Course Outline

University Studies

Winter 2017

BIOL 108A – INTRODUCTION TO BIODIVERSITY
3 credits, 3 hours lecture, 3 hours lab

Our planet supports a remarkable diversity of life. This course will discuss the history of life on earth, the evolutionary processes that gave rise to the biodiversity of earth, and how the relationships among organisms are reflected in their classification. Principles that unite all living things as well as unique adaptations that characterize major lineages will be discussed using examples from the three Domains of life. Laboratory exercises will investigate the diversity of biological form and function, and introduce students to scientific methodology, data collection and scientific writing.

Prerequisite: BIOL 30 or equivalent.

Instructor

Nancy Serediak, Ph.D.

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Office Hours

Tuesdays	9:00 am – 11:00 am
Thursdays	10:00 am – 11:00 am and 2:00 pm – 4:00 pm

Hours of Instruction

Lecture

Monday	12:00 – 1:50 pm	Room S214
Thursday	1:00 – 1:50 pm	Room S214
Friday	1:00 – 1:50 pm	Room S214

Lab

Wednesday	9:00 – 11:50 am (Biology Lab - Room CC234)

Required Resources

1. Hard copy of completed WHMIS course certificate for first lab (online resource)

2. Reece et al. (2014) Campbell Biology, 1st Canadian edition. Pearson Canada, Inc. Don Mills, ON, Canada.

3. Biology 108 Laboratory Manual (2016) Keyano College and the University of Alberta, Fort McMurray, Alberta, Canada.
   Each student is required to have their OWN copy of the lab manual.

4. Dedicated lab coat (full lab coats that go to the knees)

5. Moodle (http://ilearn.keyano.ca). The course outline, lecture notes and other resources will be made available on Moodle.

Course Outcomes

Upon successful completion of this course, the student shall be able to:

- Explain basic principles of ecology, evolution, and Mendelian genetics, with a focus on the origin and diversity of life.
- Use current phylogenetic and taxonomic nomenclature to describe the diversity of life on earth, and explain how evolutionary history is reflected in the nomenclature of organisms, including reference to major evolutionary innovations.
- Use scientific inquiry to ask and answer questions about the world around them. This includes understanding the strengths & limitations of scientific inquiry and recognizing common mis-uses/mis-understandings.

Evaluation

Assignment	**Percentage**	**Due Date**
Lecture Midterm 1	15%	Friday, February 10, 2017
Lecture Midterm 2	15%	Monday, March 13, 2017
Lab assignments and student presentations	25%	Announced in lab
Final Lab Exam	15%	Wednesday, March 29, 2017
Final Lecture Examination	30%	set by Registrar's Office

A grade of C- is required for progression or transfer.

Grading System

Descriptor	Alpha Grade	4.0 Scale	Percent	Rubric for Letter Grades
Excellent	A+	4.0	> 92.9	Work shows in-depth and critical analysis, well developed ideas, creativity, excellent writing, clarity and proper format.
	A	4.0	85 – 92.9	
	A-	3.7	80 – 84.9	
Good	B+	3.3	77 – 79.9	Work is generally of high quality, well developed, well written, has clarity, and uses proper format.
	B	3.0	74 – 76.9	
	B-	2.7	70 – 73.9	
Satisfactory **Progression**	C+	2.3	67 – 69.9	Work has some developed ideas but needs more attention to clarity, style and formatting.
	C	2.0	64 – 66.9	
	C-	1.7	60 – 63.9	
Poor **Minimum Pass**	D+	1.3	55 – 59.9	Work is completed in a general way with minimal support, or is poorly written or did not use proper format.
	D	1.0	50 – 54.9	
Failure	F	0.0	< 50	Responses fail to demonstrate appropriate understanding or are fundamentally incomplete.

Proposed Schedule of Topics

Detailed readings will be assigned during class/lab – in many instances only select pages from each chapter will be assigned. In other instances, textbook chapters will be visited more than once because concepts are pertinent in multiple contexts.

Lecture Topic	**Textbook Chapter** Textbook: Campbell's Biology 1st Canadian Edition. In many cases, students will not be responsible for entire chapters. Specific pages will be assigned in class.
1. Introduction – The scientific method and a brief tour of biological organization	Ch 1, Ch 52
2. Mechanisms of evolution	Ch 22
3. Evolution of populations (microevolution)	Ch 14, Ch 23
4. The origin of species (speciation)	Ch 24
5. Taxonomy, systematics, phylogeny, and classification	Ch 26
6. A brief history of time: the origin of life, fossils and their relevance	Ch 25
7. Prokaryotes	Ch 27
8. Endosymbiosis and the evolution of eukaryotes	Ch 25
9. Reproductive strategies: why does sex exist?	Ch 12, Ch 13, Ch 46
10. Protists	Ch 28
11. Plant diversity I: Movement of plants onto land	Ch 29
12. Plant diversity II: Evolution of seeded plants	Ch 30
13. Fungi	Ch 31
14. Animal development and classification	Ch 32
15. Animal diversity I: invertebrates	Ch 33
16. Animal diversity II: chordates and vertebrates	Ch 34

Please Note:

Date and time allotted to each topic is subject to change.

Lab schedule Winter 2017

DATE	ACTIVITY
	First Day of Classes Mon 9 January, last day Wed 12 April
Week of 9 Jan	***WHMIS certification to be completed online and printed***
13 January	**Lab 1** Biological tools and aseptic technique, begin discussion of primary literature presentations
25 January	**Lab 2** Mechanisms of evolution – hands-on & computer modeling ("Dot lab")
1 February	**Lab 3** Population genetics ("Bead Lab") *Lab assignment 1 worth 5%,* ***due 8 Feb February***
8 February	**Lecture Midterm 1 this week (15% of final grade)** **Lab assignment 1 due at start of lab (5% of final grade)** **Lab 4** Domain Bacteria and Sterile Technique, Information for lab assignment 3 presented (Efficacy of Antimicrobial Products), ***report worth 10 %, due 22 February***
15 February	**Lab 5** Domain Bacteria continued (data collection) and survey of Kingdom Fungi
22 February	**In-lab assignment 2 due at end of lab (2.5% of final grade)** **Lab 6** Kingdom Plantae and selected photosynthetic protists of importance to the evolution of Kingdom Plantae
27 Feb - 3 March	**Reading Break – no lab**
8 March	**Lab assignment 3 due at start of lab (10% of final grade)** **Lab 7 Student presentations of primary literature articles (5% of final grade)**
15 March	**Lecture Midterm 2 this week (15% of final grade)** **Lab 8** Kingdom Animalia – Part 1
22 March	**In-lab assignment 2 due at end of lab (2.5% of final grade)** **Lab 9** Kingdom Animalia – Part 2
29 March	**Final Lab Exam (15% of final grade)**

Performance Requirements

Student Responsibilities

It is your responsibility as a student to contact the office of the Registrar to complete the forms for Withdrawal or Change of Registration, and any other forms. Please refer to the list of important dates as noted in the Academic Schedule in the Keyano College credit calendar.

More specific details are found in the Student Rights and Student Code of Conduct section of the Keyano College credit calendar. It is the responsibility of each student to be aware of the guidelines outlined in the Student Rights and Student Code of Conduct Policies.

Laboratory Safety

In the science laboratories, safety is important.

Students must complete the *WHMIS for Students* online training course on Moodle before entering the science laboratories.

Students must comply with the mandatory laboratory safety rules for this course as provided in the laboratory manual. Failure to do so will result in progressive discipline such as a verbal warning, refused entry into the laboratory, or suspension from the College.

Student Attendance

Class attendance is useful for two reasons. First, class attendance maximizes a student's learning experience. Second, attending class is a good way to keep informed of matters relating the administration of the course (e.g., the timing of assignments and exams). Ultimately, you are responsible for your own learning and performance in this course.

It is the responsibility of each student to be prepared for all classes. Students who miss classes are responsible for the material covered in those classes and for ensuring that they are prepared for the next class, including the completion of any assignments and / or notes that may be due.

Students are required to attend and complete all labs. *Unexcused absence from any lab period or failure to submit a lab report may result in a failing grade in the course.*

There are no make-up lab sessions in BIOL 108.

Missing two or more labs for any reason whatsoever will result in automatically failing BIO 108.

Academic Misconduct

Students are considered to be responsible adults and should adhere to principles of intellectual integrity. Intellectual dishonesty may take many forms, such as:

- Plagiarism or the submission of another person's work as one's own
- The use of unauthorized aids in assignments or examinations (cheating)
- Collusion or the unauthorized collaboration with others in preparing work
- The deliberate misrepresentation of qualifications
- The willful distortion of results or data
- Substitution in an examination by another person
- Handing in the same unchanged work as submitted for another assignment
- Breach of confidentiality.

The consequences for academic misconduct range from a verbal reprimand to expulsion from the College. More specific descriptions and details are found in the Student Rights and Student Code of Conduct section of the Keyano College credit calendar. It is the responsibility of each student to be aware of the guidelines outlined in the Student Rights and Student Code of Conduct Policies.

In order to ensure your understanding of the concept of plagiarism, you must successfully complete the online tutorial found on Moodle. Once you have successfully completed the course, print the certificate, sign it, and show it to each of your instructors. Your course work will not be graded until you show this signed certificate.

Specialized Supports

Counselling and Accessibility Services

Counselling Services provides a wide range of specialized counselling services to prospective and registered students, including personal, career and academic counselling.

SKILL Centre

The SKILL Centre is a learning space in the Clearwater Campus at Keyano College where students can gather to share ideas, collaborate on projects and get new perspectives on learning from our tutorial staff.

The SKILL Centre, through a variety of delivery methods, provides assistance in skill development to Keyano students. Assistance is provided by instructors, staff and student tutors. Individuals wishing to improve their mathematics, writing, grammar, study, or other skills, can take advantage of this unique service.

Authorization

This course outline has been reviewed and approved by the Program Chair.

Nancy Serediak, Instructor

Louis Dingley, Chair — Date Authorized

Vincella Thompson, Dean — Date Authorized

Signed copies to be delivered to:
Instructor
Registrar's Office