

DEPARTMENT OF SCIENCE

COURSE OUTLINE – Fall 2023

BI1080 (A2): Introduction to Biological Diversity – 3 (3-1-3) 105 Hours for 15 Weeks

Northwestern Polytechnic acknowledges that our campuses are located on Treaty 8 territory, the ancestral and present-day home to many diverse First Nations, Metis, and Inuit people. We are grateful to work, live and learn on the traditional territory of Duncan's First Nation, Horse Lake First Nation, and Sturgeon Lake Cree Nation, who are the original caretakers of this land.

We acknowledge the history of this land and we are thankful for the opportunity to walk together in friendship, where we will encourage and promote positive change for present and future generations.

INSTRUCTOR:	Dr. Jessie Zgurski	PHONE:	1 780 903 6313
OFFICE:	J221	E-MAIL:	JZgurski@nwpolytech.ca
	Monday 11:30 AM - 12:5	0 PM, Wedne	esday 11:30 AM – 2:00 PM,
OFFICE HOURS:	Friday 9:30 AM – 12:50 F	M, or by app	ointment.

CALENDAR DESCRIPTION: This course examines the major lineages of life on Earth. It provides an overview of evolutionary principles and classification, the history of life, and the key adaptations of prokaryotes, protists, fungi, plants, and animals. Laboratories survey the diversity of biological form and function and introduce students to data collection and scientific writing.

PREREQUISITE(S)/COREQUISITE: Biology 30 (Prerequisite)

REQUIRED TEXT/RESOURCE MATERIALS:

1) Wasserman, S. A., Minorsky, P. V., Jackson, R. B., Scott, K. G. E., Rawle, F. E., Moyes, C. D., Durnford, D. G., Walde, S. J., Cain, M. L., Urry, L. A., and Reece, J. B. 2021. Campbell Biology, Third Canadian Edition. Pearson Canada. (Recommended Textbook. The Second Edition of Campbell Biology, Canadian Edition, is also acceptable.)

2) Biology 1080 Lab Manual (Required – Available at the Bookstore)

3) Binder for Biology 1080 Lab Manual (and other lab handouts) – It should be able to hold about 200 pages.

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DELIVERY MODE(S): Lectures (Monday and Wednesday, 10:00 - 11:20 AM in J204), Laboratory (Wednesday or Friday, 2:30 - 5:20 PM in J130), Seminars (Monday 1:00 - 1:50 PM in J203 or Friday 8:30 - 9:20 AM in J201).

LEARNING OUTCOMES: By the end of the course, students should:

• Understand how to use the scientific method to test biological hypotheses.

• Be able to describe the process of natural selection and be able to provide examples of the evidence for evolution via natural selection.

• Be able to use current phylogenetic and taxonomic nomenclature to discuss the evolution of life on Earth.

• Be able to list the characteristics that define the major clades of life, including the eukaryotes, fungi, land plants, vascular plants, seed plants, flowering plants, chordates, and amniotes.

TRANSFERABILITY:

Please consult the Alberta Transfer Guide for more information. You may check to ensure the transferability of this course at the Alberta Transfer Guide main page http://www.transferalberta.alberta.ca.

** Grade of D or D+ may not be acceptable for transfer to other post-secondary institutions. Students are cautioned that it is their responsibility to contact the receiving institutions to ensure transferability.

EVALUATIONS:	Laboratory	40% (Labs start September 13/15, 2023)
	Seminar	10% (Seminars start September 11/15, 2023)
	Midterm	20% (In class, October 25, 2023)
	Final Exam	30% (During exam week, exact time and place TBA)

The 40% laboratory mark will be broken down as follows:

Analis Assignment	1% (Due September 20 or 22)*
Anous Assignment	1.00 (Due September 20 of 22)
Museum Questions	3% (Due October 4 or 6)
Isopod Assignment	6% (Due October 11 or 13)
Algae Lab Questions	3% (Due October 18 or 20)
Brassica Lab Report	11% (Due November 8 or 10)
Lab Final	16% (On November 29 or December 1)

* This due date will depend on which lab section you are registered in.



The 10% seminar mark will be broken down as follows:

Phylogenetics Assignment	2.5% (Due October 2 or 6)*
Population Genetics Assignment	2.5% (Due October 16 or 20)
Participation	5%**

* This due date will depend on which seminar session you are registered in. ** This will be based primarily on attendance.

GRADING CRITERIA

Please note that most universities will not accept your course for transfer credit IF your grade is less than C-.

Alpha Grade	4-point Equivalent	Percentage Guidelines	Alpha Grade	4-point Equivalent	Percentage Guidelines
A+	4.0	90-100	C+	2.3	67-69
А	4.0	85-89	С	2.0	63-66
A-	3.7	80-84	C-	1.7	60-62
B+	3.3	77-79	D+	1.3	55-59
В	3.0	73-76	D	1.0	50-54
B-	2.7	70-72	F	0.0	00-49

COURSE SCHEDULE/TENTATIVE TIMELINE:

Lecture Schedule – Fall 2023					
LECTURE	Readings (Campbell's Biology)				
TOPIC	Dates (Approximate)	Textbook Chapter			
Introduction to BI 1080	September 6	-			
1. Unifying Themes in Biology	September 6, 11	Chapter 1			
2. Taxonomy, Phylogeny & Systematics	September 13, 18	Chapter 26			
3. Descent with Modification	September 20, 25	Chapter 22			
4. Evolution of Populations	September 27, October 2	Chapter 23			



Lecture Schedule – Fall 2023				
LECTURE	Readings (Campbell's Biology)			
TOPIC	Dates (Approximate)	Textbook Chapter		
5. Origin of Species	October 4, 11	Chapter 24		
6. History of Life	October 16, 18	Chapter 25		
Midterm	October 25, In Class	Covers Topics 1 - 6.		
7. Protists	October 23, October 30	Chapter 28		
8. Plants – Colonization of Land	November 1, 6	Chapter 29		
9. Plants – Seed & Flowering plants	November 6, 8	Chapter 30		
No Class – Fall Break	November 13, 15	N/A		
10. Fungi	November 20, 22	Chapter 31		
11. Animals - Overview	November 22, 27	Chapter 32		
12. Animals – Invertebrates	November 27, 29, December 4	Chapter 33		
13. Animals – Chordates/Vertebrates	December 4, 6, 11	Chapter 34		
Final Exam	TBA – Exam Week	Covers Topics 7 – 13		

Laboratory Schedule – Fall 2023				
Date	Lab	Assignment Due?		
September 13 or 15	Lab 1: Biology Tools and Techniques	No		
September 20 or 22	Lab 2: An Introduction to Evolution and Speciation	Hand in graphs by end of lab period.		
September 27 or 29	Lab 3: Museum Field Trip	No		
October 4 or 6	Lab 4: Habitat Selection in Terrestrial Isopods	Hand in Museum Worksheet.		
October 11 or 13	Lab 5: Diversity of Photosynthetic Pigments	Isopod Assignment Due		



Laboratory Schedule – Fall 2023				
Date	Lab	Assignment Due?		
October 18 or 20	Lab 6: Plant Form and Function	Lab 5 Questions Due		
October 25 or 27	Lab 7: Reproduction in Land Plants	No		
November 1 or 3	Lab 8: Biology of Invertebrates	No		
November 8 or 10	Lab 9: Introduction to Deuterostomes	Brassica Lab Report Due		
November 15 or 17	No Labs – Fall Break	No		
November 22 or 24	Lab 10: Review	No		
November 29 or December 1	Lab Exam	Lab Exam this week		

Seminar Schedule – Fall 2023				
Date	Activity	Notes		
September 11 or 15	Finding primary and secondary sources	No assignment due, Meet in Computer Lab (Check D2L for Location)		
September 18 or 22	Statistics Tutorial I (Chi- Square Test)	No assignment due		
September 25 or 29	Phylogenetics tutorial	No assignment due		
October 2 or 6	Population Genetics Tutorial	Phylogenetics Assignment Due		
October 9 or 13	No Seminar (Thanksgiving)	No assignment due		
October 16 or 20	Earthviewer Exercise	Population Genetics Assignment Due		
October 23 or 27	Statistics Tutorial II (t-test) and Lab Report Writing	No assignment due, meet in computer lab (Check D2L for Location)		
October 30 or November 3	No Seminar – Post-midterm Seminar Break.	No assignment due		



Seminar Schedule – Fall 2023				
Date	Activity	Notes		
November 6 or 10	Algae and Protista Exercises	Hand in worksheet at end of seminar.		
November 13 or 17	Fall Break – No Seminars	No assignment due		
November 20 or 24	Fungi Exercises	Hand in worksheet at end of seminar.		
November 27 or December 1	No Seminar – Lab Exam Week	No assignment due		
December 5 and 8	Final Exam Preparation Exercises	No assignment due		

STUDENT RESPONSIBILITIES: For our first laboratory (on September 13 or 15, depending on your lab section), please bring a copy of the lab manual, a binder, and something to write with. Please wear closed-toe shoes. Lab coats and gloves will be provided.

Seminars start during the second week of class, so the first seminars will be held on September 11 or 15, depending on your section. Please bring paper and something to write with. During seminars, you will learn skills that will be necessary to write lab reports, such as how to conduct the required analytical statistical tests. You will also work on problems that will allow you to apply many of the principles learned in class. The 5% participation mark is based primarily on attendance, but everyone gets one "free" absence before marks are lost for non-attendance. Students must also participate in the seminar exercises to earn full participation marks.

Students are responsible for completing and submitting work on time. Late assignments will typically be docked 10% of the mark. However, everyone will be able to hand in one assignment up to two days late without penalty.

The midterm will be conducted in class on October 25 and the laboratory final will be delivered during the last laboratory period on November 29 or December 1. A calculator will be permitted during the midterm and the laboratory final; otherwise, electronic devices are prohibited during exams. Students who cannot write the midterm or laboratory exam during the scheduled time due to a serious illness or another compelling reason must arrange to write it later. The final exam will be held during exam week. Failure to write the final exam will result in a grade of zero unless the exam was missed for a compelling reason (such as an illness). In such a case, the exam will be deferred.

You are expected to take notes in this class. Copies of the lecture PowerPoint presentations will be made available on the course website prior to the lectures. I recommend printing out copies of

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the PowerPoint files or the lecture guides (these will be Word documents) prior to class and writing additional notes on them during lecture. Alternatively, you can load them up on your tablet and take notes that way. The lecture guides are designed to be filled out during lecture. Other learning resources, including practice exam questions and pre-lab PowerPoint presentations, will be added to the page during the semester.

Phones should be put away during this class (including during labs or seminars), and tablets and computers should only be used for taking notes. Using electronic devices to play games, watch videos, shop, or browse social media is distracting to other students and inconsiderate to the instructor.

Students are expected to frequently check the course website and their college E-mail accounts for announcements regarding the class.

STATEMENT ON ACADEMIC MISCONDUCT:

Academic Misconduct will not be tolerated. For a more precise definition of academic misconduct and its consequences, refer to the Student Rights and Responsibilities policy available at https://www.nwpolytech.ca/about/administration/policies/index.html.

**Note: all Academic and Administrative policies are available on the same page.

ACCESSIBILTY SUPPORTS AND DISABILITY SERVICES: If you require disabilityrelated accommodations and support, please contact the Accessibility Supports and Disability Services office. Their Email address is <u>AS@nwpolytech.ca</u> and their website is https://libguides.nwpolytech.ca/learningcommons/AccessibilityServices

MENTAL HEALTH SUPPORTS: NWP students have access to mental health counselling services. Please do not hesitate to seek help if you are suffering from issues such as anxiety, depression, trauma, grief, or any coping-related concerns. Go to http://www.mystudentsupport.com/ or call 1-855-849- 8641 to speak to a counsellor. The NWP website also has mental health supports available. Please visit https://www.nwpolytech.ca/services/mental_health/students.html/ for more information.