



SCIENCE DEPARTMENT

COURSE: Grade 12 University Biology

COURSE CODE: SBI4U0

OVERARCHING LEARNING GOALS

<p>Scientific Investigation and Skills and Career Exploration</p> <ul style="list-style-type: none"> • Demonstrate scientific investigation skills in four areas: initiating and planning, performing and recording, analysing and interpreting and communicating. • 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. 	<p>Biochemistry</p> <ul style="list-style-type: none"> • Investigate the chemical structures, functions, and chemical properties of biological molecules • Understand the structures and functions of biological molecules, and the biochemical reactions required to maintain normal cellular functions.
<p>Metabolic Processes</p> <ul style="list-style-type: none"> • Analyse the role of metabolic processes in biotic systems. • Investigate the products of cellular respiration and photosynthesis and the energy changes and energy conversions that occur in these processes. 	<p>Molecular Genetics</p> <ul style="list-style-type: none"> • Explore the social, ethical and legal issues associated with biotechnology and genetic research • Understand the relationship between DNA and protein synthesis
<p>Homeostasis</p> <ul style="list-style-type: none"> • Investigate how homeostasis is maintained in living organisms • Understand the anatomy and physiology of human systems and be able to explain how these systems help to maintain homeostasis 	<p>Population Dynamics</p> <ul style="list-style-type: none"> • Use models to calculate the growth, size and density of populations in an ecosystem. • Understand the factors (human, or natural) that affect the growth of various populations of species • Investigate characteristics of populations and their relationships within and with each other.

SUCCESS CRITERIA**Scientific Investigation Skills**

- I can accurately collect, record, analyse and communicate lab results
- I can identify and find relevant print resources and analyse these sources for logic, accuracy, reliability and bias
- I can use appropriate terminology, symbols and units related to scientific concepts and processes

Biochemistry

- I can identify and explain the role and function of various cell components, including organelles and membranes
- I can identify biochemical compounds and how their chemical structures contribute to their properties
- I can identify and describe the four main types of biochemical reactions

Metabolic Processes

- I can analyse the role of cellular respiration and photosynthesis in biotic systems
- I can explain the chemical changes and energy conversions associated with photosynthesis, aerobic and anaerobic cell respiration
- I can explain alternative metabolic pathways, such as lipid, protein and nucleic acid metabolism

Molecular Genetics

- I can analyse some of the social, ethical, and legal effects of biotechnology and the Canadian regulations pertaining to biotechnology
- I can investigate and analyse the cell components and steps involved in the process of protein synthesis
- I can explain the model of DNA replication and the processes that modify DNA
- I can describe scientific contributions that have advanced our understanding of molecular genetics

Homeostasis

- I can investigate the effects on the human body of various endocrine, nervous system and/or excretory system disruptions, feedback systems and response mechanisms
- I can describe the anatomy and physiology of the endocrine, excretory, and nervous systems
- I can explain how reproductive hormones act in human feedback mechanisms to maintain homeostasis
- I can describe the homeostatic processes involved in maintaining water, ionic, thermal, and acid–base equilibrium

Population Dynamics

- I can analyse the effects of human population growth and activity on other populations
- I can use conceptual and mathematical population growth models to estimate the size and density of populations
- I can explain the concepts of interaction between and among a species
- I can explain factors such as carrying capacity, fecundity, density, and predation

ASSESSMENT & EVALUATION

TERM EVALUATION – 70%

Assessment and evaluation in this course will be based on provincial curriculum expectations. Evaluation throughout the course and the final evaluation will incorporate four broad categories:

Knowledge and Understanding	Thinking/ Inquiry	Communication	Application
-knowledge of content -understanding of content	-planning and performing lab investigations -problem solving, critical thinking processes and skills	-expression and organization of ideas and information -use of conventions and terminology	-making connections to society, technology and the environment -transfer of knowledge and skills to unfamiliar contexts

Students will also receive descriptive feedback as part of the learning process which may not be assigned a mark. More detailed information regarding the Port Credit Secondary School Assessment and Evaluation policy can be found in the Student Agenda.

FINAL EVALUATION – 30%

The final evaluation will consist of an in-class, practical culminating task and/or a formal written exam.

LEARNING SKILLS

The following learning skills will be taught and assessed throughout the course and rated on the report card:

***Responsibility**

***Independent Work**

***Initiative**

***Organization**

***Collaboration**

***Self-regulation**

These skills will not be included in the final numeric mark. However, it is important to remember that the development of these skills is critical to academic achievement and does have a direct bearing on the final mark.