



DEPARTMENT OF SCIENCE

COURSE OUTLINE – Winter 2024

BI2080 (A3): PRINCIPLES OF ECOLOGY – 6(6-0-0), 90 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: Beatrice Amar, Ph.D. **PHONE:** 780-539-2031
OFFICE: J208/HEC **E-MAIL:** Bamar@NWPolytech.ca
OFFICE HOURS: Mon to Thurs 11.30 a.m.-12.30 p.m. or by appointment

CALENDAR DESCRIPTION:

Ecology is the scientific study of interactions between organisms and their environment in a hierarchy of levels of individuals, organizations, populations, communities, and ecosystems. This course is designed to provide a comprehensive survey of general concepts that can stand alone or serve as preparation for advanced courses in ecology. Labs emphasize the collection, analysis, and interpretation of data from ecological experiments to illustrate and complement the lecture material. Examples will be drawn from a broad range of organisms and systems.

PREREQUISITE(S): BI1080

REQUIRED TEXT/RESOURCE MATERIALS:

There is no prescribed textbook for this course. Online resources for this course including reading material, videos and internet links will be provided on the D2L course link.

DELIVERY MODE(S): Lecture: Tuesday & Thursday 1 p.m. – 2.20 p.m. (J201)
Labs: Wednesday 2.30 - 5.20 p.m. (J126)

COURSE OBJECTIVES: The objective of this course is to develop an understanding of the environmental interactions that determine the distribution and abundance of organisms. The environmental factors can be abiotic (temperature, water availability, soil nitrogen levels, etc.) or biotic (influences exerted by other organisms). The **organism** can be viewed as the most fundamental unit of ecology in the sense that no smaller unit has a separate life in the environment. Although ecological systems can be as small as a drop of water or as large as the entire biosphere, ecologists recognize four hierarchical levels of study: the response of **individuals** to their environments; the response of **populations** of a single species; the composition and structure of **communities**; the processes occurring within **ecosystems**.

Within ecology there are several fields of study, depending on the interaction in focus. For example, **behavioural ecology** is concerned with patterns of behaviour within populations; **physiological ecology** explores how individuals are physiologically or functionally adapted to live in their environments and carry out their roles; **evolutionary ecology** is concerned with the impact of evolution on current ecological patterns and the historical formation of adaptations. In this course, we will cover several of these fields of study.

LEARNING OUTCOMES:

After the successful completion of the course, students will be able to:

1. Demonstrate knowledge of fundamental ecological principles that operate at the levels of the individual organism, the population and the community.
2. Explain the major selective forces, both living and nonliving, that challenge organisms, and illustrate how organisms respond to these challenges on a short term and long-term basis, and how these responses contribute to the structure and function of ecological systems.
3. Design, analyze and report the findings of scientific experiments.
4. Develop critical thinking skills.

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.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:

Student assessments will be conducted as given below:

Assignments:	12%
Presentation:	8%
Laboratory:	25%
Mid-term Exam:	25%
<u>Final Exam</u>	<u>30%</u>
Total	100%

The midterm exam will be announced in class and will be mid-February, 2024. The final exam will be **cumulative** and will take place during the scheduled exam period. Failure to write the midterm or exam will result in a grade of zero unless appropriate documentation is provided.

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	95-100		C+	2.3	67-69
A	4.0	85-94		C	2.0	63-66
A-	3.7	80-84		C-	1.7	60-62
B+	3.3	77-79		D+	1.3	55-59
B	3.0	73-76		D	1.0	50-54
B-	2.7	70-72		F	0.0	00-49

COURSE SCHEDULE/TENTATIVE TIMELINE:

Topics

1. Introduction to Ecology
2. Environmental Factors
3. Ecological Energetics
4. Nutrient Cycling
5. Population Ecology
6. Behavioral Ecology
7. Life Histories
8. Community Ecology
9. Distribution and Succession
10. Climate

11. Biodiversity

12. Human Ecology

STUDENT RESPONSIBILITIES: Students are expected to attend all classes and laboratory sessions. All assignments must be completed in full and handed in by the date specified. Students must attend laboratory sessions and complete each exercise in order to receive credit for the lab reports.

STATEMENT ON PLAGIARISM AND CHEATING:

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.