



Ontario eSecondary School Course Outline 2026-2027

Ministry of Education Course Title: Science - Academic	
Ministry Course Code: SNC2D	
Course Type: Academic	
Grade: 10	
Credit Value: 1.0	
Prerequisite(s): Science, Grade 9, Academic (SNC1D) Science, Grade 9, Academic (SNC1P)	
Department: Science	
Course developed by: Ting Li	Created June 31st, 2019 Revised: August 1, 2026
Length: One Semester	Hours: 110
This course has been developed based on the following Ministry documents: 1. <i>Science, The Ontario Curriculum, Grades 9 and 10</i>, 2008, (revised) 2. <i>Growing Success: Assessment, Evaluation, and Reporting in Ontario Schools</i> (2010) 3. <i>Learning for All</i> (2013)	

COURSE DESCRIPTION/RATIONALE

This course enables students to enhance their understanding of concepts in biology, chemistry, earth and space science, and physics, and of the interrelationships between science, technology, society, and the environment. Students are also given opportunities to further develop their scientific investigation skills. Students will plan and conduct investigations and develop their understanding of scientific theories related to the connections between cells and systems in animals and plants; chemical reactions, with a particular focus on acid–base reactions; forces that affect climate and climate change; and the interaction of light and matter.

Prerequisite: Science, Grade 9, Academic or Applied

Overall Curriculum Expectations

By the end of this course, students will:

A: Scientific Investigation Skills and Career Exploration

- A1. 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);
- A2. 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: Tissues, Organs, and Systems of Living Things

- B1. evaluate the importance of medical and other technological developments related to systems biology, and analyse their societal and ethical implications;
- B2. investigate cell division, cell specialization, organs, and systems in animals and plants, using research and inquiry skills, including various laboratory techniques;
- B3. demonstrate an understanding of the hierarchical organization of cells, from tissues, to organs, to systems in animals and plants.

C: Chemistry: Chemical Reactions

- C1. analyse a variety of safety and environmental issues associated with chemical reactions, including the ways in which chemical reactions can be applied to address environmental challenges;
- C2. investigate, through inquiry, the characteristics of chemical reactions;
- C3. demonstrate an understanding of the general principles of chemical reactions, and various ways to represent them.

D: Earth and Space Science: Climate Change

- D1. analyse some of the effects of climate change around the world, and assess the effectiveness of initiatives that attempt to address the issue of climate change;
- D2. investigate various natural and human factors that influence Earth's climate and climate change;
- D3. demonstrate an understanding of natural and human factors, including the greenhouse effect, that influence Earth's climate and contribute to climate change.

E: Physics: Light and Geometric Optics

- E1. evaluate the effectiveness of technological devices and procedures designed to make use of light, and assess their social benefits;
- E2. investigate, through inquiry, the properties of light, and predict its behaviour, particularly with respect to reflection in plane and curved mirrors and refraction in converging lenses;
- E3. demonstrate an understanding of various characteristics and properties of light, particularly with respect to reflection in mirrors and reflection and refraction in lenses.

COURSE CONTENT

<i>Unit</i>	<i>Length</i>
Unit 1: Biology	33 hours
Unit 2: Physics	26 hours
Unit 3: Earth and Space Science	16 hours
Unit 4: Chemistry	31 hours
	2 Hours exam
Total	110 hours

Unit Descriptions

Unit 1: Biology

Students will demonstrate an understanding of the ways in which plants and animals, including humans, are made of specialized cells, tissues, and organs that are organized into systems. They will also evaluate the social and ethical implications of developments in medicine and medical technology.

Unit 2: Physics

Students will demonstrate an understanding of the characteristics and properties of light that can be manipulated with mirrors and lenses for a range of uses. They will also explore the ways in which society has benefited from the development of a range of optical devices and technologies.

Unit 3: Earth and Space Science

Students will demonstrate an understanding that Earth's climate is dynamic and is the result of interacting systems and processes. They will explore how global climate change is influenced by both natural and human factors. Students will also investigate the variety of ways climate change affects living things and natural systems. Finally, they will assess the impact of human activity on climate change and to identify effective courses of action to reduce this impact.

Unit 4: Chemistry

Students will demonstrate an understanding of the predictable ways in which chemicals react. They will also explore how chemical reactions may have a negative impact on the environment, but they can also be used to address environmental challenges.

The students will experience a variety of activities:

Virtual simulations are interactive websites that provide students with an opportunity to ask questions, explore hypotheses, relate variables, examine relationships, and make connections between theory and application in a safe environment that promotes intellectual risk taking and curiosity.

Virtual labs are interactive websites that provide students with an opportunity to follow a procedure to test hypotheses using scientific apparatus, gather and record observations, analyze observations using formula and relevant theory/concepts, and then formulate conclusions that relate hypotheses to analysis.

Diagrams are visual representations of scientific ideas and concepts. They provide another perspective to organize ideas. Visuals are thought to promote cognitive plasticity - meaning, they can help us change our minds or help us to remember an idea.

Graphics/images are visual representations of ideas/concepts. Visuals are thought to promote cognitive plasticity - meaning, they can help us change our minds or help us to remember an idea.

Charts are visual representations of scientific ideas and concepts using math that support analysis.

Tables involve organizing information in terms of categories (rows and columns). This helps us to understand the relationships between ideas and data, as well as highlight trends.

Drawings and schematics are scientific and engineering ideas explained visually. For example, an electric circuit can be explained using symbols, which makes it possible to communicate ideas universally, clearly, and succinctly.

Articles are examples of concepts and theories being discussed in the public realm and with respect to current events. They are snapshots not only of why scientific theories/concepts/applications are relevant but also provide a window into the broader context of scientific knowledge and understanding. Students learn through reading and analysis that science is deeply related to, and intertwined with, society and the diverse perspectives of lived experience.

Cases are summaries of real-life problems wherein students relate scientific theories/concepts/formulas towards solving the problem in a real-world context. This helps students to understand the application and use of knowledge.

Maps are visual representations that relate scientific ideas/concepts/applications to geographic data. For example, we can understand that based on how the earth revolves around the sun and rotates on its axis, different areas of the world see the sun rise and set at different times. We can plot this data on a map to show time zones.

Practice problems provide students with a scenario/problem to solve by applying concepts and skills learned in a context. This helps students to understand the relevance of their learning.

Design projects are an opportunity for students to put their learning to the test in a real-world scenario, to address a design problem with a direct connection to people, the environment, economics, etc. Students collect information, apply problem solving, and use critical thinking to develop practical solutions that directly address their design problems.

ASSESSMENT, EVALUATION, AND REPORTING

Assessment: The process of gathering information that accurately reflects how well a student is achieving the identified curriculum expectations. Teachers provide students with descriptive feedback that guides their efforts towards improved performance.

Evaluation: Assessment of Learning focuses on Evaluation which is the process of making a judgment about the quality of student work on the basis of established criteria over a limited, reasonable period of time.

Reporting: Involves communicating student achievement of the curriculum expectations and Learning Skills and Work Habits in the form of marks and comments as determined by the teacher's use of professional judgment. **Assessment & Evaluation at OES: Triangulation of Learning**

In alignment with the Ontario Ministry of Education's *Growing Success* policy, student achievement across all high school courses at Ontario eSecondary School (OES) is evaluated through the **triangulation of evidence: observations, conversations, and student products**.

OES courses incorporate each of these evidence sources in a variety of ways to provide every student with equitable opportunities to demonstrate their learning:

- **Observations:** Collected through video recordings, interactive digital tools, learning logs, and synchronous task demonstrations.
- **Conversations:** Gathered via teacher-student conferences, oral defenses, virtual check-ins, and reflective feedback dialogues.
- **Products:** Demonstrated through major projects, essays, lab reports, performance tasks, and final assessments.

By evaluating a balanced variety of evidence, OES teachers apply professional judgment to ensure accurate, fair, and comprehensive assessment of each student's progress.

STRATEGIES FOR ASSESSMENT

Assessment practices can nurture students' sense of progress and competency and information instruction. Many diagnostic tools, e.g. checklists and inventories, are used at regular intervals throughout the units to encourage students' understanding of their current status as learners and to provide frequent and timely reviews of their progress.

Teachers are encouraged to share goals with students early in the course and to connect Unit learning experiences frequently and explicitly with big ideas, overall expectations, and performance tasks.

ASSESSMENT ACTIVITIES

- ☐ Virtual lab assignments
- ☐ Individual conference meetings
- ☐ Practice (formative) worksheet
- ☐ Oral presentations
- ☐ Research projects (STSE focused)
- ☐ Inquiry Assignments
- ☐ Tests & Exam

EVALUATION

The final grade will be determined as follows:

- ☐ 65% percent of the grade will be based on evaluation conducted throughout the course. This portion of the grade should reflect the student's most consistent level of achievement throughout the course, although special consideration will be given to more recent evidence of achievement.
- ☐ 20% of the grade will be based on a final evaluation administered at the end of the course. This evaluation will be based on a final written examination, comprehensive of the course. The final evaluation is an opportunity for the student to demonstrate comprehensive achievement of the overall expectations for the course.
- ☐ 15% of the grade will be based on the student's attendance and participation throughout the course, assessed according to Ministry criteria.

(*Growing Success: Assessment, Evaluation and Reporting in Ontario Schools*. Ontario Ministry of Education Publication, 2010 p.41)

SNC2D Science

Grade 10 · Academic

How the final mark is calculated from September 2026



TERM WORK EVALUATIONS (65%)

Evaluation Item	Description	Category	Weight
Unit 1	Assignment Cell Structure Students will demonstrate their knowledge of	K, T, C, A	5
Unit 1	Unit 1 Test	K, T, C, A	8
Unit 1	Unit 2 Project	K, T, C, A	5
Unit 2	Unit 2 Test	K, T, C, A	9
Unit 2	Unit 2 End of the Unit Response	K, T, C, A	5
Unit 3	Unit 3 Project	K, T, C, A	5
Unit 3	Unit 3 Test	K, T, C, A	9
Unit 4	Unit 4 Project	K, T, C, A	5
Unit 4...	Unit 4 Test	K, T, C, A	9
Unit 4...	Unit 4 End of the Unit Response	K, T, C, A	5

FINAL EVALUATIONS (20%)

Evaluation Item	Description	Category	Weight
Final Exam	Final Exam	K, T, C, A	20

ATTENDANCE AND PARTICIPATION (15%)

Evaluation Item	Description	Category	Weight
Attendance	Assessed according to the Ministry's attendance criteria (Growing Success, September 2026 update), based on the proportion of unexcused absences over the course.	N/A	8
Participation	Assessed according to the Ministry's participation criteria (Growing Success, September 2026 update), based on engagement in class discussions and activities throughout the course, including the standardized participation prompts (see Teaching and Learning Strategies).	N/A	7

AFL/AAL/AOL Tracking sheet:

Unit 1: Biology

AAL	AFL	AOL
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Discussion Forum Gizmos: growing plants Worksheet (self-check answers) Lesson notes KWL chart	Worksheet Gizmos Investigation: ● Cell division ● Digestive system ● Circulatory system	Assignment: cell structure worksheet (1.2) Unit Test
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Unit 2: Physics

AAL	AFL	AOL
Worksheet (self-check answers) Lesson notes KWL chart	Gizmos Investigation: ● Reflection ● Ray tracing (mirrors) ● Refraction ● Ray tracing (Lenses)	Unit Project Unit Test End of the unit Conversation and Observation with Teacher

Unit 3: Earth and Space Science

AAL	AFL	AOL
Worksheet (self-check answers) Lesson notes KWL chart	Gizmos Investigation: ● Greenhouse effect	Unit Project Unit Test

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Unit 4: Chemistry

AAL	AFL	AOL
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Worksheet (self-check answers) Lesson notes KWL chart	Gizmos Investigation: ● Periodic trends ● Balancing chemical equations	Unit Project Unit Test End of the unit Conversation and Observation with Teacher
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Finals

AOL
Final Exam

CONSIDERATION FOR PROGRAM PLANNING

PLANNING PROGRAMS FOR STUDENTS WITH SPECIAL EDUCATION NEEDS

OES teachers are the key educators of students with special education needs and have a responsibility to help all students learn. Program planning for students with special education needs is guided by the principles set out in Learning for All: A Guide to Effective Assessment and Instruction for All Students, Kindergarten to Grade 12 (2013): all students can succeed; each student has their own unique patterns of learning; successful instructional practices are founded on evidence-based research, tempered by experience; and universal design and differentiated instruction are effective and interconnected means of meeting the learning or productivity needs of any group of students. Where a student has an Individual Education Plan (IEP), the accommodations identified in the IEP — instructional, environmental, and assessment — are implemented within the course, and the online learning environment is adapted accordingly. The asynchronous structure of OES courses provides built-in flexibility that supports many common accommodations, including extended time for assignments and assessments, breaks as needed, access to assistive technology, and the ability to review instructional material multiple times.

PROGRAM CONSIDERATIONS FOR ENGLISH LANGUAGE LEARNERS

Ontario schools have some of the most linguistically diverse student populations in the world, and OES serves English language learners across Ontario and internationally. English language learners may be Canadian-born or newcomers; they may have experience of highly sophisticated educational systems or may have come from regions where access to formal schooling was limited. In planning this course, teachers consider the strengths and needs of English language learners and provide appropriate adaptations consistent with English Language Learners / ESL and ELD Programs and Services: Policies and Procedures for Ontario Elementary and Secondary Schools, Kindergarten to Grade 12 (2007). Supports within the online environment include modification of instructional language without modification of curriculum expectations, use of visual and multimedia supports, opportunities to replay and review lesson content, extended time where appropriate, and teacher feedback that models academic English. Assessment accommodations, such as granting additional time and permitting the use of bilingual dictionaries, are provided where appropriate.

ENVIRONMENTAL EDUCATION

Consistent with Acting Today, Shaping Tomorrow: A Policy Framework for Environmental Education in Ontario Schools (2009) and Environmental Education: Scope and Sequence of Expectations (2017), environmental education is embedded across the curriculum rather than treated as a separate subject. Teachers help students acquire knowledge about the environment, develop skills to address environmental

issues, and foster attitudes that motivate responsible environmental action. As an online school, OES also models environmental responsibility through paperless course delivery and the elimination of daily commuting. Environmental education is a natural fit in this course: students investigate the relationships between science, technology, society, and the environment, including topics such as sustainability, resource use, and the environmental impact of human activity, consistent with the STSE focus of the Ontario science curriculum.

EQUITY AND INCLUSIVE EDUCATION

This course is planned and delivered in accordance with Ontario's Equity and Inclusive Education Strategy (2009) and Policy/Program Memorandum No. 119, Developing and Implementing Equity and Inclusive Education Policies in Ontario Schools (2013). OES is committed to an inclusive learning environment in which all students feel welcomed, respected, and able to succeed, regardless of ancestry, culture, ethnicity, sex, gender identity, sexual orientation, disability, race, religion, or socio-economic status. In this course, teachers select learning materials that reflect the diversity of Ontario and the wider world, address bias in texts and resources where it arises, and ensure that assessment practices are fair and free of cultural assumptions. Because OES students learn from communities across Ontario, Quebec, and around the world, discussion activities and teacher feedback are moderated to maintain a respectful, harassment-free environment for all learners.

FINANCIAL LITERACY EDUCATION

In accordance with A Sound Investment: Financial Literacy Education in Ontario Schools (2010) and current Ministry direction on financial literacy, students are provided with opportunities to build the knowledge and skills needed to make informed financial decisions, understand their roles as consumers and citizens, and think critically about the economic forces that affect their lives. OES also supports students in meeting the Ministry's financial literacy graduation requirement, as described in the OES School Course Calendar. In this course, students consider the economic dimensions of scientific and technological choices, including cost-benefit analysis of technologies and the financial implications of decisions that affect health and the environment.

FIRST NATIONS, MÉTIS, AND INUIT EDUCATION

Program planning in this course aligns with the Ontario First Nation, Métis, and Inuit Education Policy Framework (2007), which supports improved outcomes for First Nations, Métis, and Inuit students and promotes awareness and understanding of Indigenous histories, cultures, perspectives, and contributions among all students. Where appropriate to the curriculum expectations, teachers incorporate Indigenous perspectives, authors, and content, and approach these topics with accuracy and respect, drawing on Ministry-recommended resources. All OES students benefit from opportunities to deepen their knowledge of the histories and contemporary realities of First Nations, Métis, and Inuit peoples, including the legacy of the residential school system and the Truth and Reconciliation Commission's Calls to Action related to education.

THE ROLE OF INFORMATION AND COMMUNICATIONS TECHNOLOGY

Information and communications technology (ICT) is integral to every OES course: instruction, learning activities, assessment, and teacher-student communication all take place through the school's learning management system. ICT tools — including multimedia lessons, digital texts, simulations, video conferencing for proctored assessments, and word-processing and productivity software — extend and enrich instruction and allow students to collect, organize, and present their learning in a range of formats. Teachers help students develop digital citizenship skills, including responsible and ethical use of technology, critical evaluation of online sources, protection of personal information, and academic integrity in digital environments, consistent with OES's Acceptable Use, Academic Honesty, and Artificial Intelligence policies as published in the School Course Calendar.

CAREER EDUCATION

Consistent with Creating Pathways to Success: An Education and Career/Life Planning Program for Ontario Schools (2013), teachers support students in answering the four questions at the centre of education and career/life planning: Who am I? What are my opportunities? Who do I want to become? What is my plan for

achieving my goals? Expectations in this course include many opportunities for students to apply their skills to work-related situations, explore educational and career options, and become self-directed learners. OES guidance staff support students in course selection, postsecondary application planning (including OUAC, CEGEP, and international pathways), and the development of individual pathways plans. This course supports pathways into health sciences, engineering, environmental science, research, technology, and the skilled trades, and career connections within scientific fields are highlighted throughout the course.

COOPERATIVE EDUCATION AND OTHER FORMS OF EXPERIENTIAL LEARNING

Planned learning experiences in the community, including job shadowing, work experience, and cooperative education, provide students with opportunities to see the relevance of their classroom learning, explore careers of interest, and develop essential workplace skills consistent with The Ontario Curriculum, Grades 11 and 12: Cooperative Education (2018). Students may earn up to two cooperative education credits toward their compulsory credit requirements for the Ontario Secondary School Diploma. Students interested in experiential learning opportunities related to this course are encouraged to contact OES guidance staff to discuss options available to them.

HEALTH AND SAFETY

Although OES students learn remotely, health and safety remain integral considerations in program planning. Teachers model and promote safe and healthy practices for online learning, including sound ergonomics, balanced screen time, regular breaks, and strategies that support positive mental health and well-being. OES maintains a safe and respectful virtual learning environment consistent with the school's codes of conduct, bullying prevention expectations, and privacy practices as published in the School Course Calendar, and students are provided with clear channels for reporting concerns to their teachers, guidance staff, or the Principal. Where the course includes hands-on, at-home investigations, students receive explicit safety instruction, use only safe household materials as directed, and are required to follow all stated precautions; virtual labs and simulations are used where hands-on activity would pose a risk in a home setting.

ACCOMMODATIONS

Accommodations will be based on meeting with parent, teachers, administration and external educational assessment report. The following three types of accommodations may be provided:

- ☐ **Instructional accommodations:** such as changes in teaching strategies, including styles of presentation, methods of organization, or use of technology and multimedia.
- ☐ **Environmental accommodations:** such as preferential seating or special lighting.
- ☐ **Assessment accommodations:** such as allowing additional time to complete tests or assignments or permitting oral responses to test questions.

Other examples of modifications and aids, which may be used in this course, are:

- ☐ Provide step-by-step instructions.
- ☐ Help students create organizers for planning tasks.
- ☐ Allow students to report verbally using a voice or video recording.
- ☐ Permit students a range of options for reporting tasks.
- ☐ Provide opportunities for enrichment.