

**SAULT COLLEGE OF APPLIED ARTS AND TECHNOLOGY**

**SAULT STE. MARIE, ONTARIO**



**COURSE OUTLINE**

**COURSE TITLE:** BIOLOGY FOR HEALTH SCIENCES                      **SEMESTER:** Various

**CODE NO:** BIO122

**PROGRAM:** PRE-HEALTH SCIENCES

**AUTHOR:** LESLIE DAFOE

**DATE:** JAN. 2011                      **PREVIOUS OUTLINE DATED:** JAN. 2010

**APPROVED:**                                      **“Marilyn King”**                                      **Jan, 2011**

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**CHAIR, HEALTH PROGRAMS**

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**DATE**

**TOTAL CREDITS:** 4

**PREREQUISITE(S):** SB13U or SB13C (Biology, Grade 11, University Preparation or College Preparation), Bio 112 or equivalent

**HOURS/WEEK:** 4 Hrs/Wk

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For additional information, please contact the Chair, Health Programs

School of Health and Community Services

(705) 759-2554, Ext. 2689

## **I. COURSE DESCRIPTION:**

This course will prepare graduates from secondary school, who lack SB14U (Grade 12 Biology, University Preparation), for potential entry into programs in the health sciences. The course will provide theoretical and practical knowledge of concepts within the following strands: metabolic processes, homeostasis, molecular genetics, and evolution. There will be an emphasis placed on mastery of the required theoretical base needed for the pursuit of further studies in the life sciences, with special attention to the health sciences.

## **II. LEARNING OUTCOMES AND ELEMENTS OF THE PERFORMANCE:**

Upon successful completion of this course the student will demonstrate the ability to:

1. Understand and utilize appropriate terminology related to descriptions of the following: how energy is supplied by metabolic processes such as respiration and photosynthesis; the regulatory systems involved in maintenance of homeostasis; the molecular biology of the gene, and the mechanism of evolution.
2. Describe the role of macromolecules, esp. proteins and enzymes, in the normal metabolism of living things and the basic metabolic styles used by cells for the generation of energy (i.e. aerobic respiration versus anaerobic respiration).
3. Recognize the significance of similar mechanisms across species boundaries with regard to processes integral to life (i.e. respiration and the molecular mechanism of inheritance).
4. Describe the basic structure and function of the macromolecules necessary for genetic processes to take place in all living cells.
5. Describe and explain the roles played by the endocrine and nervous systems in the maintenance of homeostasis in the human body. Understand the importance of feedback mechanisms and some of the specific physiological and biochemical mechanisms utilized by these systems in fulfilling their roles.
6. Describe the nature of genes from both a structural and functional perspective. Understand the structural and functional differences between DNA and RNA.
7. Describe in a basic way the method by which DNA replicates and the processes of transcription and translation.

8. Understand how the scientific method has been utilized to propose and strengthen the theory of evolution. Describe the current and historical methods proposed for how evolution occurs.
9. Describe some of the landmark contributions/discoveries made in the field of evolution and evaluate their significance and the degree to which they did/do support the theory of evolution.
10. Understand and describe the following concepts: adaptation, descent with modification, and speciation.

### **III. TOPICS:**

- 1) The macromolecules of life
- 2) Metabolic processes within cells - respiration and photosynthesis
- 3) Maintaining a stable internal environment: homeostasis
- 4) The roles of the nervous and endocrine systems in homeostasis
- 5) Molecular genetics - How DNA acts as the contractor to build all cells
- 6) Evolution - the mechanism by which the diversity of life has arisen

### **IV. REQUIRED TEXTS/RESOURCES/MATERIALS:**

Campbell, N.A., J.B. Reece, E.J. Simon (2010). *Essential Biology with Physiology, 3e.* Toronto. Benjamin Cummings. ISBN-13:9780321602077

### **V. EVALUATION PROCESS/GRADING SYSTEM:**

1. The pass mark for this course is **50%**. It is composed of unit tests, a mid-term exam and a final exam.

2. Evaluation Methods:

Units Tests (6 in total):	60%
Mid-term Exam	20%
Final Exam	20%

**The mid-term exam will consist of course material from the beginning of the course until the mid-term date.**

**The final exam will consist of material from after the mid-term exam to the end of the course.**

3. Students who receive a mark of below 50% **may** be eligible to write a supplemental exam. The following criteria apply:

- received at least 47-49% in the overall mark
- attended at least 80% of the classes
- received at least 55% on the midterm exam and on at least 2 of the 6 classroom tests

**The supplemental exam will cover the whole semester (entire course).** It will be comprised of multiple choice questions and diagrams.

4. **Students missing the unit tests for any reason will NOT be able to write them at any other date.**
5. Students missing the mid-term exam or final exam because of illness or other serious reason must phone the professor **before** the exam to inform her/him (759-2554 ext. 630). Those students who have notified the professor of their absence, according to policy, will be eligible to arrange an opportunity as soon as possible to write the exam at another time. Those students who **do not notify the professor** will receive a zero grade for that exam. **It is the student's responsibility** on his/her first day back at school to contact the professor to arrange to write the exam. Failure to notify the professor at this time will result in a mark of "0".
6. Students receiving borderline marks (59, 69, 79, 89) **may**, at the professor's discretion, have their mark advanced to the next category **if they have attended at least 80% of the classes.**
7. **MIDTERM GRADES:** The determination of midterm grades as "S" or "U" will be based on the cumulative grades of all tests completed up to the date of submission of midterm grades. Any student who does not achieve a passing grade on the majority of graded work will receive a "U" grade at midterm. Those who do receive a "U" grade at midterm are encouraged to schedule a meeting with the professor for additional help towards success in the course.
8. **Course Grading Scheme:**

Grade	Definition	Grade Point Average
A <sup>+</sup>	90 - 100%	4.00
A	80 - 89%	4.00
B	70 - 79%	3.00
C	60 - 69%	2.00
D	50 - 59%	1.00
F	49% or below	
CR (Credit)	Credit for diploma requirements has been awarded.	

S	Satisfactory achievement in field placement or non-graded subject areas.
U	Unsatisfactory achievement in field placement or non-graded subject areas.
X	A temporary grade. This is used in limited situations with extenuating circumstances giving a student additional time to complete the requirements for a course (see <i>Policies and Procedures Manual - Deferred Grades and Make-up</i> ).
NR	Grade not reported to Registrar's office. This is used to facilitate transcript preparation when, for extenuating circumstances, it has not been possible for the faculty member to report grades.

**NOTE: Mid Term grades are provided in theory classes and clinical/field placement experiences. Students are notified that the midterm grade is an interim grade and is subject to change.**

#### VI. SPECIAL NOTES:

##### Attendance:

Sault College is committed to student success. There is a direct correlation between academic performance and class attendance; therefore, for the benefit of all its constituents, all students are encouraged to attend all of their scheduled learning and evaluation sessions. This implies arriving on time and remaining for the duration of the scheduled session.

#### VII. COURSE OUTLINE ADDENDUM:

The provisions contained in the addendum located on the portal form part of this course outline.