



## Ontario eSecondary School Course Outline 2026-2027

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| <b>Ministry of Education Course Title: Biology 12, University Preparation</b>                                                                                                                                                                                                                                                                                                                  |                                                              |
| <b>Ministry Course Code: SBI4U</b>                                                                                                                                                                                                                                                                                                                                                             |                                                              |
| <b>Course Type: University Preparation</b>                                                                                                                                                                                                                                                                                                                                                     |                                                              |
| <b>Grade: 12</b>                                                                                                                                                                                                                                                                                                                                                                               |                                                              |
| <b>Credit Value: 1.0</b>                                                                                                                                                                                                                                                                                                                                                                       |                                                              |
| <b>Prerequisite(s): SBI3U, Grade 11, University Preparation</b>                                                                                                                                                                                                                                                                                                                                |                                                              |
| <b>Department: Science</b>                                                                                                                                                                                                                                                                                                                                                                     |                                                              |
| <b>Course developed by:</b><br><b>Quan Ly</b>                                                                                                                                                                                                                                                                                                                                                  | <b>Date: March 1, 2025</b><br><b>Revised: August 1, 2026</b> |
| <b>Length:</b><br><b>One Semester</b>                                                                                                                                                                                                                                                                                                                                                          | <b>Hours:</b><br><b>110</b>                                  |
| This course has been developed based on the following Ministry documents: <ol style="list-style-type: none"> <li>1. <a href="#"><u>Science, The Ontario Curriculum, Grades 11 and 12, (2008)</u></a></li> <li>2. <a href="#"><u>Growing Success: Assessment, Evaluation, and Reporting in Ontario Schools (2010)</u></a></li> <li>3. <a href="#"><u>Learning for All (2013)</u></a></li> </ol> |                                                              |

## **COURSE DESCRIPTION/RATIONALE**

This course provides students with the opportunity for in-depth study of the concepts and processes that occur in biological systems. Students will study theory and conduct investigations in the areas of biochemistry, metabolic processes, molecular genetics, homeostasis, and population dynamics. Emphasis will be placed on the achievement of detailed knowledge and the refinement of skills needed for further study in various branches of the life sciences and related fields.

## **OVERALL CURRICULUM EXPECTATIONS**

### **Scientific Investigation Skills and Career Exploration**

By the end of the course, students will:

- 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)

### **Biochemistry**

By the end of this course, students will:

- identify chemical structures, functions, and chemical properties of biological molecules involved in some common cellular processes and biochemical reactions and understand the importance of these in the maintenance of normal cellular function.
- analyze technological applications related to enzyme activity in the food and pharmaceutical industries

### **Metabolic Processes**

By the end of this course, students will:

- identify and describe the cellular organelles involved in cellular respiration and photosynthesis, and the various metabolic reactions taking place during these processes and will understand the importance of these reactions in the maintenance of normal cellular function.
- analyze medical and technological applications related to cellular respiration and photosynthesis

### **Molecular Genetics**

By the end of this course, students will:

- identify key scientific contributions leading to the discovery of DNA and DNA function, and describe the key events in DNA replication and protein synthesis with an emphasis on impacts of mutations on protein function and disease.
- analyze common biotechnological tools and applications related to molecular genetics

### **Homeostasis**

By the end of this course, students will:

- will identify key components of the nervous, endocrine and excretory system, and describe their role in maintaining homeostasis and how select chemical substances and environmental factors affect these processes.
- will assess the impact of various drugs on homeostatic mechanisms

### **Population Dynamics**

By the end of this course, students will:

- demonstrate an understanding of concepts related to population growth, and explain the factors that affect the growth of various populations of species, use models to calculate the growth of populations and analyze the relationships between population growth, personal consumption, technological development, and our ecological footprint.
- assess the impact of human population growth on the sustainability of resources for future generations

## COURSE CONTENT

| <i>Unit</i>                 | <i>Length</i>    |
|-----------------------------|------------------|
| Unit 1: Biochemistry        | 23hours          |
| Unit 2: Metabolic Processes | 24.5 hours       |
| Unit 3: Molecular Genetics  | 24 hours         |
| Unit 4: Homeostasis         | 24 hours         |
| Unit 5: Population Dynamics | 12 hours         |
| Unit 6: Final Project       | 7 hours          |
| Final Exam                  | 2.5 hours        |
| <b>Total</b>                | <b>110 Hours</b> |

## UNIT DESCRIPTIONS

### Unit 1 - Biochemistry

In this unit, students will identify chemical structures, functions, and chemical properties of biological molecules involved in some common cellular processes and biochemical reactions and understand the importance of these in the maintenance of normal cellular function. Students will also analyse technological applications related to enzyme activity in the food and pharmaceutical industries.

### Unit 2 - Metabolic Processes

In this unit, students will identify and describe the cellular organelles involved in cellular respiration and photosynthesis, and the various metabolic reactions taking place during these processes and will understand the importance of these reactions in the maintenance of normal cellular function. Students will also analyze medical and technological applications related to cellular respiration and photosynthesis.

### Unit 3 - Molecular Genetics

In this unit, students will identify key scientific contributions leading to the discovery of DNA and DNA function, and describe the key events in DNA replication and protein synthesis with an emphasis on the impacts of mutations on protein function and disease. Students will also analyze common biotechnological tools and applications related to molecular genetics.

### Unit 4- Homeostasis

In this unit, students will identify key components of the nervous, endocrine and excretory system, and describe their role in maintaining homeostasis and how select chemical substances and environmental factors affect these processes. Students will also assess the impact of various drugs on homeostatic mechanisms.

### Unit 5 - Population Dynamics

In this unit, students will demonstrate an understanding of concepts related to population growth, and explain the factors that affect the growth of various populations of species, use models to calculate the

growth of populations and analyze the relationships between population growth, personal consumption, technological development, and our ecological footprint. Students will also assess the impact of human population growth on the sustainability of resources for future generations.

## TEACHING AND LEARNING STRATEGIES

**In this course, students will experience the following activities.**

**Participation activities** are seven standardized, course-wide prompts (Teach the Teacher, Concept in Action, Spot the Error, Concept Connections, Take a Position, Claim/Support/Question, and a culminating Course Takeaways video) embedded at set points throughout the course. They build metacognitive engagement with unit concepts and contribute to the course's participation grade.

**Presentations with embedded videos** are utilized to outline concepts, explain theory with the use of examples and practice questions, and incorporate multi-media opportunities for students to learn more (e.g. online simulations, quizzes, etc.).

**End of unit conversations and Poodlls** are opportunities for students to express their ideas, problem solving, and thought processes with a teacher who provides timely feedback.

**Reflection** is an opportunity for students to look back at concepts and theories with new eyes, to relate theory to practice, and to align learning with their own values and beliefs.

**Discussions with the instructor** are facilitated through video conferencing, discussing the concepts and skills being studied. This enables two-way communication between the student and the instructor, to share ideas and ask questions in dialogue. This also helps to build a relationship between the student and instructor.

**Discussion forums** are an opportunity for students to summarize and share their ideas and perspectives with their peers, which deepens understanding through expression. It also provides an opportunity for peer-to-peer feedback.

**Practical extension and application of knowledge** are integrated throughout the course. The goal is to help students make connections between what they learn in the classroom and how they understand and relate to the world around them and their own lives. Learning becomes a dynamic opportunity for students to be more aware that their learning is all around them and enable them to create more meaning in their lives.

**Individual activities/assignments** assessments are completed individually at a student's own pace and are intended to expand and consolidate the learning in each lesson. Individual activities allow the teacher to accommodate interests and needs and to assess the progress of individual students. For this reason, students are encouraged to discuss IEPs (Individual Education Plans) with their teacher and to ask to modify assessments if they have a unique interest that they feel could be pursued in the assessment. The teacher plays an important role in supporting these activities by providing ongoing feedback to students, both orally and in writing.

**Research** is an opportunity to apply inquiry skills to a practical problem or question. Students perform research to gather information, evaluate quality sources, analyze findings, evaluate their analysis, and synthesize their findings into conclusions. Throughout, students apply both creative thinking and critical thinking. New questions are also developed to further learning.

**Writing** as a learning tool helps students to think critically about course material while grasping, organizing, and integrating prior knowledge with new concepts. Good communication skills are important both in and out of the classroom.

**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.

**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.

**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.

**Readings** are an opportunity for students to gain insight from a variety of texts online and further develop literacy skills. Students may print out the reading material to use it to highlight, take notes, and have with them when a computer is not available.

**Oral presentations** in an online environment are opportunities for students to present live or record presentations, expressing their ideas and understanding orally.

**Reflective/comparative analysis and evaluation of written work** is very important in this course. Concepts and skills are modelled in examples (exemplars), which students can refer to and utilize to self-evaluate their own work. A variety of texts are shared, and students are encouraged to make comparisons with different texts, real life situations, and their own writing.

## 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. These assessments are not for marks.

- In assessment for learning (AFL), teachers provide students with descriptive feedback and coaching for improvement.
- In assessment as learning (AAL), teachers help students develop their capacity to be independent, autonomous learners who are able to set individual goals, monitor their own progress, determine next steps, and reflect on their thinking and learning.

**Evaluation:** Assessment of Learning (AOL) focuses on evaluation which is the process of making a judgement 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 judgement.

### **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, 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 of student acquisition of learning skills also occurs regularly through unobtrusive teacher observation and conferencing.

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. The teacher is encouraged to involve students in the discussion, modification, or creation of rubrics, and teach students to use rubrics as a learning tool.

## **ASSESSMENT ACTIVITIES**

- Discussion forums
- Diagnostic tests
- Video assignment
- Tests and quizzes
- Reflections
- Graphs - plotting and analyzing
- Drawings / diagrams / sketches / schematics - creating, labeling, and analyzing
- Problem solving calculations
- Lab reports
- Virtual labs
- Research projects and reports
- End of unit conversations (Google Meets)
- Final exam

## **EVALUATION**

The final grade will be determined as follows:

- 65% 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.
- 25% 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.
- 10% 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)



## TERM WORK EVALUATIONS (65%)

| Evaluation Item                              | Description                                                                                                          | Category | Weight |
|----------------------------------------------|----------------------------------------------------------------------------------------------------------------------|----------|--------|
| Unit 1.6 Research Article Summary Assignment | Students will analyze and summarize a scientific article for general readers                                         | C, A     | 15     |
| Unit 1.7 Enzyme Lab                          | Students will conduct an online lab activity to discover the factors that affect enzyme activity                     | T, C     |        |
| Unit 1.10 Unit 1 Test                        | Students will complete a Unit Test                                                                                   | K, T, A  |        |
| Unit 2.5 Cellular Respiration Report         | Students will conduct research on an cellular respiration topic of their choice and report their findings in a paper | T, C, A  | 15     |
| Unit 2.9 Unit 2 Interview                    | Students will conduct a 1-on-1 interview with their teacher to demonstrate their learning                            | T, C, A  |        |
| Unit 2.10 Unit 2 Test                        | Students will complete a Unit Test                                                                                   | K, T, A  |        |
| Unit 3.1 DNA Extraction Lab                  | Students will conduct a live lab and answer follow-up questions about the lab                                        | A        | 3      |
| Unit 3.9 Video Assignment                    | Students will demonstrate their learning by creating a video explanation of one of the topics covered in this unit   | K, C     | 10     |

|                                           |                                                                                                                                             |            |    |
|-------------------------------------------|---------------------------------------------------------------------------------------------------------------------------------------------|------------|----|
| Unit 3.10 Unit 3 Test                     | Students will complete a Unit Test                                                                                                          | K, T, A    |    |
| Unit 4.3 Breathing Rate Lab               | Students will conduct a live lab and answer follow-up questions about the lab                                                               | T, C, A    | 15 |
| Unit 4.8 Interview                        | Students will conduct a 1-on-1 interview with someone in their community to learn more about a medical condition, and report their findings | K, C, A    |    |
| Unit 4.8 Unit 4 Test                      | Students will complete a Unit Test                                                                                                          | K, T, C, A |    |
| Unit 5.2 Measuring Populations Assignment | Students will conduct a live lab and answer follow-up questions about the lab                                                               | T, C, A    | 7  |
| Unit 5.4 Unit 5 Test                      | Students will complete a Unit Test                                                                                                          | K, T, C, A |    |

## FINAL EVALUATIONS (25%)

| Evaluation Item | Description                         | Category | Weight |
|-----------------|-------------------------------------|----------|--------|
| Final Exam      | Students will complete a Final Exam | K, T, A  | 25     |

## ATTENDANCE AND PARTICIPATION (10%)

| 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      | 5      |
| 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      | 5      |

## AAL/AFL/AOL TRACKING SHEET

### Unit 1: Biochemistry

| AAL                           | AFL                                     | AOL                                 |
|-------------------------------|-----------------------------------------|-------------------------------------|
| Checkpoint Questions          | Fundamentals of Science Practice        | Research Article Summary Assignment |
| Identifying Functional Groups | Formative Quiz Functional Groups        | Enzyme Lab                          |
| Carbohydrates Discussion      | Formative Carbohydrates and Lipids Quiz | Unit 1 Test                         |
| FoldIt                        | Mock Interview                          |                                     |
| Identifying Nutrients Gizmo   | End of Unit Teacher Student             |                                     |

|               |                            |  |
|---------------|----------------------------|--|
|               | Conference and Observation |  |
| Unit 1 Review |                            |  |

### Unit 2: Metabolic Processes

| AAL                                             | AFL                                                    | AOL                         |
|-------------------------------------------------|--------------------------------------------------------|-----------------------------|
| Checkpoint Questions                            | Formative Quiz Metabolic Processes                     | Cellular Respiration Report |
| Glycolysis Pathway Worksheet                    | Quiz (Formative) Cellular Respiration                  | Unit 2 Interview            |
| Kreb's Cycle Worksheet                          | Quiz (Formative) Photosynthesis                        | Unit 2 Test                 |
| Photosynthesis Discussion                       | End of Unit Teacher Student Conference and Observation |                             |
| Unit 2 Review                                   |                                                        |                             |
| Learning Skills and Work Habits Self Assessment |                                                        |                             |

### Unit 3: Molecular Genetics

| AAL                                | AFL                                                    | AOL                |
|------------------------------------|--------------------------------------------------------|--------------------|
| DNA Replication Practice Questions | Formative DNA Replication Quiz                         | DNA Extraction Lab |
| Gene Expression Practice Questions | Formative Protein Synthesis Quiz                       | Video Assignment   |
| Transcription Practice Questions   | DNA Profiling Gizmo                                    | Unit 3 Test        |
| Translation Practice Questions     | End of Unit Teacher Student Conference and Observation |                    |
| Mutations Practice Questions       |                                                        |                    |
| Mutations Discussion               |                                                        |                    |
| Unit 3 Review                      |                                                        |                    |

### Unit 4: Homeostasis

| AAL                               | AFL                                                    | AOL                         |
|-----------------------------------|--------------------------------------------------------|-----------------------------|
| Homeostasis Practice Questions    | Formative Quiz Nervous System                          | Breathing Rate Lab Report   |
| Homeostasis Discussion            | Formative Quiz Endocrine System                        | Medical Condition Interview |
| Brain Activity                    | End of Unit Teacher Student Conference and Observation | Unit 4 Test                 |
| Urinary System Practice Questions |                                                        |                             |
| Unit 4 Review                     |                                                        |                             |

### Unit 5: Population Dynamics

| AAL                                      | AFL                                                    | AOL                      |
|------------------------------------------|--------------------------------------------------------|--------------------------|
| Population Worksheets Practice Questions | Formative Population Quiz                              | Measuring Population Lab |
| Population Dynamics Practice Problems    | End of Unit Teacher Student Conference and Observation | Unit 5 Test              |
| Human Population Discussion              |                                                        |                          |
| Extra Population Problems                |                                                        |                          |

|            |  |  |
|------------|--|--|
| (Optional) |  |  |
|------------|--|--|

### Unit 6: Final Tasks

| AAL                                                | AFL                                           | AOL        |
|----------------------------------------------------|-----------------------------------------------|------------|
| Learning Skills and Work Habits<br>Self Assessment | End-of-Course Conversation and<br>Observation |            |
|                                                    |                                               | 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 parents, teachers, administration and external educational assessment reports. 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.
- ☐ **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 writing tasks.
- ☐ Allow students to report verbally to a scribe (teacher/ student) who can help in note taking.
- ☐ Permit students a range of options for reading and writing tasks.
- ☐ Where an activity requires reading, provide it in advance.
- ☐ Provide opportunities for enrichment.