INSTITUTE OF CANADIAN EDUCATION

Course Title: Biology (SBI3U) Grade 11, Online
Course Name: Biology
Course Code: SBI3U
Grade: 11
Course Type: University Preparation / Online
Credit Value: 1.0
Prerequisite: Grade 10 Science, Academic (SNC2D)
Curriculum Policy Document: *The Ontario Curriculum: Science, Grades 11 and 12 (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: 2026

This course furthers students' understanding of the processes that occur in biological systems. Students will study theory and conduct investigations in the areas of biodiversity; evolution; genetic processes; the structure and function of animals; and the anatomy, growth, and function of plants. The course focuses on the theoretical aspects of the topics under study, and helps students refine skills related to scientific investigation.

Prerequisite: Grade 10 Science, Academic (SNC2D)

Course Expectation

UNIT	UNIT NAME	UNIT DESCRIPTION	Time Allocated
UNIT 1	Diversity of Living Things	Students investigate the diversity of life by examining classification systems, taxonomy, and evolutionary relationships among organisms. They analyze similarities and differences between prokaryotic and eukaryotic organisms and explore the importance of biodiversity.	21 Hours
UNIT 2	Evolution	Students examine evolutionary theory, including natural selection, adaptation, and speciation. Evidence from fossils, comparative anatomy, molecular biology, and genetics is analyzed to explain evolutionary change and biological diversity.	21 Hours
MIDTERM	Midterm Evaluation	The midterm evaluation assesses student achievement of curriculum expectations from Units 1 and 2. This evaluation may include a test, performance task, or project and contributes to the term work portion of the final grade.	2 Hours
UNIT 3	Genetic Processes	Students explore the molecular basis of heredity, including DNA structure, replication, transcription, translation, and cell division. They investigate patterns of inheritance, genetic technologies, and ethical issues related to genetics.	23 Hours
UNIT 4	Animals: Structure and Function	This unit focuses on animal anatomy and physiology, emphasizing major organ systems and homeostasis. Students analyze how systems interact and how animals adapt to their environments.	20 Hours
UNIT 5	Plants: Anatomy, Growth, and Function	Students study plant structure, transport systems, photosynthesis, growth, and reproduction. They examine the importance of plants to ecosystems, agriculture, and sustainability.	20 Hours

FINAL	Summative Evaluation	Students complete a final evaluation that assesses their understanding of biological concepts and inquiry skills developed throughout the course.	3 Hours
	TOTAL		110 Hours

SBI3U OVERALL CURRICULUM EXPECTATIONS

Scientific Investigation Skills and Career Exploration

By the end of this course, students will:

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 communication);

2. Identify and describe careers related to the fields of science under study, and describe the contributionsof scientists, including Canadians, to those fields.

Diversity of Living Things

1. Analyse the effects of various human activities on the diversity of living things;

2. Investigate, through laboratory and/or field activities and classification techniques;

3. Demonstrate an understanding of the diversity of living organisms in terms of the principles of taxonomy and phylogeny.

Evolution

1. Analyse the economic and environmental advantages and disadvantages of an artificial selection technology, and evaluate the impact of environmental changes on natural selection and endangered species;

2. Investigate evolutionary processes, and analyse scientific evidence that supports the theory of evolution;

3. Demonstrate an understanding of the theory of evolution, the evidence that supports it, and some of the mechanisms by which it occurs.

Genetic Processes

1. Evaluate the importance of some recent contributions to our knowledge of genetic processes, and analyse social and ethical implications of genetic and genomic research;

2. Investigate genetic processes, including those that occur during meiosis, and analyse data to solve basic genetics problems involving monohybrid and dihybrid crosses;

3. Demonstrate an understanding of concepts, processes, and technologies related to the transmission of hereditary characteristics.

Animals: Structures and Function

1. Analyse the relationships between changing societal needs, technological advances, and our understanding of internal systems of humans;

2. Investigate, through laboratory inquiry or computer simulation, the functional responses of the respiratory and circulatory systems of animals, and the relationships between their respiratory, circulatory, and digestive systems;

3. Demonstrate an understanding of animal anatomy and physiology, and describe disorders of the respiratory, circulatory, and digestive systems.

Plants: Anatomy, Growth, and Function

1. Evaluate the importance of sustainable use of plants to Canadian society and other cultures;

2. Investigate the structures and functions of plant tissues, and factors affecting plant growth;

3. Demonstrate an understanding of the diversity of vascular plants, including their structures, internal transport systems, and their role in maintaining biodiversity

TEACHING AND LEARNING STRATEGIES

In this course, students will experience a variety of activities designed to develop their **knowledge, inquiry, critical-thinking, problem-solving, communication, and scientific skills**.

- **Video presentations and multimedia** help explain biological concepts, theories, and processes.
- **Practice quizzes and activities** provide opportunities to review learning and receive timely feedback.
- **Inquiry activities and case studies** allow students to investigate questions, analyze information, and apply biology to real-world situations.
- **Virtual labs and simulations** provide opportunities to conduct investigations, test hypotheses, collect observations, and draw conclusions in a safe online environment.
- **Research activities** develop students' ability to locate reliable sources, evaluate information, analyze evidence, and communicate findings using appropriate citation and APA formatting.

- **Diagrams, charts, tables, graphic organizers, and drawings** help students organize and visually represent biological concepts and relationships.
- **Individual assignments and practice problems** allow students to apply and consolidate their learning while receiving ongoing teacher feedback.
- **Discussion forums and instructor discussions** encourage students to share ideas, ask questions, explain their thinking, and consider different perspectives.
- **Practical applications and real-world examples** help students connect biology to health, the environment, technology, society, and everyday life.
- **Writing and reflection activities** encourage students to organize their thinking, make connections between concepts, and reflect on their learning.
- **Design and problem-solving activities** provide opportunities for students to apply biological knowledge to practical problems and develop creative solutions.
- **Oral presentations** may be completed through video conferencing or recorded presentations, allowing students to communicate scientific ideas clearly.

Assessment Strategies

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.

Assessment FOR Learning	Assessment AS Learning	Assessment OF Learning
Quizzes and tests	Self- and peer-assessment	Unit tests
Assignments and worksheets	Reflections and learning journals	Research projects and reports
Ongoing teacher feedback	Learning checklists and goal setting	Inquiry assignments
Simulation activities	Peer feedback	Case studies and case study worksheets
Teacher questioning and discussions	Self-reflection	Oral presentations

Completed templates and graphic organizers	Student learning reflections	Design projects and reports
Problem-solving activities	Individual conference meetings	Drawings, diagrams, sketches, and schematics
Discussion forums	Goal setting and progress monitoring	Problem-solving tasks
Research activities	Feedback from individual conferences	Simulation-based assessments
Speech recordings		Final examination
Google Meet discussions		

Evaluation

Final Grade

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

Term Work Based on evaluations conducted throughout the course.	65%
Final Evaluation A final evaluation in the form of a written exam.	20%
Attendance and Participation	15%

Final Examination Breakdown

- 20% written exam

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.

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

EVALUATION MODEL – 10% TOTAL ATTENDANCE AND ENGAGEMENT WEIGHT

Component	Weight	Quantifiable Metric	Criteria
Biweekly Check-In	3%	Completed every two weeks	Students completes the required check-in within the scheduled time frame.
Post-Unit Formative Quiz	4%	Completed after each unit	Student completes the formative quiz by the assigned deadline.
Discussion Forum Participation	3%	Required posts and responses	Student submits the required original response and completes assigned peer responses.

CONSIDERATION FOR PROGRAM PLANNING

Students with Special Education Needs

Teachers support all students through Universal Design for Learning (UDL) and differentiated instruction. Where applicable, IEP accommodations are implemented in instruction, the learning environment, and assessment. Online learning provides flexibility through extended time, breaks, assistive technology, and opportunities to review materials.

English Language Learners (ELL)

Teachers recognize students' diverse language backgrounds and provide appropriate support without changing curriculum expectations. Strategies include clear instructional language,

visuals and multimedia, repeated access to lesson content, additional time when appropriate, bilingual dictionaries, and feedback that develops academic English.

Environmental Education

Environmental education is integrated throughout the course, with opportunities to explore sustainability, resource use, STSE connections, and the environmental impacts of human activities. Online learning also supports environmental responsibility through paperless resources.

Equity and Inclusive Education

The course promotes an inclusive, respectful, and accessible learning environment. Learning materials and activities reflect diverse cultures, perspectives, and experiences, while assessment practices are fair and free from cultural bias.

Financial Literacy Education

Students develop financial decision-making skills by examining the economic aspects of scientific and technological choices, including cost-benefit analysis and the financial impacts of decisions related to health, technology, and the environment.

First Nations, Métis, and Inuit Education

Where appropriate, the course incorporates Indigenous perspectives, histories, cultures, contributions, and contemporary issues respectfully and accurately, including connections to Truth and Reconciliation.

Information and Communications Technology (ICT)

ICT is integrated throughout the course for instruction, communication, learning, and assessment. Students use digital tools, multimedia, simulations, video conferencing, and productivity software while developing digital citizenship, responsible technology use, source evaluation, privacy awareness, and academic integrity.

Career Education

Students connect course learning to careers, postsecondary opportunities, and workplace skills. The course supports pathways related to areas such as health sciences, engineering, environmental science, research, technology, and skilled trades.

Cooperative Education and Experiential Learning

Students may connect classroom learning to real-world experiences through job shadowing, work experience, cooperative education, and other experiential learning opportunities. Guidance staff can assist students in exploring available pathways.

Health and Safety

Health and safety are emphasized in both online and practical learning. Students are encouraged

to maintain proper ergonomics, take regular breaks, manage screen time, and maintain well-being. Any at-home activities include clear safety instructions and appropriate precautions.

ACCOMMODATIONS

Accommodations are determined through consultation with parents/guardians, teachers, administration, and relevant educational assessment information. These may include:

- **Instructional accommodations:** modified teaching strategies, presentation methods, organization, technology, and multimedia.
- **Assessment accommodations:** additional time, alternative response formats, and oral responses where appropriate.
- Step-by-step instructions and graphic organizers.
- Support with planning and organizing writing tasks.
- Verbal responses using a scribe when appropriate.
- A range of reading and writing options.
- Providing reading materials in advance.
- Opportunities for enrichment and extension.

Required Software, Equipment, Textbooks

Required Textbooks and Resources:

- **Ontario Grade 11 Biology (University Preparation) textbook** covering:
    - Diversity of Living Things
    - Evolution
    - Genetic Processes
    - Animals: Structure and Function
    - Plants: Anatomy, Growth, and Function
- Supplementary resources: scientific articles, videos, case studies, and simulations related to biological concepts and current research
- Teacher-provided worksheets, laboratory manuals, inquiry activities, and practice exercises

Digital Resources and Software:

- **Google Drive** – for storing, sharing, and submitting assignments, laboratory reports, and projects
- **Internet access** for research, virtual laboratories, simulations, and scientific databases
- **Microsoft Office Suite** (Word, PowerPoint, Excel) or equivalent for written work, data analysis, and presentations

Teacher Considerations:

- Assistive technology (e.g., text-to-speech, speech-to-text) may be used to support learning
- Flexibility in submission formats (Google Docs, PDFs, slides, videos, digital lab reports, etc.)

Tips for Success

Welcome to **Biology, Grade 11 (SBI3U)**

- Check announcements and course messages daily
- Monitor the calendar for due dates
- Review rubrics before submitting assignments
- Ask for help early
- Communicate regularly with your teacher

Time commitment, communication, and consistency are the keys to success in this online course.