

## BIOLOGY 4405B – ECOSYSTEM ECOLOGY

### Winter 2025-26 Course Outline

#### 1. Course Information

**Course Title:** Biology 4405B – Ecosystem Ecology  
**Session:** Winter 2026

**Lectures:**

#### List of Prerequisites

- a) Biology 2483A/B – Ecology
- b) Any 0.5 Biology course at the 3000-level

Unless you have either the prerequisites for this course or written special permission from the Department of Biology to enroll in it, you may be removed and withdrawn from this course in accordance with university policy. This may be done after the add/drop deadline of the academic term, and the course will be marked as withdrawn (WDN) on your academic record. This decision may not be appealed.

#### 2. Instructor and Contact Information

**Course-related email must be sent to:**

Individual meetings may be requested at any time to address matters that are not suitable for office hours. Use the course email address above to request a meeting with the instructor. Only the course instructor has access to this email address.

#### 3. Course Description

This course traces the flow of water, energy, and nutrients from their abiotic origins, to their cycles through microbes, plants, and animals. This course will synthesize current advances in ecology with established theory to offer a comprehensive survey of ecosystem pattern and process.

## **Course Objectives**

Understanding the structure and function of ecosystems is fundamental to their conservation and necessary for the remediation of impacted environments. Ecosystem ecology is an area of active research nationally and internationally, and perspectives gained from the "ecosystem approach" have proven valuable to conservation biologists, natural resource management agencies, and governments at all levels.

The goal of this course is to teach you the fundamental principles of ecosystem ecology with a focus on terrestrial and freshwater systems. This includes principles and theories on the relationships between terrestrial life and abiotic factors in the environment to understand major pathways by which carbon, nutrients, and water cycle through the environment, and how energy passes through ecosystems.

## **Learning Outcomes**

Through the attendance of lectures, review of the lecture material, and textbook reading, in test and exam assessments students should be able to:

- a) Express an understanding of the biotic and abiotic factors that define and differentiate Earth ecosystems.
- b) Express an understanding of the basic flows of energy or nutrients within ecological systems and be able to describe them in a systems framework (e.g. stocks and flows; mass balance).
- c) Describe the factors that affect (and disrupt) the functioning of ecological systems.

## **Mode of Delivery**

## **4. Course Materials**

**Website:** PDF files of lecture presentations will be posted on the course Brightspace page. These files will be available in PDF format only. The course website will be the primary method of communication with students outside of lecture. All important documents (syllabus, lectures, assigned readings, updates etc.) will be posted to the course Brightspace page. It is your responsibility to check the course Brightspace page frequently (recommend daily).

**Required Textbook** (Assigned, Examinable Readings e-book):

Chapin III, F. Stuart., Matson, P. A., & Vitousek, Peter. (2011). Principles of Terrestrial Ecosystem Ecology [electronic resource] (2nd ed. 2011.). Springer New York.  
<https://doi.org/10.1007/978-1-4419-9504-9>

This excellent text is available as an e-book that may be viewed online or downloaded from the UWO library online collection. Search for the book title on the library home page (<https://www.lib.uwo.ca/>), find the listing that indicates [electronic resource], and follow the links. Many lecture figures and concepts are drawn from this text, and material in assigned pages/sections of this resource will be examinable.

**Other Reading:** Optional reading PDFs/links will be posted on the course website. Students may choose complete readings linked to lecture and deep dive discussions. These materials will deepen understanding and may lead to better performance on the midterm test and final exam. No questions on tests or exams will be derived solely from optional readings.

## 5. Methods of Evaluation

**Due to budget cutbacks to the Department of Biology enacted by the Faculty of Science and Western University, there are no teaching assistants (TAs) available to support the delivery of higher level assessment methods previously offered in this course, and that are appropriate for a 4000-level course in Biology. Due to workload and available time, these budget decisions unfortunately restrict this courses evaluation to an test and exam-only format.**

### Evaluation

Review quizzes (participation only)	Weekly (online)	10%
Midterm Test	Feb 23	35%
Final exam (cumulative)	(Scheduled by university)	55%

### Review Quizzes

Over the course of the term, there will be 12 weekly online review quizzes that will cover lecture and reading content from the previous lectures. These quizzes are for participation marks only – if you complete a quiz, you will receive the participation mark regardless of your performance. You will receive feedback immediately, and will be able to use the feedback provided to improve your study skills and prepare for the course mid-term test and exam. You only have to complete 10 of the 12 quizzes to receive full participation marks, however completing all of the quizzes will provide the greatest insight into the content and format of the test and exam. The weekly online review quizzes will be available for 48 hours (Thursday 12:00 am to Friday 11:55 pm), and will not be re-released or otherwise made available again over the term.

### Test and Examination

There will be one in-class term test and a cumulative final exam in this course; all tests and exams are compulsory. Students are responsible for material presented in lecture, and assigned readings in the course textbook. You can expect the test and exam to include any or all of the following question types: multiple choice, matching, fill-in-the-blank, short answer and/or essay. The midterm test will cover material up to and including materials covered in

scheduled course times in the week prior to the mid-term. The final exam is cumulative and will include questions covering the entire term.

## **General information about missed coursework**

Students must familiarize themselves with the *University Policy on Academic Consideration – Undergraduate Students in First Entry Programs*, posted on the Academic Calendar:

[https://uwo.ca/univsec/pdf/academic\\_policies/appeals/academic\\_consideration\\_Sep24.pdf](https://uwo.ca/univsec/pdf/academic_policies/appeals/academic_consideration_Sep24.pdf),

This policy does not apply to requests for Academic Consideration submitted for **attempted or completed work**, whether online or in person.

The policy also does not apply to students experiencing longer-term impacts on their academic responsibilities. These students should consult Accessible Education.

For procedures on how to submit Academic Consideration requests, please see the information posted on the Office of the Registrar's webpage:

[https://registrar.uwo.ca/academics/academic\\_considerations/](https://registrar.uwo.ca/academics/academic_considerations/)

All requests for Academic Consideration must be made within 48 hours after the assessment date or submission deadline. *Students that miss an assessment and are submitting an Academic Consideration request must notify the instructor within 48 hrs of the missed assessment so that alternative arrangements can be made.*

All Academic Consideration requests must include supporting documentation; however, recognizing that formal documentation may not be available in some extenuating circumstances, the policy allows students to make **one** Academic Consideration request **without supporting documentation** in this course. However, the following assessments are **excluded** from this and, therefore, always require formal supporting documentation:

- **Midterm Test (Feb 23)**
- **Examinations scheduled during official examination periods (Defined by Policy)**

When a student *mistakenly* submits their **one** allowed Academic Consideration request without supporting documentation for the assessments listed above or those in the Coursework with Assessment Flexibility section below, *the request cannot be recalled and reapplied*. This privilege is forfeited.

## **Evaluation Scheme for Missed Assessments**

When a student misses the midterm test and their Academic Consideration has been granted, then a make-up mid-term test will be offered within one calendar week of date of the scheduled regular mid-term test. *Students that miss an assessment and are submitting an Academic Consideration request must notify the instructor within 48 hrs of the missed assessment so that alternative arrangements can be made.*

When a student misses the Final Exam and their Academic Consideration has been granted, they will be allowed to write the Special Examination (the name given by the University to a makeup Final Exam). See the Academic Calendar for details (under

Special Examinations), especially for those who miss multiple final exams within one examination period.

## **Coursework with Assessment Flexibility**

By policy, instructors may deny Academic Consideration requests for the following assessments with built-in flexibility:

### **Flexible Completion**

**Quizzes.** This course has 12 weekly online review quizzes, and only 10 need to be completed to receive full participation marks. Completing additional quizzes will not result in more than 100% participation marks. Because of this flexibility, no Academic Consideration requests will be accepted for the participation marks earned by completing the weekly online review quizzes.

## **6. Additional Statements**

### **6.1 Religious Accommodation**

When a recognized religious holiday or observance conflicts with an examination, test, or other scheduled academic obligation, students must request accommodation via the University's Student Absence Portal (SAP). This request should identify the conflict and specify which course component(s) (e.g. test, midterm, exam) are affected.

Students are encouraged to submit the SAP request as early as possible, but no later than two weeks before any examination, or one week before any mid-term test or quiz, to allow sufficient time for adjustment.

The SAP request serves as official notification to both the course instructor and the Academic Advising Office, in accordance with University policy:

[https://www.uwo.ca/univsec/pdf/academic\\_policies/appeals/accommodation\\_religious.pdf](https://www.uwo.ca/univsec/pdf/academic_policies/appeals/accommodation_religious.pdf)

The Faculty of Science considers religious accommodations as scheduling conflicts. Instructors should provide either a make-up exam or an earlier sitting of the same exam to accommodate the student.

For more information on recognized religious holidays, please visit the Diversity Calendar posted on the Equity, Diversity & Inclusion website - <https://www.edi.uwo.ca>

### **6.2 Academic Accommodation Policies**

Students with disabilities are encouraged to contact Accessible Education, which provides recommendations for accommodation based on medical documentation or psychological and cognitive testing. The policy on Academic Accommodation for Students with Disabilities can be found at:

[https://www.uwo.ca/univsec/pdf/academic\\_policies/appeals/Academic\\_Accommodation\\_disabilities.pdf](https://www.uwo.ca/univsec/pdf/academic_policies/appeals/Academic_Accommodation_disabilities.pdf).

### **6.3 General Academic Policies**

The website for Registrar Services is <https://www.registrar.uwo.ca/>.

**Use of @uwo.ca email:** In accordance with policy, [https://www.uwo.ca/univsec/pdf/policies\\_procedures/section1/mapp113.pdf](https://www.uwo.ca/univsec/pdf/policies_procedures/section1/mapp113.pdf), the centrally administered e-mail account provided to students will be considered the individual's official university email address. It is the responsibility of the account holder to ensure that emails received from the University at their official university address are attended to in a timely manner.

### **Requests for Relief** (formally known as "appeals")

Policy on Request for Relief from Academic Decision:  
[https://uwo.ca/univsec//pdf/academic\\_policies/appeals/requests\\_for\\_relief\\_from\\_academic\\_decisions.pdf](https://uwo.ca/univsec//pdf/academic_policies/appeals/requests_for_relief_from_academic_decisions.pdf)

Procedures on Request for Relief from Academic Decision (Undergraduate):  
[https://uwo.ca/univsec//pdf/academic\\_policies/appeals/undergrad\\_requests\\_for\\_relief\\_procedure.pdf](https://uwo.ca/univsec//pdf/academic_policies/appeals/undergrad_requests_for_relief_procedure.pdf)

## **6.4 Scholastic Offences**

Policy on Scholastic Offences:  
[https://uwo.ca/univsec//pdf/academic\\_policies/appeals/scholastic\\_offences.pdf](https://uwo.ca/univsec//pdf/academic_policies/appeals/scholastic_offences.pdf)

Procedures on Scholastic Offences (Undergraduate):  
[https://uwo.ca/univsec//pdf/academic\\_policies/appeals/undergrad\\_scholastic\\_offence\\_procedure.pdf](https://uwo.ca/univsec//pdf/academic_policies/appeals/undergrad_scholastic_offence_procedure.pdf)

## **Use of Electronic Devices During Assessments**

In courses offered by the Faculty of Science, the possession of unauthorized electronic devices during any in-person assessment (such as tests, midterms, and final examinations) is strictly prohibited. This includes, but is not limited to: mobile phones, smart watches, smart glasses, and wireless earbuds or headphones.

Unless explicitly stated otherwise in advance by the instructor, the presence of any such device at your desk, on your person, or within reach during an assessment will be treated as a *scholastic offence*, even if the device is not in use.

Only devices expressly permitted by the instructor (e.g., non-programmable calculators) may be brought into the assessment room. It is your responsibility to review and comply with these expectations.

## **Use of Generative AI Tools**

Unless otherwise stated, the use of generative AI tools (e.g., ChatGPT, Microsoft Copilot, Google Gemini, or similar platforms) is **not permitted** in the completion of any course assessments, including but not limited to: assignments, lab reports, presentations, tests, and final examinations.

Using such tools for content generation, code writing, problem solving, translation, or summarization—when not explicitly allowed—will be treated as a **scholastic offence**.

If the use of generative AI is permitted for a particular assessment, the conditions of use will be specified by the instructor in advance. If no such permission is granted, students must assume that use is prohibited. It is your responsibility to seek clarification before using any AI tools in academic work.

## **6.5 Support Services**

Please visit the Science & Basic Medical Sciences Academic Advising webpage for information on adding/dropping courses, academic considerations for absences, requests for relief, exam conflicts, and many other academic-related matters:  
<https://www.uwo.ca/sci/counselling/>.

Students who are in emotional/mental distress should refer to Mental Health@Western (<https://uwo.ca/health/>) for a complete list of options about how to obtain help.

Western is committed to reducing incidents of gender-based and sexual violence (GBSV) and providing compassionate support to anyone who has gone through these traumatic events. If you have experienced GBSV (either recently or in the past), you will find information about support services for survivors, including emergency contacts, at:

[https://www.uwo.ca/health/student\\_support/survivor\\_support/get-help.html](https://www.uwo.ca/health/student_support/survivor_support/get-help.html).

To connect with a case manager or set up an appointment, please contact [support@uwo.ca](mailto:support@uwo.ca).

Please contact the course instructor if you require lecture or printed material in an alternate format or if any other arrangements can make this course more accessible to you. If you have any questions regarding accommodations, you may also wish to contact Accessible Education at

[http://academicsupport.uwo.ca/accessible\\_education/index.html](http://academicsupport.uwo.ca/accessible_education/index.html)

Learning-skills counsellors at Learning Development and Success (<https://learning.uwo.ca>) are ready to help you improve your learning skills. They offer presentations on strategies for improving time management, multiple-choice exam preparation/writing, textbook reading, and more. Individual support is offered throughout the Fall/Winter terms in the drop-in Learning Help Centre, and year-round through individual counselling.

Additional student-run support services are offered by the USC, <https://westernusc.ca/services/>.