



Course Description/Rationale/Overview: This course provides students with the opportunity for in-depth study of the concepts and processes associated with 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 achievement of the detailed knowledge and refined skills needed for further study in various branches of the life sciences and related fields.

PREREQUISITE: To enroll in this course a student must have successfully completed Biology, Grade 11, University Preparation (SBI3U). It is also highly recommended that the student has taken Chemistry, Grade 11, University Preparation (SCH3U).

Class Requirements:

- Three ring binder
- Calculator
- Writing utensils
- Textbook: Biology 12, Nelson (to be provided)

COURSE REQUIREMENTS/SCHOOL POLICIES

PLAGIARISM: Plagiarized work may result in a mark of zero, and the case will be forwarded to school administration.

LATE ASSIGNMENTS: Late assignments without legitimate cause may be subject to mark deductions. Please speak with your teacher if you feel you won't be able to complete your assignment in time.

MISSED TESTS/ASSESSMENTS: Missed tests/assessments due to illness or quarantine will not be academically penalized. The teacher will provide alternative arrangements for the student to complete the test/assessment.

ASSESSMENT/EVALUATION STRATEGIES:

Diagnostic: Assessment activities used, as required at the beginning of a block of learning (i.e. course, unit), to determine students' strengths and learning needs in order to plan, modify and adjust instruction or to provide alternative learning opportunities. *Diagnostic assessment data is not used in the determination of midterm or finals for inclusion on the report card. (e.g. homework, diagnostic test)*

Formative: Ongoing assessment during the learning process. It is used to monitor student performance and provide feedback in an effort to enhance and improve learning and instruction. Recorded formative data can be tracked and monitored to support professional judgement in cases where the body of evidence provided by the student has been affected by such things as illness, missed assignments, etc. (e.g. pop quizzes, rough notes, planning notes, process work, homework, practice tests)

Summative: Evaluation that occurs at the conclusion of a block of learning (e.g. activity, unit, course, semester/school year) and focuses on student achievement and program effectiveness. This is used to determine the 70% term mark. (e.g. research paper, quiz, unit test, laboratory activity)

LEARNING SKILLS: Evaluated on Report Card as E(excellent); G(good); S(satisfactory); N(needs improvement)

1) Responsibility 2) Organization 3) Independent Work 4) Collaboration 5) Initiative 6) Self-Regulation

TERM WORK: ACHIEVEMENT CATEGORIES (90% of overall mark)

1) Knowledge and Understanding (25%) 2) Application (25%) 3) Communication (20%) 4) Thinking/ Inquiry (20%)

CULMINATING TASKS (10% of overall mark)

Culminating Activity (10%)

FINAL MARK

Term Work (90%)

Culminating Activity (10%)

Classroom Routines and Procedures:

- Regular attendance is essential. If you are going to be away, you are responsible for catching up on missed work.
- All work submitted must be your own. Submitting another person's work is considered plagiarism and may result in a mark of zero.
- Listening is an important part of class. Please listen to instructions. Record important due dates and dates of assessments.
- Review course material regularly.
- No eating during class. Food is not permitted in any science classroom.
- Please refer to the Student Code of Conduct for further information.



COURSE OUTLINE: Biology, Grade 12, University Preparation (SBI4U)

Term work will be based on the Overall Curriculum Expectations listed below.

Biochemistry

1. Analyse technological applications of enzymes in some industrial processes, and evaluate technological advances in the field of cellular biology
2. Investigate the chemical structures, functions, and chemical properties of biological molecules involved in some common cellular processes and biochemical reactions
3. Demonstrate an understanding of the structures and functions of biological molecules, and the biochemical reactions required to maintain normal cellular function.

Metabolic Processes

1. Analyse the role of metabolic processes in the functioning of biotic and abiotic systems, and evaluate the importance of an understanding of these processes and related technologies to personal choices made in everyday life
2. Investigate the products of metabolic processes such as cellular respiration and photosynthesis
3. Demonstrate an understanding of the chemical changes and energy conversions that occur in metabolic processes.

Molecular Genetics

1. Analyse some of the social, ethical, and legal issues associated with genetic research and biotechnology
2. Investigate, through laboratory activities, the structures of cell components and their roles in processes that occur within the cell
3. Demonstrate an understanding of concepts related to molecular genetics, and how genetic modification is applied in industry and agriculture.

Homeostasis

1. Evaluate the impact on the human body of selected chemical substances and of environmental factors related to human activity
2. Investigate the feedback mechanisms that maintain homeostasis in living organisms
3. Demonstrate an understanding of the anatomy and physiology of human body systems, and explain the mechanisms that enable the body to maintain homeostasis.

Population Dynamics

1. Analyse the relationships between population growth, personal consumption, technological development, and our ecological footprint, and assess the effectiveness of some Canadian initiatives intended to assist expanding populations;
2. Investigate the characteristics of population growth, and use models to calculate the growth of populations within an ecosystem.
3. Demonstrate an understanding of concepts related to population growth, and explain the factors that affect the growth of various populations of species.