INSTITUTE OF CANADIAN EDUCATION

Course Title: Science

Course Name: Science

Course Code: SNC2D

Grade: 10

Course Type: Academic

Credit Value: 1.0

Prerequisite: *SNC1D o*r SNC1W

Curriculum Policy Document: *The Ontario Curriculum: Science, Grades 9 & 10 (Revised); Growing Success: Assessment, Evaluation, and Reporting in Ontario Schools (2010)*

Course Developer: Institute of Canadian Education

Department: SCIENCE

Head of department: Sadiya Manjra

Development Date: 2025

Most Recent Revision Date: August 2026

Course Description

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.

UNIT ORDER

UNIT	UNIT NAME	UNIT DESCRIPTION	Time Allocated
Unit 1	**Chemistry: Chemical Reactions**	Students examine the properties of acids and bases, chemical reactions, and pH. They conduct experiments to identify substances, predict reactions, and analyze neutralization processes. Emphasis is placed on laboratory skills, safety, and real-world applications of acid–base chemistry.	**30 Hours**
Unit 2	**Biology: Tissues, Organs, and System of Living Things**	Students investigate the structure and function of cells and how cells form tissues, organs, and systems in plants and animals. They examine relationships between biological systems and analyze how these systems work together to maintain life.	**25 Hours**
	MID TERM EXAM		**2 Hours**
Unit 3	**Physics: Light and Geometric Optics**	Students investigate the properties of light, including reflection, refraction, and the behaviour of light in different media. They examine optical technologies such as lenses, mirrors, and the human eye, and analyze how light interacts with matter in everyday applications.	**26 Hours**
Unit 4	**Earth and Space Science: Climate Change**	In this unit, students explore Earth's climate system and the factors that influence climate and climate change. Topics include atmospheric processes, energy balance, human activities, and global climate models. Students analyze data and evaluate strategies for mitigating and adapting to climate change.	**25 Hours**
Final	**Final Exam**	The final exam assesses students' understanding of concepts from optics, climate science, chemistry, and biology through multiple-choice, short-answer, and application-based questions.	**2 Hours**
	TOTAL		**110 Hours**

Overall Curriculum Expectations

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.

TEACHING AND LEARNING STRATEGIES

Students will engage in a variety of interactive, collaborative, and independent learning activities throughout the course. Strategies include:

- **Presentations and multimedia:** Videos, examples, practice questions, simulations, and quizzes to explain concepts and theories.
- **Discussions and video conferencing:** Opportunities to ask questions, share ideas, and receive timely teacher feedback.
- **Reflection**: Students connect course concepts to real-life experiences, values, and prior learning.
- **Instructor demonstrations:** Guided instruction and modelling of skills such as research and problem-solving.
- **Discussion forums:** Students share perspectives, communicate ideas, and provide peer feedback.
- **Practical application:** Activities that connect classroom learning to real-world situations.
- **Individual activities and assessments:** Self-paced tasks that reinforce learning and allow for differentiated support.
- **Research and inquiry:** Students gather and evaluate information, analyze findings, solve problems, and develop conclusions using critical and creative thinking.
- **Writing:** Used to organize ideas, develop understanding, and communicate learning effectively.
- **Virtual simulations and labs:** Interactive activities that allow students to test ideas, collect observations, analyze results, and apply concepts.
- **Visual learning:** Diagrams, graphics, charts, tables, drawings, and schematics to organize and communicate information.
- **Practice problems:** Opportunities to apply concepts and skills to relevant scenarios and problems.

Assessment Strategies

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

Assessment FOR Learning	Assessment AS Learning	Assessment OF Learning
Quizzes and knowledge checks	Self- and peer-assessment	Unit tests
Assignments and worksheets	Reflections and learning journals	Laboratory reports
Ongoing teacher feedback	Learning checklists and goal setting	Research projects
Virtual labs and simulations	Peer feedback	Case studies
Teacher questioning and discussions	Self-reflection	Practical investigations
Practice problems and activities	Student learning reflections	Presentations
Exit tickets and review activities	Goal-setting activities	Midterm examination
Diagnostic activities	Student self-monitoring	Final examination

Evaluation

Students will be provided with numerous and varied opportunities to demonstrate the full extent of their achievement of the curriculum expectations, across all four categories of the Achievement Chart. Progress will be monitored on an on-going basis using a variety of assessment tools, including written work, formal testing, quizzes, teacher-student communication, discussion boards and chat rooms.

The final grade will be determined as follows (in accordance with Ministry of Education standards):

Term Work Classroom work Completed throughout the course	65%
Final Evaluation A final evaluation in the form of a written exam.	20%
Attendance and Participation	15%

Final Assessment (20%)

The final assessment evaluates achievement of overall course expectations and includes:

- **Final Exam**

All final assessments must be completed independently.

ATTENDANCE POLICY

Regular attendance and active engagement are important for student success. Attendance and participation are monitored through the school's Learning Management System (LMS).
All online credit courses at ICE are designed to meet or exceed the **minimum 110 hours of instructional time** required for a credit course.

Online instructional time and engagement are monitored through:

- **LMS Engagement:** Students are expected to log in regularly and actively participate in online learning activities. LMS activity records are used to monitor engagement.
- **Biweekly Check-Ins:** Students complete a brief check-in every two weeks to review their progress and engagement. Additional support may be provided when concerns are identified.
- **Post-Unit Quizzes:** Short formative quizzes are completed at the end of each unit to monitor student progress and pacing.
- **Discussion Forums:** Students participate in required unit discussions and peer activities. Participation is monitored based on completion and engagement.
- **Instructional Records:** The school maintains records of instructional time, attendance, and student engagement.

Students are responsible for maintaining regular participation and completing required learning activities within the course schedule.

EVALUATION MODEL (15% TOTAL ATTENDANCE WEIGHT)

Component	Weight	Quantifiable Metric Criteria
Physical Attendance	5%	Marked present, or late within 10 minutes, for each scheduled class period; excused absences are removed from the calculation.
Weekly Participation Checklist	5%	Meets at least 3 of 4 weekly in-class engagement indicators (responding/volunteering, group work, guided practice, on-task behaviour).
Homework Assignment Punctuality	5%	Submits homework on or before the due date, through the required platform, with a complete submission.

CONSIDERATION FOR PROGRAM PLANNING

Students with Special Education Needs:
All students can succeed. Universal Design for Learning (UDL) and differentiated instruction will be used to meet diverse learning needs. Teachers will use evidence-based practices and collaborate with special education staff when appropriate.

English Language Learners:
Students from diverse linguistic and cultural backgrounds will be supported through clear instructions, visuals, modelling, vocabulary development, and opportunities to demonstrate learning in different ways.

Role of Technology in the Science Program:
ICT tools such as multimedia resources, databases, websites, digital cameras, word-processing programs, simulations, and digital learning tools will support research, data collection and organization, scientific inquiry, communication, collaboration, and presentation of learning.

Accommodations:
Accommodations will be based on consultation with parents/guardians, teachers, administration, and relevant educational assessment reports. They may include:

- Instructional accommodations: Changes in teaching strategies, presentation styles, organization, technology, and multimedia.
- Environmental accommodations: Preferential seating, special lighting, and other appropriate environmental supports.
- Assessment accommodations: Additional time for tests or assignments and oral responses where appropriate.
- Step-by-step instructions.
- Graphic organizers and planning tools.
- Verbal, audio, or video recording options.
- A range of options for reporting **and demonstrating learning.**
- **Opportunities for enrichment.**

Course Materials

Required Textbooks and Resources

- *Nelson Science Perspectives 10* or equivalent Ontario-approved text
- Laboratory equipment and safety materials
- Teacher-prepared worksheets, lab manuals, and inquiry activities

Digital Resources and Software

- Google Drive – assignment submission, lab reports, and collaboration
- Internet access for research, simulations, and virtual labs
- Online tools such as PhET simulations or equivalent
- Microsoft Office Suite or equivalent

Teacher Considerations

- Assistive technology (text-to-speech, speech-to-text) may be used
- Flexible formats for lab reports and assessments may be provided

Tips for Success
Welcome to SNC2D – Science (Grade 10 Academic)!

Get ready to enjoy the excitement and challenge of learning about **SNC2D – Science** in an online environment. At the end of this course, you will be well prepared for future senior science courses at the university or college preparation level. Plus, you will have developed strong skills in time management, organization, scientific inquiry, and using technology as a learning tool. Listed below you will find some reminders to help you be successful.

- Check **Announcements**, **What's New**, and your **mailbox** every day.
- Check the **calendar for due dates**! It is your responsibility to meet these dates. If you have a problem with a due date, contact your teacher.
- Regularly remind yourself of the **assignment and evaluation criteria** when completing assignments. Make a checklist to ensure that you have included everything, in the proper manner, and submitted it as requested by the due date. This again is your responsibility.
- Don't be afraid to **ask for help**!
- For questions relating to **technical difficulties**, contact the **Help Desk**.
- Any other problem? I am the one you contact. Use the email on this site. When you email me, expect a return within the next 24 hours. If you are in **BIG trouble**, quote **"URGENT"** in the subject line of the email. I will endeavor to get back to you as soon as possible.

The key elements to success are:

- **Time commitment** – 1–2 hours every day.
- **Communication** – regular contact with me is vital!