



Biology (BIOL) 345

Ecology (Revision 6)

Status:

Replaced with new revision, see the [course listing](#) for the current revision

Delivery mode:

Individualized study online with **eText**, and **Home Lab** as well as a **Supervised Lab**. BIOL 345 has a **lab exemption**. This course is charged a **lab fee**

Credits:

3

Area of study:

Science

Prerequisites:

BIOL 204 and **BIOL 207**. Alternatively six credits from a recognized university and approval by the course professor.

Precluded:

None

Challenge:

BIOL 345 is not available for challenge.

Faculty:

Faculty of Science and Technology

This course has a **mandatory, four-day supervised lab component** in Athabasca.

Notes:

See [BIOL 345 lab resources](#)  on the Science and Technology website.

Overview

Ecology, as a branch of biology, is the study of the interactions of organisms with their environments. This course covers experimentation and models, relationships between organisms and their abiotic environments, population ecology and various symbiotic relationships, community ecology, ecosystem energetics and biogeochemical cycles, as well as aquatic and terrestrial biomes.

Outline

- Chapter 1: The Nature of Ecology

Part 1: The Physical Environment

- Chapter 2: Climate
- Chapter 3: The Aquatic Environment
- Chapter 4: The Terrestrial Environment

Part 2: The Organism and Its Environment

- Chapter 5: Adaptation and Natural Selection
- Chapter 6: Plant Adaptations to the Environment
- Chapter 7: Animal Adaptations to the Environment

Part 3: Populations

- Chapter 8: Properties of Populations
- Chapter 9: Population Growth
- Chapter 10: Life History

- Chapter 11: Intraspecific Population Regulation

Part 4: Species Interactions

- Chapter 12: Species Interactions, Population Dynamics, and Natural Selection
- Chapter 13: Interspecific Competition
- Chapter 14: Predation
- Chapter 15: Parasitism and Mutualism

Part 5: Community Ecology

- Chapter 16: Community Structure
- Chapter 17: Factors Influencing the Structure of Communities
- Chapter 18: Community Dynamics
- Chapter 19: Landscape Dynamics

Part 6: Ecosystem Ecology

- Chapter 20: Ecosystem Energetics
- Chapter 21: Decomposition and Nutrient Cycling
- Chapter 22: Biogeochemical Cycles

Part 7: Ecological Biogeography

- Chapter 23: Terrestrial Ecosystems
- Chapter 24: Aquatic Ecosystems
- Chapter 25: Coastal and Wetland Ecosystems
- Chapter 26: Large-Scale Patterns of Biological Diversity
- Chapter 27: The Ecology of Climate Change

Learning outcomes



Upon completion of BIOL 345, you will be able to

- explain how the physical environment (water, climate, soils, light and

nutrients) shapes ecological processes.

- describe the fundamental role of plant and animal adaptations for ecology.
- define and apply the population concept when describing population growth and life history.
- describe the concepts of competition, predation, parasitism and mutualism in the context of community ecology.
- define, with examples, major aspects of both community structure and community dynamics.
- explain the concept of landscapes in ecology.
- describe major aspects of ecosystem ecology, including energetics, decomposition and biogeochemical cycles.
- describe the earth's major aquatic and terrestrial biomes.
- explain the major concepts of climate change ecology.

Evaluation

To **receive credit**  for BIOL 345, you must obtain a course composite grade of at least **D (50 percent)**  as well as 50 percent on the examination, and 50 percent on the lab assignment. The weighting of the composite grade is as follows:


Activity	Weight
Assignment 1	10%
Assignment 2	15%
Assignment 3	15%
Lab Assignment (following four-day Field Ecology Workshop)	20%
Final Exam	40%

Activity	Weight
Total	100%

The **final examination** for this course must be requested in advance and written under the supervision of an AU-approved exam invigilator. Invigilators include either ProctorU or an approved in-person invigilation centre that can accommodate online exams. Students are responsible for payment of any invigilation fees. Information on exam request deadlines, invigilators, and other exam-related questions, can be found at the [Exams and grades](#) section of the Calendar.

To learn more about assignments and examinations, please refer to Athabasca University's [online Calendar](#).

Materials

Smith, T. M. and Smith, R. L. 2015. *Elements of Ecology*, 9th ed. San Francisco: Pearson Education.  (eText)

eText

Registration in this course includes an electronic textbook. For more information on [electronic textbooks](#), please refer to our [eText Initiative site](#).

Publisher's website

> [MasteringBiology](#)

Special Course Features

The first three home labs require some materials that you must supply. If you do not own these materials already, these materials should cost less than \$30. The assignments and examination must be completed within your registration period (normally six months). However, the Field Ecology Workshop can be done up to 14 months after your initial registration. **The Field Ecology Workshop (FEW) is compulsory.** It consists of four days of field and laboratory work. It will be held in the summer at Athabasca

University's headquarters in Athabasca, Alberta.

For up-to-date information regarding the Field Ecology Workshop dates, see [lab schedule](#) or contact the science lab coordinator at fst_success@athabascau.ca.

Important links

- › [Academic advising](#)
- › [Program planning](#)
- › [Request assistance](#)
- › [Support services](#)
- › [Lab dates and locations](#)

Athabasca University reserves the right to amend course outlines occasionally and without notice. Courses offered by other delivery methods may vary from their individualized study counterparts.

Opened in Revision 6, February 24, 2020

Updated October 2, 2024

View [previous revision](#)
