Superior Heights Collegiate – 2013/2014

Science, Grade 12, Academic Biology (SBI4U) - Course Outline

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.

The important understandings and skills of this course are:

Students final report card grade will be based on the evidence provided of these overall curriculum expectations:

Scientific Investigation Skills and Career Exploration

- 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.

Biochemistry

- Technological applications that affect biological processes and cellular functions are used in the food, pharmaceutical, and medical industries.
- Biological molecules and their chemical properties affect cellular processes and biochemical reactions.
- Biochemical compounds play important structural and functional roles in cells of all living organisms.

Metabolic Processes

- All metabolic processes involve chemical changes and energy conversions.
- An understanding of metabolic processes enables people to make informed choices with respect to a range of personal, societal, and environmental issues.

Molecular Genetics

- DNA contains all the genetic information for any living organism.
- Proteins control a wide variety of cellular processes.
- Genetic research and biotechnology have social, legal, and ethical implications.

Homeostasis

- Organisms have strict limits on the internal conditions that they can tolerate.
- Systems that maintain homeostasis rely on feedback mechanisms.
- Environmental factors can affect homeostasis.

Population Dynamics

- Population growth follows predictable patterns.
- The increased consumption of resources and production of waste associated with population growth result in specific stresses that affect Earth's sustainability.

Assessment for Learning

The primary purpose of assessment is to improve student learning. Teachers will provide students with descriptive feedback so that students, parents and teachers can monitor student progress towards the achievement of their specific learning goals. Examples of assessment include early drafts, first tries, practice assignments, practice quizzes or tests, etc.

Evaluation – Assessment of Learning

The purpose of evaluation (assessment of learning) is to determine student achievement at a given point in time. Teachers make judgments about student demonstrated knowledge and/or skills. Report card grades will be based on a summary of data from evaluations.

70% of your learning will be evaluated throughout the course through:		
Category Weightings	**Criteria that define the categories**	**Examples of Assessment and Evaluation**
Knowledge and Understanding 40%	Subject-specific content acquired (knowledge), and the comprehension of its meaning and significance (understanding). • Knowledge of content: *(e.g., facts; terminology; definitions; safe use of tools, equipment, and materials)* • Understanding of content: *(e.g., concepts, ideas, theories, principles, procedures, processes)*	Written and oral quizzes and tests, interviews, conferencing, exit passes, journaling, discussions etc.
Thinking and Investigation 20%	The use of critical and creative thinking skills and/or processes including: • Initiating and planning skills and strategies *(e.g., formulating questions, identifying the problem, developing hypotheses, scheduling, selecting strategies and resources, developing plans)* • Processing skills and strategies *(e.g., performing and recording, gathering evidence and data, observing, manipulating materials and using equipment safely, solving equations, proving)* • Use of critical/creative thinking processes, skills, and strategies *(e.g., analysing, interpreting, problem solving, evaluating, forming and justifying conclusions on the basis of evidence)*	Investigations, labs, experiments, demonstrations, research projects, etc.
Communication 5%	The conveying of meaning through various forms (oral, visual, and/or written) including: • Expression and organization of ideas and information *(e.g., diagrams, models, tables, charts, presentations, posters, essays)* • Communication for different audiences *(e.g., peers, adults)* and purposes *(e.g., to inform, to persuade)* • Use of scientific conventions, vocabulary, and terminology *(e.g., symbols, formulae, scientific notation, SI units)*	Investigations, experiments, tests, quizzes, pamphlets, presentations, reports, journals, projects, debates, etc.
Application 5%	The use of knowledge and skills to make connections within and between various contexts • Application of knowledge and skills in familiar contexts *(e.g., concepts and processes, safe use of equipment and technology, investigation skills* • Transfer of knowledge and skills to unfamiliar contexts*(e.g., concepts and processes, safe use of equipment and technology, investigation skills)* • Making connections between science, technology, society, and the environment*(e.g., assessing the impact of science and technology on people, other living things, and the environment)* • Proposing courses of practical action to deal with problems relating to science, technology, society, and the environment	Projects, case studies, proposals, opinion pieces, social action initiatives, demonstrations, etc.

30% of your learning will be evaluated at the end of the course (last four weeks of the semester) through:	
20 % Final Examination	-Consisting of a variety of question types (e.g., short answer, multiple choice, extended response, problem solving, etc.); -Completed during exam time period; -Individual student effort; -Evaluated by teacher; -a 1 hour exam within a 1.5 hour time slot (Knowledge)
10 % Final Task	-Consisting of an investigation or an open-ended problematic situation; -Completed during final four weeks of the course; -Individual student effort; -Evaluated by teacher; (Investigation (5%), Communication (2.5%), Application (2.5%)
100% of your learning will be recorded as Final Grade on Report Card	

Learning Skills and Work Habits

The development of learning skills and work habits are an important step toward preparation for post-secondary education and the world of work. Students will develop these skills through their classroom experience and with feedback from their teacher.

Learning Skills and Work Habits	E – Excellent G – Good S – Satisfactory N – Needs Improvement			
Responsibility			**Organization**	
▪ Fulfils responsibilities and commitments within the learning environment. ▪ Completes and submits class work, homework, and assignments according to agreed-upon timelines. ▪ Takes responsibility for and manages own behaviour.			▪ Devises and follows a plan and process for completing work and tasks. ▪ Establishes priorities and manages time to complete tasks and achieve goals. ▪ Identifies, gathers, evaluates, and uses information, technology, and resources to complete tasks.	
Independent Work			**Collaboration**	
▪ Independently monitors, assesses, and revises plans to complete tasks and meet goals. ▪ Uses class time appropriately to complete tasks. ▪ Follows instructions with minimal supervision.			▪ Accepts various roles and an equitable share of work in a group. ▪ Responds positively to the ideas, opinions, values, and traditions of others. ▪ Builds healthy peer-to-peer relationships through personal and media-assisted interactions. ▪ Works with others to resolve conflicts and build consensus to achieve group goals. ▪ Shares information, resources, and expertise, and promotes critical thinking to solve problems and make decisions.	
Initiative			**Self-Regulation**	
▪ Looks for and acts on new ideas and opportunities for learning. ▪ Demonstrates the capacity for innovation and a willingness to take risks. ▪ Demonstrates curiosity and interest in learning. ▪ Approaches new tasks with a positive attitude. ▪ Recognizes and advocates appropriately for the rights of self and others.			▪ Sets own individual goals and monitors progress towards achieving them. ▪ Seeks clarification or assistance when needed. ▪ Assesses and reflects critically on own strengths, needs, and interests. ▪ Identifies learning opportunities, choices, and strategies to meet personal needs and achieve goals. ▪ Perseveres and makes an effort when responding to challenges.	

How to get extra help!

You know it's time to ask for help when you find yourself saying…

- I cannot complete the homework.
- I don't have a clue.
- I thought I did well but…
- I am lost.
- I feel like I am the only one not getting it.

Who can help?

Mr. Patterson
Mr. Persic
Mrs. Dvorak
Mrs. Coulter
Mr. Skalecki
Mr. Hankinson

Where to go?

- Learning Resources
- Library
- Your classroom.

Some specific suggestions…

- Review each day's notes as soon as possible.
- Do your homework before the next class.
- Participate in class.
- Form study groups with classmates.