



SBI4U

Course Profile & Evaluation

Course Description/Rationale/Overview

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.

Prerequisite: Biology Grade 11 (SBI3U)

Class Requirements

Student Responsibility

Students must seek assistance from the teacher and fellow students for all work missed due to absence and must make arrangements to complete missed work.

Course Requirements/Department Policies

Late Assignments

Late assignments must be accompanied with a note signed by a parent or guardian stating the reason for tardiness of the assignment. The note must list the due date of the assignment and the actual date of submission.

If an assignment is handed in after it has been taken up/handed back, the student may not receive a mark for it.

Missed Tests

It is the student's responsibility to make arrangements, ahead of time, for any tests/quizzes that are missed. If a student misses a test/quiz for an unforeseen reason such as illness, the student must bring a note signed by a parent or guardian and be prepared to write the test/quiz immediately upon return to school.

Evaluation

Assignments, projects, quizzes, tests and final examination

Curriculum Strands

1. Scientific investigation skills
2. Biochemistry
3. Metabolic processes
4. Molecular genetics
5. Homeostasis
6. Population dynamics

Achievement Categories

- Knowledge & Understanding 25%
- Application 25%
- Problem Solving & Inquiry 25%
- Communication 25%

Learning Skills

- Responsibility.
- Organization.
- Independent Work
- Collaboration
- Initiative
- Self-Regulation.

Evaluation

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|-------------------|----------------------|
| Assignments | 30 % (approximately) |
| Quizzes and Tests | 40 % (approximately) |
| Final Evaluation | 30 % |

FINAL MARK

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|----------------------|-----|
| Term Work: | 70% |
| Summative Evaluation | 30% |

Course Outline

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, analyzing and interpreting, and communicating);
2. identify and describe careers related to the fields of science under study, and describe the contributions of scientists, including Canadians, to those fields.

Biochemistry

By the end of this course, students will be able to:

1. analyze 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

By the end of this course, students will be able to:

1. analyze 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

By the end of this course, students will be able to:

1. analyze 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

By the end of this course, students will be able to:

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

By the end of this course, students will be able to:

1. analyze 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.