

Course ID:	Course Title:	Fall 2023
BIO 213	Principles of Ecology	Prerequisite: BIO 133
		Credits: 3

Class Information		Instructor Information		Important Dates	
Delivery:	In Class	Instructor:	Matthew Morris, PhD, MSc, BSc (Hnrs Co-op), BRE Lizelle Odendaal, PhD, MSc	First Day of Class:	Sept 6
Days:	W/F	Email:	Matthew.Morris@ambrose.edu Lizelle.Odendaal@ambrose.edu	Last Day to Add/Drop:	Sept 17
Time:	11:15-12:30	Phone:	403-410-2000 ext 6932	Last Day to Withdraw:	Nov 20
Room:	A2133	Office:	A2158	Last Day to Apply for Coursework Extension:	Nov 23
Lab/Tutorial:	Mon, 1-4 pm A2151	Office Hours:	by request	Last Day of Class:	Dec 11
Final Exam:	Sat Dec 16 9 am – noon A2133				

Important Dates and Information

For a list of all important dates and information regarding participating in classes at Ambrose University, please refer to the Academic Calendar at <https://ambrose.edu/academic-calendar> .

Course Description

The dynamics and maintenance of biological diversity are examined in terms of ecological processes, conservation of species, habitats, and evolutionary principles. Ecological principles and organism interactions at individual, population, community and ecosystem levels will be explored.

Textbooks

Required: Relyea R, Ricklefs R (2021) Ecology: The Economy of Nature, Ninth Edition. W.H. Freeman and Company: USA. **The subscription to Achieve is mandatory.**

Learning Outcomes:

1. Understand

- a. **Ecological principles:** Understand fundamental ecological concepts, including adaptation, ranges of tolerance, niche, allocation of energy, population dynamics, community interactions and structure, and biogeochemical cycles.
- b. **Historical context:** Describe some key experiments in the history of ecology, and the principles these experiments helped establish.
- c. **Levels of ecology:** Compare and contrast the different levels of ecology, from individual to biosphere.
- d. **Biodiversity and conservation:** Comprehend the factors influencing biodiversity, and understand the significance of conserving biodiversity.

2. Assess

- a. **Data analysis in ecology:** Develop skills to analyze ecological data using appropriate statistical methods and interpret the results in the context of ecological questions.
- b. **Fieldwork and observation:** Learn to conduct field surveys and experiments, collect ecological data, and use observational skills to assess ecological patterns.
- c. **Quantitative skills:** Apply quantitative methods to assess population dynamic and biodiversity.

3. Research

- a. **Research design:** Design an ecologically sound research project, including formulating hypotheses, identifying variables, using appropriate statistic, and interpreting the results in light of the initial question.
- b. **Literature review:** Conduct a comprehensive literature review to identify gaps in ecological knowledge, synthesize existing research, and inform research directions.

4. Communicate

- a. **Scientific writing:** Communicate ecological research effectively through a well-structured experimental paper, including abstract, introduction, methods, results, discussion, and literature cited.
- b. **Data visualization:** Develop skills in creating accurate and informative data visualizations such as graphs, tables, and figures, to enhance communication of ecological findings.

5. Character Formation

- a. **Critical thinking:** Cultivate critical thinking skills by evaluating ecological concepts, theories, and research findings.
- b. **Collaborative work:** Collaborate effectively with peers on group projects, fostering teamwork and interpersonal skills.
- c. **Ethical awareness:** Develop empathy for non-human life, in a way that spurs ecological action to conserve biodiversity for love of God, neighbour, and created order.
- d. **Faith:** Consider the role one's personal faith plays in conservation.

Course Schedule

Week	Topic	Readings	Homework Due
Sept 6	Introduction to Ecology	Ch 1: 1.1, 1.2, 1.5	
Sept 8	Climate and Biomes	Ch 2	
Sept 13	Adaptation	Ch 5: 5.1-5.4 Ch 6: 6.1-6.5	
Sept 15	Physiological Ecology: Salinity	Ch 3	
Sept 20	Physiological Ecology: Temperature	Ch 4	
Sept 22	The Niche	Ch 1: 1.3 Ch 10: 10.1	
Sept 27	Life Histories	Ch 7	
Sept 29	Behavioural Ecology: Sex and Conflict	Ch 8: 8.1-8.3, 8.5	Homework 1
Oct 4	Deeper Life		
Oct 6	Behaviour Ecology: Mating Systems	Ch 8: 8.4	
Oct 11	Population Ecology: Distributions	Ch 10	
Oct 13	Population Ecology: Life Tables	Ch 11: 11.3	
Oct 18	Population Ecology: Growth	Ch 11: 11.1, 11.2	
Oct 20	Population Ecology: Intraspecific Interactions	Ch 9	
Oct 25	Community Ecology: Growth with Competitors	Ch 15: 15.2	Homework 2
Oct 27	Community Ecology: Community Interactions	Ch 1: 1.3 Ch 14: 14.1 Ch 15: 15.1 Ch 16	
Nov 1	Community Ecology: Growth with Predators	Ch 13: 13.1, 13.2	
Nov 3	Community Ecology: Structure and Biodiversity	Ch 17: 17.1, 17.2, 17.3	
Nov 8	Reading Break		
Nov 10	Reading Break		
Nov 15	Community Ecology: Food Webs and Networks	Ch 17: 17.4 Ch 15: 15.4	Homework 3
Nov 17	Community Ecology: Disturbance and Succession	Ch 18	
Nov 22	Ecosystem Ecology: Productivity and Energy	Ch 19	
Nov 24	Ecosystem Ecology: Nutrients	Ch 20	
Nov 29	Ecosystem Ecology: Services	Ch 22: 22.1	
Dec 1	Conservation	Ch 22: 22.2, 22.3, 22.4	Homework 4
Dec 6	TBD		
Dec 8	TBD		

Lab Schedule

Week	Topic	Value	Due
Sept 11	Lab Introduction and Plant Scavenger Hunt	1	End of Lab
Sept 18	Experimental Design	Prelab: 1 Assignment: 2	Prelab due beginning Assignment due end of lab
Sept 25	Describing a Population	Prelab: 1 Assignment: 2	Prelab due beginning Assignment due Oct 2
Oct 2	Experimental Setup		End of lab
Oct 9	Thanksgiving		
Oct 16	Field Trip – Griffiths Woods	2	End of lab
Oct 23	Quadrat Sampling	Prelab: 1 Assignment: 2	Prelab due beginning Assignment due Oct 30
Oct 30	Midterm		
Nov 6	Reading break		
Nov 13	Writing an Experimental Paper	3	In-class due end of lab Abstract due Nov 20
Nov 20	Biodiversity	5	Nov 27
Nov 27	Experimental Endpoint	Paper: 8	
Dec 4	Conservation Ecology	2	End of lab
Dec 11	Paper Due/Review		Experimental paper due

Mark distribution:

Homework assignments: 20% (4 assignments throughout semester, 5% each)

Midterm (Oct 30): 20%

Final exam (Dec 16): 30%

Lab: 30%

Introduction: 1%

Experimental Design: 2%

Prelab: 1%

Describing a Population: 2%

Prelab: 1%

Field Trip: 2%

Quadrat Sampling: 2%

Prelab: 1%

How to Write an Experimental Paper: 3%

Biodiversity: 5%

Experimental Paper: 8%

Conservation ecology: 2%

Homework assignments

The purchase of your textbook comes with an Achieve account. There are four homework assignments posted to Moodle. These homework assignments come in two parts. Part 1 involves answering questions through the Achieve platform, which will be submitted through Achieve. Part 2 involves calculations and short answer questions that will be handwritten and submitted at the beginning of the class for which the assignment is due.

Collectively, these exercises sum to 20% of your overall grade.

Some optional exercise will be provided throughout the semester, especially prior to the midterm and final exam. It is strongly recommended that students do these optional exercises, as they will better prepare for testing.

Exams

The midterm will be completed during lab session over the full three hours. If you are with accessibility it is your responsibility to communicate with the instructor and the accessibility office about midterm accommodations.

Lab content is fair game for midterms.

The final exam is comprehensive and cumulative, and will be scheduled by the office of the Registrar.

Lab assignments

Laboratory assignments will involve individual or group work, as specified on the assignment. Group work will require only one submission per group; grades will be given to those named on the assignment. Some labs are due at the end of the lab period; others are due at the start of the following lab period.

Attendance

Attendance to lectures is not mandatory, but in my experience students who do not come to lecture do not perform well. Lectures will not be provided over Zoom unless there is a change in university policy as a response to some change to the pandemic. If you miss lectures, it is your responsibility to review the PPT slides provided and talk to your peers.

Attendance **to laboratories is mandatory**. Missing more than two lab periods results in an automatic F for the course.

Late assignment policies

Homework or lab assignments cannot be submitted late without cause and approval from the professor. Homework assigned during lecture is **due at the start of lecture** for which it is due; anything after the start of lecture will be considered late. Lab assignments not due at the end of the lab period in which the work is done

are due at the beginning of the next lab period; anything after the start of the lab will be considered late. The penalty for late homework or lab assignments are as follows:

Issue	Communicated to professor or lab instructor in advance?	Penalty
Late by 5 min – 7 days	Yes	5% deducted per day
Late by 5 min – 7 days	No	10% deducted per day
Late by >7 days	-	0 on assignment
No name on assignment	-	0 on assignment

Assignments officially receiving a grade of 0 as a penalty will still be “graded” so that you can have feedback before the exam, even if your official grade is 0.

Missed midterms or final exams, without cause, cannot be made up.

Use of artificial intelligence (AI)

In this class, you will be conducting a variety of written assignments, including an experimental report. All work should be your own. Use of AI-generated text or images is not permitted and will be considered an example of plagiarism (see policy below). For this reason, written assignments will be submitted through Moodle and assessed for AI content and other forms of plagiarism via Turnitin.

Plagiarism policy

Consult the Academic Calendar for Ambrose’s position on plagiarism and its consequences. In brief, it is your responsibility as a citizen of Ambrose to be aware of the policies of Ambrose and abide by them. Ignorance is no excuse. Plagiarism will not be tolerated.

Examples of plagiarism include, but are not limited, to:

1. Copying an assignment from someone else and submitting it as your own work.
2. Working with a friend and writing down identical answers, whether you understand the content or not, and submitting the assignments separately.
3. Quoting directly from a source without supplying quotation marks or a citation.
4. Quoting directly from a source without supplying quotation marks, even if it is referenced.
5. Copying nearly word-for-word from a source, changing only the occasional word, without providing quotation marks, even if it is referenced.
6. Submitting an assignment in which >30% of the content is properly quoted; that is, at least 70% of the words in an assignment need to be your own. A general rule of thumb: for every line quoted, there should be three lines of your own material explaining that quote.
7. Submitting the same or similar assignment for more than one class, or more than one iteration of the same class.
8. Not citing illustrations used in a paper.
9. Submitted AI-generated content as your own.

Penalties for plagiarism

Offence	Consequence
First	0% on assignment, no chance to resubmit; report on academic misconduct filed with the registrar
Second	F in course; report on academic misconduct filed with the registrar
Third	F in course and recommendation to registrar for expulsion; report on academic misconduct filed with the registrar

Note that Ambrose has an appeals process in place if you feel that allegations of plagiarism are unfounded; these are for final marks only, and not for individual assignments.

Note that my record of a student's past plagiarism does **not** reset with each semester.

Grade Summary:

The available letters for course grades are as follows:

Grade	Percentage	Interpretation	Grade Points
A+	96-100	Excellent	4.00
A	92-96		4.00
A-	88-92		3.70
B+	83-88	Good	3.30
B	78-83		3.00
B-	73-78		2.70
C+	68-73	Satisfactory	2.30
C	64-68		2.00
C-	60-64		1.70
D+	55-60	Poor	1.30
D	50-55		1.0
F	<50	Failure	0.00
P		Pass	No Grade Points

Because of the nature of the Alpha 4.00 system, there can be no uniform University-wide conversion scale. The relationship between raw scores (e.g. percentages) and the resultant letter grade will depend on the nature of the course and the instructor's assessment of the level of each class, compared to similar classes taught previously. Please note that final grades will be available on student registration system. Printed grade sheets are not mailed out.

Ambrose University Important Policies & Procedures:

Registration

Registration is the process of selecting and enrolling in classes for upcoming semesters. Only students who are registered will be permitted to attend class and receive a grade for the course. You are responsible for ensuring that the courses you take are appropriate for your program, that they do not have any scheduling conflicts, that they have the necessary prerequisites and that they meet all degree requirements.

Withdrawal From A Course

Prior to the Add/Drop deadline: through the student registration system whereby course(s) will be removed with no academic or financial penalty. After the Add/Drop deadline and until the Withdrawal deadline: through submission of the 'Withdrawal from Course' form whereby course(s) will remain on the permanent academic record/transcript with the symbol 'W'. (See ambrose.edu/registrar/request-forms.) Students who withdraw from more than 30 credits attempted at Ambrose University will be required to withdraw from their program. Students considering withdrawing from courses are encouraged to discuss with their Faculty Advisor and/or the Office of the Registrar questions relating to their withdrawal decision specifically relating to financial assistance, study permit requirements, prerequisites for subsequent courses, readmission, and/or graduation timeline. Students who do not formally withdraw from a course are still considered registered in the course, even if they are no longer attending classes. In this case, students will be assigned a grade based on coursework completed as per the course syllabus and are responsible to pay the tuition and fees assessed for the course. Under extenuating circumstances, students may request from the Office of the Registrar a course(s) withdrawal after the Withdrawal deadline and until the last day of classes. Extenuating circumstances typically consider situations such as medical emergencies, compassionate grounds, or unforeseen conditions/situations beyond the students' control that arise after the start of the semester and are considered on a case-by-case basis. Supporting documentation from a physician or Registered Health Professional must accompany this request.

Coursework Extensions

Should a request for a time extension on coursework exceed the end of the term, a *Coursework Extension Application* must be completed and submitted to the Office of the Registrar. The extension (if granted) will be recorded on the student record. Extensions are granted at the discretion of the instructor and registrar. If granted, time extensions do not excuse you from a final examination where one has been scheduled for the course. More conditions apply.

Exam Scheduling

Students who find a conflict in their exam schedule must submit a *Revised Final Exam Time Application* to the Office of the Registrar by the deadline noted in the Academic Calendar. Requests will be considered for the following reasons only: 1) the scheduled final examination slot conflicts with another exam; or 2) the scheduled final examination slot results in three consecutive examination periods. Travel is not considered a valid excuse for re-scheduling or missing a final exam.

Communication

Your Ambrose email account is the University's primary and official mode of communication with you. Information delivered to your Ambrose email is considered official notification. Ambrose University is not responsible for your failure to receive important information delivered to your Ambrose email.

Lecture Recording

The recording of lectures or any other classroom academic activity, other than an audio recording as an accommodation, is prohibited except at the discretion of the instructor. Any use other than that agreed upon with the instructor constitutes academic misconduct and may result in suspension or expulsion. Permission to allow a lecture recording is not a transfer of any copyrights, so such recordings may be used only for individual or group study with other students enrolled in the same class and may not be reproduced, transferred, distributed or displayed in any public or commercial manner. Student must destroy recordings in any, and all formats at the end of the semester in which they are enrolled in the class. All students recording lectures, must sign the Permission Form to audio record lectures which is available through the Office of the Registrar.

Standards of Behaviour in the Classroom Setting

Learning is an active and interactive process, a joint venture between student and instructor and between student and student. Some topics covered within a class may lead to strong reactions and opinions. It is important that Students understand that they are entitled to hold contradictory beliefs and that they should be encouraged to engage with these topics in a critical manner. Committing to this type of "active learning" significantly increases the learning experience for both teacher and student, and reflects the Christian imperative to pursue truth, which lies at the heart of the Ambrose educational experience. However, active discussion of controversial topics will be undertaken with respect and empathy, which are the foundations of civil discourse in the Classroom Setting. Primary responsibility for managing the classroom rests with the instructor. The instructor may direct a student to leave the class if the student engages in any behaviour that disrupts the classroom setting. If necessary, Ambrose security will be contacted to escort the student from class.

Academic Integrity

We are committed to fostering personal integrity and will not overlook breaches of integrity such as plagiarism and cheating. Academic dishonesty is taken seriously at Ambrose University as it undermines our academic standards and affects the integrity of each member of our learning community. Any attempt to obtain credit for academic work through fraudulent, deceptive, or dishonest means is academic dishonesty. Plagiarism involves presenting someone else's ideas, words, or work as one's own. Plagiarism is fraud and theft, but plagiarism can also occur by accident when a student fails or forgets to acknowledge to another person's ideas or words. Plagiarism and cheating can result in a failing grade for an assignment, for the course, or immediate dismissal from the university. Students are expected to be familiar with the policies in the current Academic Calendar that

deal with plagiarism, cheating, and the penalties and procedures for dealing with these matters. All cases of academic dishonesty are reported to the Academic Dean and become part of the student's permanent record.

Academic Policies

It is the responsibility of all students to become familiar with and adhere to academic policies as stated in the Academic Calendar. The academic calendar can be found at <https://ambrose.edu/academics/academic-calendar>

Privacy

Personal information (information about an individual that may be used to identify that individual) may be required as part of taking this class. Any information collected will only be used and disclosed for the purpose for which the collection was intended. For further information contact the Privacy Compliance Officer at privacy@ambrose.edu.

Academic Success and Supports

Accessibility Services

Academic accommodation is provided to Ambrose students with disabilities in accordance with the Alberta Human Rights Act and the Canadian Charter of Rights and Freedoms. Provision of academic accommodation does not lower the academic standards of the university nor remove the need for evaluation and the need to meet essential learning outcomes. Reasonable accommodations are tailored to the individual student, are flexible, and are determined by considering the barriers within the unique environment of a postsecondary institution. It can take time to organize academic accommodations and funding for disability-related services. Students with a disability who wish to have an academic accommodation are encouraged to contact Accessibility Services as early as possible to ensure appropriate planning for any needs that may include accommodations. Staff can then meet with students to determine areas to facilitate success, and if accommodations are required, ensure those accommodations are put in place by working with faculty.

Ambrose Writing Services

Ambrose Writing services provides academic support in the four foundational literacy skills—listening, speaking, reading, and writing. It also assists students with critical thinking and the research process. Throughout the academic year, students can meet with a writing tutor for personalized support, or they can attend a variety of workshops offered by Academic Success. These services are free to students enrolled at Ambrose University. Academic Success serves all students in all disciplines and at all levels, from history to biology and from theatre to theology. To learn more, please visit <https://ambrose.edu/sas/writing-services>

Ambrose Tutoring Services

Ambrose Tutoring Services provides support in specific disciplinary knowledge, especially in high-demand areas such as chemistry, philosophy, math and statistics, and religious studies. These tutors also coach students in general study skills, including listening and note-taking. During the academic year, Ambrose Tutoring Services

offers drop-in tutoring for courses with high demand; for other courses, students can book a one-to-one appointment with a tutor in their discipline. These services are free to students enrolled at Ambrose University. To learn more, please visit <https://ambrose.edu/tutoring>.

Mental Health Support

All of us need a support system. We encourage students to build mental health supports and to reach out when help is needed.

On Campus:

- Counselling Services: ambrose.edu/counselling
- For immediate crisis support, there are staff on campus who are trained in Suicide Intervention Skills and can help you access mental health support. See <https://ambrose.edu/student-life/crisissupport> for a list of staff members.
- For additional wellness resources go to the Ambrose wellness page: <https://ambrose.edu/wellness>

Off Campus:

- Distress Centre - 403-266-4357
- Alberta Mental Health Helpline - 1-877-303-2642 (Toll free)
- Sheldon Chumir Health Care Centre - 403-955-6200
- Emergency - 911

Sexual Violence Support

We are committed to supporting students who have experienced gender based sexual violence in the past or while at Ambrose. Many of the staff, faculty, and student leaders have received Sexual Violence Response to Disclosure training. We will support you and help you find the resources you need and you can access information about reporting. Information about the Sexual Violence policy and on and off campus supports can be found on our website— ambrose.edu/sexual-violence-response-and-awareness.

Off Campus:

- Alberta's Oneline for Sexual Violence - 1-866-403-8000 call or text
- Clinic: Sheldon Chumir Health Centre - 403-955-6200
- Calgary Communities Against Sexual Abuse - 403-237-5888
- Chat: www.calgarycasa.com

Note: Students are strongly advised to retain this syllabus for their records.