Western Science

Department of Biology

Animal Ecology Bio 3435 Course Outline

1. Course Information

Course Information
Animal Ecology Bio 3435G is a winter term course. In the 2025-26 academic year, it consists of two lectures/week and one lab/tutorial/week in select weeks only. All class sessions are in-person only.

> *We acknowledge that Western University is located on the traditional lands of the Anishinaabek, Haudenosaunee, Lūnaapéewak and Chonnonton peoples, on lands connected with the London Township and Sombra Treaties of 1796 and the Dish with One Spoon Covenant Wampum. With this, we respect the longstanding relationships that Indigenous Nations have to this land, as they are the original caretakers.*

The lab sections are capped at 25 students per section. Any lab section switches must be done through the formal class enrollment system – the instruction team is not able to facilitate this separately. Requests to the professor from a student to join a section they are not enrolled in, or to switch sections will be denied.

List of Prerequisites
Biology 2483A/B, and Biology 2244A/B or Statistical Sciences 2244A/B, with a minimum grade of 60%. 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for this course or written special permission from the Department of Biology to enroll in it, you may be removed and withdrawn from this course in accordance with university policy. This may be done after the add/drop deadline of the academic term, and the course will be marked as withdrawn (WDN) on your academic record.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 Information

Instructors	**Email**
Dr. Alice Boyle, professor, primary instructor	aboyle7@uwo.ca
AJ Randolph-Westerhof, TA (sections 002 & 004)	arandolp@uwo.ca
Evan Bennett, TA (sections 003 & 005)	ebenne29@uwo.ca

Students must use their Western (@uwo.ca) email addresses when contacting their instructors. If you have a question ***that is not answered in the syllabus*** and requires our attention, please direct it to my email. Students should use their Western (@uwo.ca) email addresses when contacting their instructors, and include "BIO3435" in the subject line. We cannot guarantee a response to other email addresses or forms of contact. There will be drop-in student hours on Tues and Thurs following lecture (2:30-3:30) or by appointment, in person or over Zoom.

Dr. Boyle will answer questions about course content up until 24 hours prior to exams. Your TAs will not have office hours and are available for questions during lab hours. They are available for questions pertaining to statistics DURING your periods and may not answer statistics/troubleshoot questions via

email. You may email them for questions pertaining to labs up to 24 hours before assignments are due. Any questions pertaining to grades should be directed to the person who graded the assignment. Please be aware that questions regarding grades should be sent via email, and at least 24 hours after the grades have been released. Requests to regrade or contest assignment marks must be made within 1 week of grades being returned to be eligible for remarking.

3. Course Syllabus, Schedule, Delivery Mode

This course tours the incredible world of animal ecology, bringing key concepts to life through examples from across the animal tree of life and around the world. Throughout the course, students may recognize core ecological theory introduced in general ecology, but here, we emphasize the ways and reasons why animals diverge from other organisms. The course is organized in five modules. Module 1 introduces main patterns, considers the levels of organization and scales at which we understand topics in animal ecology. Modules 2-4 focusing on key traits, how those traits are shaped by interactions with the abiotic environment, and with the biotic environment. Module 5 scales those attributes to population-level processes and persistence. Throughout the course, we will relate ecological and evolutionary processes to current select regimes as a consequence of anthropogenic change. Case studies will provide insight into how animal ecologists answer scientific questions.

My goals in this course are that you:

- **Appreciate** the nature and causes of the diversity of animal traits and the ways they interact with each other and the environment
- **Understand** core content including the major patterns and causes of diverse animal solutions to living in every biome on earth
- **Develop fundamental skills** in critical thinking, writing, and presentation that will serve you as scientists and citizens
- **Inspired** to make meaningful personal and societal choices, whatever your career path

Learning objectives	***Means of assessment***
Understand core concepts from each module	*End-of-module low-stakes quizzes with subsequent explanations*
Relate & apply those concepts to interpret biological phenomena	*In-class active-learning sessions and lab/tutorial periods; exams*
Make connections between complex and large-scale phenomena to specific topics individually relevant to each student	*longer benchmarked (feedback/improvement) writing assignment; peer review; presentations*

I strive for an inclusive teaching and learning environment by:

- Providing information in multiple ways including diagrams, figures, spoken word, readings, web-based resources
- Provide multiple ways to demonstrate learning: in-class engagement, varied assignments, exams
- Feature the work of diverse scientists
- Model compassion and flexibility in my interactions

The topics listed below are ***subject to change*** based on emerging research and course dynamics. Periodic readings will complement lecture material, and specific outcomes for each lecture will be provided throughout the semester. End-of-module quizzes will allow students to review key concepts from that module, and once closed, will include explanation of how your instructor would answer those

same questions with rationale. These questions will form the core knowledge that students are expected to know for the final exam.

Course Schedule:

Week	Module	Lecture/lab etc	Topic
week 1	I	lecture 1	intro to course
	I	lecture 2	global patterns
Week 2	I	lecture 3	levels of organization
	I	lecture 4	temporal scales
Week 3	I	lecture 5	End-of-module in-class exercise
	II	lecture 6	sensory ecology
week 4	II	lecture 7	foraging
	II	lecture 8	movement
week 5	II	lecture 9	reproduction & sexual selection
	II	lecture 10	life history strategies
week 6	...	lecture 11	Guinness book of animal records
	...	test	in-class midterm
READING WEEK			
week 7	III	lecture 12	thermal biology
	III	lecture 13	niches
week 8	III	lecture 14	adaptations to extreme conditions
	III	lecture 15	responses to a changing world
week 9	III	lecture 16	ecosystem services 1
	III	lecture 17	ecosystem services 2
week 10	III	lecture 18	End-of-module in-class exercise
	IV	lecture 19	agonistic interactions
week 11	IV	lecture 20	mutualistic interactions
	IV	lecture 21	interactions 3: oddities and trophic consequences
week 12	IV	lecture 22	End-of-module in-class excercise
	V	lecture 23	population ecology & conservation 1
week 13	V	lecture 24	population ecology & conservation 2
	V	lecture 25	population ecology & conservation 3

Key Sessional Dates:

Classes begin: January 5, 2026
Spring Reading Week: February 14 – 22, 2026
Classes end: April 9, 2026
Exam period: April 12 – 30, 2026, date schedule by OOR

4. Course Materials

Recommended textbook:
Bowman & Hacker, Ecology, 6th edition, Oxford University Press, 2021. The physical textbook costs ~$220 to purchase (or less through second-hand sellers), or an electronic copy can be rented for 180 days for $84 through the Bookstore. This textbook is recommended, but not required. If you choose to purchase the textbook, you should purchase the 6th edition. Earlier editions do not contain all the same information.

Required texts:

- Getting Started with R (Beckerman et al., 2017) will be used as support for the labs. Western has an electronic version available for free here.
- Instructions for labs/tutorials will be posted to Brightspace

Personal computers:
Completion of assignments requires that you have access to a computer on which you can install R, RStudio, and have access to word processing and presentation software. For any labs involving training in data analysis, it is incredibly useful to have a laptop computer and bring it to class. If you do not have a laptop, please notify your instructor and TA at the beginning of the class and we will make alternate arrangement for you. You may download R and RStudio for free onto PCs or Macs by following instructions here https://posit.co/download/rstudio-desktop/

Course Website:
All course materials, including lecture slides, lab instructions, and assignment details, will be posted to OWL Brightspace: https://westernu.brightspace.com/. Students are responsible for checking the course OWL site regularly for news and updates. This is the primary method by which information will be disseminated to all students in the class.

If students need assistance with the course OWL site, they can seek support on the OWL Brightspace Help page. Alternatively, they can contact the Western Technology Services Helpdesk. They can be contacted by phone at 519-661-3800 or ext. 83800.

Intellectual Property and Course Conduct Policy in the use of Lecture, Tutorial, and other materials: All materials that are posted for and/or presented to you are for your individual use only. Course material, assignments, tests, and exams, are the intellectual property of your instructor that are shared with the student and the University. To post, share, or sell any of this content is a breach of intellectual property. Visual recording is not allowed, however audio recording is permitted for personal use only.

5. Methods of Evaluation

Grading Scheme
The overall course grade will be calculated as listed below. Please see OWL for due dates for each assignment (Lab assessments vary by section)

	points	**%**

Lab assignments		
Analyzing animal ecology research	25	8.33
Intro to R	10	3.33
Statistical analysis in animal ecology research	25	8.33
Research proposal and related		
Proposal	30	10.00
Peer review	15	5.00
Presentation	20	6.67
Lecture assessments		
In class exercises (3)	9	3.00
End-of module quizzes (4)	16	5.33
Midterm	50	16.67
Final (cumulative)	100	33.33
Total	**300**	**100.00**

Use of Generative AI Tools
Generative AI tools (e.g., ChatGPT, Copilot, Gemini) are **prohibited except for the explicit purposes outlined in assignment 1.** The use of AI is not permitted for proposal writing.

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,

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/
All requests for Academic Consideration must be made within 48 hours after the assessment date or submission deadline.

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

- Examinations scheduled during official examination periods (Defined by policy)
- Midterm (Designated by the instructor as the one assessment that always requires documentation when requesting Academic Consideration)

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
The course policies regarding missed assessments are designed to ensure fairness and maintain the integrity of the grading process. Students are expected to submit all assessments within the specified timelines. Assessments not submitted within these timelines will receive a grade of zero unless academic consideration. The instructor cannot grant extensions unless consideration has been approved by Academic Advising. Requests of academic consideration must be submitted to Academic Advising within 48 hours of the missed assessment or deadline. In the event a student cannot complete an assignment and receives approval of academic consideration, they must contact the instructor to confirm the exemption.

For assignments with deadlines, a late penalty of 10% will be applied each day starting 5 minutes after the specified deadline for the student's section and an additional 10% penalty will be deducted for each subsequent 24-hour period. For assignments with a 48-hour no-penalty period, the late penalty will be applied each day starting 5 minutes after the end of the 48-hour no-penalty period, and an additional 10% penalty for each subsequent 24-hour period.

Midterm: If a student misses the midterm, they must seek academic accommodation to be eligible to write the makeup. If approved, the student will write the make-up midterm on February 12th at 7pm. There will only be one makeup midterm scheduled for the course, if the student is unable to write either the in-class or the makeup test, the weight of the midterm will be shifted to the final exam.

Lab Assignments: Failure to submit a lab assignment will result in a grade of zero for that lab. Assignments have a 48-hour grace period after the deadline during which they can be submitted without penalty. If a student cannot submit within this 48-hour period, they must obtain academic consideration for a late submission.

- *Without Documentation:* Students requesting academic consideration without documentation must submit their assignment within 72 hours of the original deadline. Extensions beyond 72 hours will not be granted without documentation.

- *With Documentation:* Students must request academic consideration with documentation through the Academic Advising portal. If approved, the assignment must be submitted within 24 hours of the extended deadline.

Assignments cannot be submitted after grades or feedback have been released for any section. No assignment will be accepted more than 10 days past the original deadline. If academic consideration is approved but the assignment remains incomplete, the assignment's weight will be reallocated to the remaining lab assignment(s). If there are no remaining lab assignments, weight will shift to the final exam.

Written Research Proposal: The written proposal has a 48-hour grace period after the deadline during which it can be submitted without penalty. If a student cannot submit within this 48-hour period, they must obtain academic consideration for a late submission.

- *Without Documentation:* Students requesting academic consideration without documentation must submit their proposal within 72 hours of the original deadline. Extensions beyond 72 hours will not be granted without documentation.

- *With Documentation:* Students must request academic consideration with documentation through the Academic Advising portal. If approved, the proposal must be submitted within 24 hours of the extended deadline.

Proposals not submitted by the original deadline (including the 48 hour no-late penalty period) cannot be reviewed by peers, and the portion of the grade assigned to peer review will be forfeited. This forfeited grade portion will instead be reallocated to the TA's assessment of the proposal. Proposals cannot be submitted after grades have been returned to any section.

Proposal Peer Review: The peer review is conducted during scheduled lab time. Students who do not attend their scheduled lab will not receive feedback from their peers. In this case, the portion of the proposal grade assigned to peer feedback will be reassigned to the TA's assessment of the proposal and clearly communicated to the student. Students unable to attend their lab must obtain academic consideration to be eligible for an electronic "makeup" review.

- *Without Documentation:* Students requesting academic consideration without documentation must submit their assigned electronic review within 48 hours of their scheduled lab time.

- *With Documentation:* Students requesting academic consideration with documentation, upon approval, must submit their review within 24 hours of the end of their coverage period.

All reviews must be submitted by March 16th at 5:00 PM. If a review is not submitted by this deadline, its weight will be shifted to the student's final exam.

Research Pitch Presentation: The presentation is due at the start of the student's scheduled lab section, and the oral component will take place during lab time.

- *Without Documentation:* Students requesting academic consideration to miss their lab section without documentation must submit their presentation within 48 hours of their scheduled lab section. They will deliver their oral presentation during the second week of presentations during their lab section.

- *With Documentation*: Students requesting academic consideration with documentation, upon approval, must submit their presentation within 24 hours of the end of their coverage period. They will then deliver their oral presentation during the second week of presentations. If their approved coverage extends beyond one week, they will be offered a single makeup session to present.

Presentations cannot be submitted after feedback or grades have been returned to any section. If students cannot complete their presentation by the end of classes or before feedback is returned (whichever occurs first), the weight of the presentation will be shift to the final exam. The 48-hour no-penalty period is not applicable to this presentation.

Final Exam: Accommodation for the final exam as scheduled by the OOR always requires formal supporting documentation. Students who miss the final exam and are granted academic consideration will write the department scheduled makeup final exam. When a student misses both the Final Exam and make-up Final, 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. The final exam, which is cumulative, assesses a significant portion of the course material. It is designed to ensure students demonstrate mastery of key concepts and skills from

the course, including the integration of laboratory methods and proposal writing. This is critical, as the course has both theoretical and practical components. As this is a lab-essay course with a substantial written proposal component, the final exam can be worth a maximum of 55% of the student's grade. However, successful completion of the final exam does not exempt students from fulfilling the *Essential Learning Requirements*. To pass the course, students must meet all requirements as outlined in the syllabus, including submission of required lab assignments and the research proposal, each with a passing grade.

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.

Essential Learning Requirements
Even when Academic Considerations are granted for missed coursework, the following are deemed essential to earn a passing grade.

- submission of at least 2 out of 3 labs, earning at passing grade in each
- submission of the research proposal, earning a passing grade

Failure to successfully complete the essential learning requirements will result in a failure of the course (a final grade of 49) regardless of performance on other course assessments. In such cases that a student fails to meet the essential learning requirements of the course and has been granted formal academic consideration, they may complete the equivalent assessment(s) during the next offering of the course. In this case, they will receive a grade of Incomplete (INC) and their maximum course load may be reduced during the term in which they complete their course requirements.

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

Deadline with a No-Late-Penalty Period Assignments
Students are expected to submit each of the lab assignments by the deadline listed. Should extenuating circumstances arise, students do not need to request Academic Consideration and they are permitted to submit their assignment up to 48 hours past the deadline without a late penalty (not applicable to presentations). Should students submit their assessment beyond 48 hours past the deadline, a late penalty of 10% per day will be applied. Academic Consideration requests may be granted only for extenuating circumstances that started before the deadline and lasted longer than the No-Late-Penalty Period (48 hours).

> *For example:* If your lab assignment is due Monday January 20th at 8:30am, then you are permitted to submit the assignment up to 48 hours past the deadline without a late penalty (Wednesday January 22nd by 8:30am). If you require an extension beyond 48 hours, you must submit for academic consideration via academic advising. If you submit for consideration without documentation, you receive a 24 hour extension to the no-late-penalty period and must submit within 72 hours of the deadline (Thursday January 23rd by 8:30am). If you submit for consideration with documentation, you must submit your assignment within 24 hours of the end of your coverage period from academic advising. If you do not submit for, or receive, approved academic accommodation and submit your assignment after the deadline, you will receive a 10% deduction per day.

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

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.

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, 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

Procedures on Request for Relief from Academic Decision (Undergraduate):
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

Procedures on Scholastic Offences (Undergraduate):
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.

All required papers may be subject to submission for textual similarity review to the commercial plagiarism detection software under license to the University for the detection of plagiarism. All papers submitted for such checking will be included as source documents in the reference database for the purpose of detecting plagiarism of papers subsequently submitted to the system. Use of the service is subject to the licensing agreement, currently between The University of Western Ontario and Turnitin.com (http://www.turnitin.com).

Computer-marked multiple-choice tests and exams may be subject to submission for similarity review by software that will check for unusual coincidences in answer patterns that may indicate cheating.

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.

To connect with a case manager or set up an appointment, please contact 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

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/.