

University Studies

Winter, 2018

BIOL 108A
Introduction to Biodiversity

3 Credits, 3 hours lecture, 3 hours lab per week

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.

Prerequisites BIOL 030

Instructors

Dr. David Smith
S209B
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Office Hours

Monday to Friday 12:00 – 12:50
All office hours are in S209B

Hours and Location of Instruction

Monday, Tuesday, Friday 8:00 - 8:50 Room S218
Wednesday 9:00 – 11:50 CC234

Required Resources

Textbook title,

*Campbell, N. A., Urry, L. A., Cain, M. L., Wasserman, S. A., Minorsky, P. V. and Jackson, R. B. 2014. Biology, Canadian Edition. Benjamin/Cummings Publishing Company. San Francisco, California, USA. ISBN: 978-0-321-77830-7

* *The 9th edition of Biology is also acceptable*

Course Outcomes

Upon successful completion of this course, students will be able to:

- 1) Explain basic principles of ecology, evolution, and Mendelian genetics, with a focus on the origin and diversity of life.
- 2) 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.

3) Use scientific inquiry to ask and answer questions about the world around them. This includes understanding the strengths and limitations of scientific inquiry and recognizing common mis-uses/mis-understandings.

Evaluation

Lab Assignments	20%, due every 3 weeks
Midterm	25%, week of Feb. 12
Lab exam	20%, week before final exam
Final Exam	35%, week of April 16
Total	100%

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 Lecture Topics

Lecture Topic – (week of:)	Textbook Reading
Jan. 8 - Introduction – The scientific method and the scale of biology	1.1-1.3
Jan. 8 - Darwin and natural selection	22.1-22.3
Jan. 15 - Evolution of populations (microevolution)	14.1-14.2; 23.1-23.4
Jan. 15 - The origin of species (speciation)	24.1-24.4
Jan. 22 - Taxonomy, systematics, phylogeny, and classification	26.1-26.5
Jan. 22. 2 - A brief history of time: the origin of life, fossils and their relevance	25.1-25.4
Jan. 29 - Prokaryotes	27.1-27.6
Feb. 5 - Endosymbiosis and the evolution of eukaryotes	25.3, 26.6
Feb. 12 - Reproductive strategies: why does sex exist?	12.1-12.2; 13.1-13.4
Feb. 26 – Protists	28.1-28.7
Mar. 5 - Plant diversity I: bryophytes and pteridophytes	29.1-29.3
Mar. 12 - Plant diversity II: seeded plants	30.1-30.4
Mar. 19 - Functional anatomy of seed plants	35.1-35.4; 36.3-36.4
Mar. 26 – Fungi	31.1-31.5
April 2 - Animal development and classification	32.1; 32.3-32.4
April 2 - Animal diversity I: invertebrates	33.1-33.5
April 9 - Animal diversity II: chordates and vertebrates	34.1-34.8

Proposed Schedule of Laboratory Topics (week of:)

Jan. 8	No lab
Jan. 15	Lab 1 – Biological tools and aseptic techniques, discuss primary literature assignment
Jan. 22	Lab 2 – Mechanisms of evolution (dot lab)
Jan. 29	Lab 3 – Population genetics (bead lab) Assignment on Labs 1-3 – 5% due Feb. 14
Feb. 5	Lab 4 – Domain Bacteria and sterile technique Lab report assigned for “Efficacy of Antimicrobial Products”, worth 5 %, report due Feb. 28
Feb. 12	Lab 5 – Domain Bacteria continued (data collection) and survey of Kingdom Fungi
Feb. 26	Lab 6 - Student presentations of primary literature – 5%
Mar. 5	Lab 7 - Kingdom Plantae and selected photosynthetic protists of importance to the evolution of Kingdom Plantae
Mar. 12	Lab 8 – Kingdom Animalia – part 1
Mar. 19	Lab 9 – Kingdom Animalia – part 2 Assignment on Labs 7-9 due March 28 – 5%
Mar. 26	Review
April 2	Lab exam

Please Note:

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

Performance Requirements

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 to 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.

Attendance of lectures and laboratories is mandatory and will be monitored and reported to the Chair. Missing two or more labs will result in failure.

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 2016-2017 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 ilearn.keyano.ca. Then 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.