboratory glassware, an optical bench) and materials (e.g., prepared slides, an aquarium, lenses, pH paper) for particular inquiries
-------------	-----------------	---

EXPECTATION	SNC2D.A 1.5.	Performing and Recording [PR]: Conduct inquiries, controlling some variables, adapting or extending procedures as required, and using standard equipment and materials safely, accurately, and effectively, to collect observations and data
-------------	-----------------	--

EXPECTATION	SNC2D.A 1.11.	Communicating [C]: Communicate ideas, plans, procedures, results, and conclusions orally, in writing, and/or in electronic presentations, using appropriate language and a variety of formats (e.g., data tables, laboratory reports, presentations, debates, simulations, models)
-------------	------------------	--

STRAND / COURSE	ON.SNC2 D.	Science, Grade 10 Academic SNC2D
STRAND / OVERALL EXPECTATION	SNC2D. D.	Earth and Space Science: Climate Change
STAGE / SKILLS	SNC2D. D.OE.	Overall Expectations: By the end of this course, students will:

SUB-ORGANIZER / SPECIFIC EXPECTATION	SNC2D.D.2.	Investigate various natural and human factors that influence Earth's climate and climate change;
--------------------------------------	------------	--

SUB-ORGANIZER / SPECIFIC EXPECTATION	SNC2D.D.3.	Demonstrate an understanding of natural and human factors, including the greenhouse effect, that influence Earth's climate and contribute to climate change.
--------------------------------------	------------	--

STRAND / COURSE	ON.SNC2D.	Science, Grade 10 Academic SNC2D
STRAND / OVERALL EXPECTATION	SNC2D.D.	Earth and Space Science: Climate Change
STAGE / SKILLS	SNC2D.D.SE.	Specific Expectations
SUB-ORGANIZER / SPECIFIC EXPECTATION	SNC2D.D1.	Relating Science to Technology, Society, and the Environment: By the end of this course, students will:

EXPECTATION	SNC2D.D.1.1.	Analyse current and/or potential effects, both positive and negative, of climate change on human activity and natural systems (e.g., loss of habitat for Arctic mammals such as polar bears and loss of traditional lifestyles for Inuit as Arctic ice shrinks; famine as arable land is lost to desertification; an increase in water-borne disease and human resettlement as coastal lands are flooded; expansion of the growing season in some regions) [AI, C]
-------------	--------------	--

STRAND / COURSE	ON.SNC2D.	Science, Grade 10 Academic SNC2D
STRAND / OVERALL EXPECTATION	SNC2D.D.	Earth and Space Science: Climate Change
STAGE / SKILLS	SNC2D.D.SE.	Specific Expectations
SUB-ORGANIZER / SPECIFIC EXPECTATION	SNC2D.D2.	Developing Skills of Investigation and Communication: By the end of this course, students will:

EXPECTATION	SNC2D.D.2.2.	Design and build a model to illustrate the natural greenhouse effect, and use the model to explain the anthropogenic greenhouse effect [IP, PR, C]
-------------	--------------	--

EXPECTATION	SNC2D.D.2.3.	Analyse different sources of scientific data (e.g., lake cores, tree rings, fossils and preserved organisms, ice cores) for evidence of natural climate change and climate change influenced by human activity [PR, AI, C]
-------------	--------------	--

EXPECTATION	SNC2D.D.2.6.	Investigate, through laboratory inquiry or simulations, how water in its various states influences climate patterns (e.g., water bodies moderate climate, water vapour is a greenhouse gas, ice increases the albedo of Earth's surface) [PR, AI]
-------------	--------------	---

EXPECTATION	SNC2D.D.2.9.	Compare different perspectives and/or biases evident in discussions of climate change in scientific and non-scientific media (e.g., with reference to knowledge, beliefs, and values) [AI, C]
-------------	--------------	---

STRAND / COURSE	ON.SNC2D.	Science, Grade 10 Academic SNC2D
STRAND / OVERALL EXPECTATION	SNC2D.D.	Earth and Space Science: Climate Change

STAGE / SKILLS	SNC2D.D.SE.	Specific Expectations
SUB-ORGANIZER / SPECIFIC EXPECTATION	SNC2D.D3.	Understanding Basic Concepts: By the end of this course, students will:
EXPECTATION	SNC2D.D 3.3.	Describe the natural greenhouse effect, explain its importance for life, and distinguish it from the anthropogenic greenhouse effect
EXPECTATION	SNC2D.D 3.4.	Identify natural phenomena (e.g., plate tectonics, uplift and weathering, solar radiance, cosmic ray cycles) and human activities (e.g., forest fires, deforestation, the burning of fossil fuels, industrial emissions) known to affect climate, and describe the role of both in Canada's contribution to climate change
EXPECTATION	SNC2D.D 3.5.	Describe the principal sources and sinks, both natural and/or anthropogenic, of greenhouse gases (e.g., carbon dioxide, methane, nitrous oxide, halocarbons, water vapour)
EXPECTATION	SNC2D.D 3.6.	Describe how different carbon and nitrogen compounds (e.g., carbon dioxide, methane, nitrous oxide) influence the trapping of heat in the atmosphere and hydrosphere
EXPECTATION	SNC2D.D 3.7.	Describe, in general terms, the causes and effects of the anthropogenic greenhouse effect, the depletion of stratospheric and tropospheric ozone, and the formation of ground-level ozone and smog
EXPECTATION	SNC2D.D 3.8.	Identify and describe indicators of global climate change (e.g., changes in: glacial and polar ice, sea levels, wind patterns, global carbon budget assessments)

STRAND / COURSE	ON.SNC2P.	Science, Grade 10 Applied SNC2P
STRAND / OVERALL EXPECTATION	SNC2P.A.	Scientific Investigation Skills and Career Exploration
STAGE / SKILLS	SNC2P.A.OE.	Overall Expectations: Throughout this course, students will:

SUB-ORGANIZER / SPECIFIC EXPECTATION

SNC2P.A 1. 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);

STRAND / COURSE	ON.SNC2P.	Science, Grade 10 Applied SNC2P
STRAND / OVERALL EXPECTATION	SNC2P.A.	Scientific Investigation Skills and Career Exploration
STAGE / SKILLS	SNC2P.A.SE.	Specific Expectations

SUB-ORGANIZER / SPECIFIC EXPECTATION

SNC2P.A1. **Scientific Investigation Skills: Throughout this course, students will:**

EXPECTATION

SNC2P.A 1.2. Initiating and Planning [IP]: Select appropriate instruments (e.g., a microscope, laboratory glassware, an optical bench) and materials (e.g., prepared slides, an aquarium, lenses, acid-base indicators) for particular inquiries

EXPECTATION

SNC2P.A 1.5. Performing and Recording [PR]: Conduct inquiries, controlling some variables, adapting or extending procedures as required, and using standard equipment and materials safely, accurately, and effectively, to collect observations and data

EXPECTATION	SNC2P.A 1.11.	Communicating [C]: Communicate ideas, plans, procedures, results, and conclusions orally, in writing, and/or in electronic presentations, using appropriate language and a variety of formats (e.g., data tables, laboratory reports, presentations, debates, simulations, models)
-------------	------------------	--

STRAND / COURSE	ON.SNC2 P.	Science, Grade 10 Applied SNC2P
STRAND / OVERALL EXPECTATION	SNC2P.D.	Earth and Space Science: Earth's Dynamic Climate
STAGE / SKILLS	SNC2P.D.OE.	Overall Expectations: By the end of this course, students will:

SUB-ORGANIZER / SPECIFIC EXPECTATION	SNC2P.D 1.	Analyse effects of human activity on climate change, and effects of climate change on living things and natural systems;
--------------------------------------	---------------	--

SUB-ORGANIZER / SPECIFIC EXPECTATION	SNC2P.D 2.	Investigate various natural and human factors that have an impact on climate change and global warming;
--------------------------------------	---------------	---

SUB-ORGANIZER / SPECIFIC EXPECTATION	SNC2P.D 3.	Demonstrate an understanding of various natural and human factors that contribute to climate change and global warming.
--------------------------------------	---------------	---

STRAND / COURSE	ON.SNC2 P.	Science, Grade 10 Applied SNC2P
STRAND / OVERALL EXPECTATION	SNC2P.D.	Earth and Space Science: Earth's Dynamic Climate
STAGE / SKILLS	SNC2P.D.SE.	Specific Expectations
SUB-ORGANIZER / SPECIFIC EXPECTATION	SNC2P.D1.	Relating Science to Technology, Society, and the Environment: By the end of this course, students will:

EXPECTATION	SNC2P.D 1.2.	Analyse ways in which human actions (e.g., burning fossil fuels, implementing tree-planting programs) have increased or decreased the production of greenhouse gases [A], [C]
-------------	-----------------	---

STRAND / COURSE	ON.SNC2 P.	Science, Grade 10 Applied SNC2P
STRAND / OVERALL EXPECTATION	SNC2P.D.	Earth and Space Science: Earth's Dynamic Climate
STAGE / SKILLS	SNC2P.D.SE.	Specific Expectations
SUB-ORGANIZER / SPECIFIC EXPECTATION	SNC2P.D2.	Developing Skills of Investigation and Communication: By the end of this course, students will:

EXPECTATION	SNC2P.D 2.1.	Use appropriate terminology related to Earth's dynamic climate, including, but not limited to: anthropogenic, atmosphere, carbon footprint, carbon sink, climate, greenhouse gases, hydrosphere, and weather [C]
-------------	-----------------	--

EXPECTATION	SNC2P.D 2.2.	Investigate the principles of the natural greenhouse effect, using simulations, diagrams, and/or models, and compare these principles to those of an actual greenhouse [PR, AI]
EXPECTATION	SNC2P.D 2.3.	Use a research process to investigate a source of greenhouse gases (e.g., decaying garbage, animal digestive processes, burning biomass) Grade 10 and its effect on a region of Canada (e.g., melting of the polar ice cap in the Arctic, shrinking of glaciers in the Rockies) [IP, PR, AI]
EXPECTATION	SNC2P.D 2.4.	Conduct an inquiry to determine how different factors (e.g., an increase in surface temperature, an increase in water temperature) affect global warming and climate change [PR]
EXPECTATION	SNC2P.D 2.5.	Investigate their personal carbon footprint, using a computer simulation or numerical data (e.g., determine carbon emissions that result from their travelling to school, work, and recreation venues; from vacation travelling; from buying products imported from distant countries), and plan a course of action to reduce their footprint (e.g., a plan to increase their use of bicycles or public transit; to eat more local foods) [PR, AI, C]

STRAND / COURSE	ON.SNC2 P.	Science, Grade 10 Applied SNC2P
STRAND / OVERALL EXPECTATION	SNC2P.D.	Earth and Space Science: Earth's Dynamic Climate
STAGE / SKILLS	SNC2P.D.SE.	Specific Expectations
SUB-ORGANIZER / SPECIFIC EXPECTATION	SNC2P.D3.	Understanding Basic Concepts: By the end of this course, students will:
EXPECTATION	SNC2P.D 3.2.	Describe the natural greenhouse effect, its importance for life, and the difference between it and the anthropogenic greenhouse effect
EXPECTATION	SNC2P.D 3.4.	Identify different greenhouse gases (e.g., carbon dioxide, methane, water vapour, nitrous oxide), and explain how they are produced naturally in the environment
EXPECTATION	SNC2P.D 3.5.	Describe methods by which greenhouse gases are produced by humans (e.g., burning of biomass, chemical reactions involving pollutants)
EXPECTATION	SNC2P.D 3.6.	Identify the natural and human causes of climate change in the world and, in particular, how Canada contributes to climate change