

Course ID: **BIO 213**

Credits: 3

Course Name: **Introduction to Ecology and Evolution**

Prerequisites: BIO 133

Class Information		Instructor Information		First day of classes:	Wed., Sept. 9, 2015
Days:	TU / TH	Instructor:	Graeme Gissing	Last day to add/drop, or change to audit:	Sun., Sept 20, 2015
Time:	9:45-11:00	Email:	ggissing@ambrose.edu	Last day to request revised exam:	Mon., Oct. 26, 2015
Room:	A2141	Phone:	403-410-2000 x 5940	Last day to withdraw from course:	Thu., Nov. 12, 2015
Lab:	FR: 11:15-2:15	Office:	G2204	Last day to apply for time extension for coursework:	Mon., Nov 23, 2015
Room:	A2151				
FINAL EXAM:		Office Hours:	12:00 - 1:30 on Thursdays and by appointment	Last day of classes:	Mon., Dec 14, 2015
Date: Friday, December 18, 2015 Time: 1:00 PM Room: A2210					

Textbook:

Required: Molles, M. C. and J. F. Cahill. 2014. Ecology: Concepts and Applications, 3rd Canadian Edition. McGraw-Hill Ryerson, Whitby.

Note: Students may use an alternate undergraduate level ecology text if approved by the instructor.

Course Description:

The dynamics and maintenance of biological diversity are examined in terms of ecological processes and evolutionary principles. This class will cover the introductory concepts of ecology and evolution, including biomes, population dynamics and growth, species interactions, and energy and nutrient cycling.

Expected Learning Outcomes:

1. Students will gain a greater understanding of evolutionary principles and theory that shape the diversity of life on the planet, be able to discuss the evolutionary history, biological diversity, and modern relationships between organisms, populations, and species
2. Students will learn and apply the principles of population genetics, natural selection, predation, competition, and symbiotic relationships

3. Students will learn the principles of ecology that describe population growth, community dynamics, and ecosystem processes

4. Students will collaborate with peers in a laboratory setting and conduct a collaborative ecology research project

Course Schedule:

The following schedule provides a general guideline and timetable for topics and tests. It may change depending on progress through the semester.

Week 01: Introduction to Ecology / Natural History / Modern Ecology / Defining Ecology

Week 01: The Abiotic Environment / Patterns of Distribution and Abundance / Sampling in Ecology

Week 02: Survey Types / Establishing a Monitoring Program / Experiments in Ecology

Week 02: New Tools in Ecology / Categories of Ecological Exploration / Life on Land

Week 02: Climate Diagrams / Biomes

Week 03: Life in Water / The Hydrological Cycle / Ocean Zones / Tides

Week 03: Ocean and Land Transitions / Natural Selection and Evolution

Week 04: Natural Selection and Evolution / Microevolution / Random Genetic Drift / Macroevolution

Week 04: Thursday, October 1, 2015. No class - Spiritual Emphasis Days

Week 05: Temperature and Water Relations / Microclimates / Temperature and Performance of Organisms

Week 05: Heat Gain Against Heat Loss / Body Temperature Regulation Systems

Week 05 (depending on progress): Term test 1 of 2

Week 06: Principle of Allocation / Thermal neutral zone / Temperature regulation in endotherms

Week 06: Avoiding Extremes / Water movement in aquatic environments / Salt Tolerance / Nitrogenous Waste

Week 07: Mechanisms of Tolerance and Avoidance of Stressors / Water Potential / Ecotypes / Ecozones

Week 07: Water Potential / Nutrients / Methods of Nutrient Acquisition / Photosynthetic Pathways

Week 07: Energy and Nutrient Limitation

Week 08: Animal Behaviour / Inclusive Fitness / Foraging / Altruistic Behaviour

Week 08: Food Density and Animal Functional Response / Optimal Foraging Theory

Week 08: Sociality / Cooperative Breeding / Eusociality

Week 09: Reproductive Behaviour / General Reproductive Patterns - Animal Mating Systems

Week 09: Sexual Selection / Life Histories and the Niche

Week 10: Classifying Life History Strategies / r and K Selection / Fundamental and Realized Niches

Week 10: Phenology and Life Histories / Distribution and Abundance of Populations and Species

Week 10 (depending on progress): Term test 2 of 2

Week 11: Dispersal / Colonization of New Areas / Dispersal and Predators / Metapopulations

Week 11: Dispersal Patterns within Populations

Week 12: Measuring Dispersal / Survivorship and Population Structure

Week 12: Life Tables / Age-structure Diagrams / Survivorship Curves

Week 13: Population Dynamics / Density-dependent Factors / Density-independent Factors

Week 13: Fecundity / Population Growth / Geometric / Intrinsic / Exponential

Week 13: Logistic Population Growth / Logistic equation / r_{max}

Week 14: Competition / Intraspecific / Interspecific / Types of Interactions / Classic Experiments in Competition

Week 14: Niche Partitioning / Ecological (Competitive) Release / Predator-Prey Cycles / Avoiding Predation

Requirements:

All exams and assignments are announced and/or scheduled in advance. Assignments are due at the designated time; please see the late policy below for additional information about late submissions.

Theory (Lecture) Exams:

1. Term tests are objective, utilizing a variety of formats including multiple-choice, matching, true/false, completion, short answer, calculations, and may contain a small set of selected essay questions.
2. The final exam will have a structure similar to the term tests, with a combination of question formats. Approximately 50% of the final exam will cover new material (since term test 2 of 2). Approximately 50% of the exam will consist of comprehensive material. This ratio may change based on class progress but will be made clear prior to the final exam. Further details regarding this comprehensive material will be forthcoming.

Labs:

1. Lab Reports and/or Assignments (where applicable) are exercises designed to review major concepts, summarize pertinent results, and demonstrate comprehension of material covered in both lab and lecture. Lab reports and/or Assignments will always be collected at the BEGINNING of the class in which they are due, unless otherwise noted by the instructor.
2. Each student will take part in a term project in ecology. The results of the term project will be presented in a formal setting and format as a poster (conference quality) at the 2nd Annual Ecology Day.

Please note: Attendance at the laboratory sessions is compulsory. Any lab missed without a valid excuse cannot be made up. Some lab activities may require field data collection at sites around Calgary. It is important to be prepared for such activities. Proper preparations include: sturdy clothing and shoes (long pants, long sleeves, closed-toe shoes), rain gear (jacket and pants), necessary food and water, field notebook (water resistant or place in a ziploc bag), pencil, hat, sunscreen, and insect repellent. Come prepared to work rain or shine, and for the entire lab time. Finally, you MUST let the instructor know IN ADVANCE if you have allergies (food, bee stings, poison ivy, etc.) that will prevent you from participating in labs. The final exam will have a structure similar to the written term tests, with a combination of question formats.

Submission of Assignments:

Over the course of term, we will be engaged in a number of projects that require both faculty-student and student-student collaboration that will be turned for a grading. Thus, it will be vital that all parties take responsibility for their part in these activities. I will provide clear objectives, adequate time, and necessary assistance for completing these assignments. As students, you will be responsible for working together and managing your time such that you are prepared for due dates. Over the course of term, we will be engaged in a number of projects that require both faculty-student and student-student collaboration. Often, these collaborations will culminate in assignments that will be turned in for a grade. Thus, it will be vital that all parties take responsibility for their part of these activities. As your instructor, I will provide clear objectives, adequate time, and necessary assistance for completing these assignments. As students, you will be responsible for managing your time such that you are prepared for due dates.

Method of Submission: All written assignments are to be printed and handed in as a hard copy unless otherwise instructed. Emailed assignments will not be accepted unless specifically asked for as a submission method.

Late Submission of Assignments:

I realize that certain circumstances prevent students from turning in individual assignments on time and have developed the following late policy to address these rare situations. This policy will apply to all lecture and laboratory assignments. The late policy will **NOT cover term tests, the final exam, or the ecology term project**, all of which **MUST** be completed on time or a grade of zero will be assigned.

Condition (calendar days include both weekdays and weekends)	Deduction
Assignment is turned in 1 calendar day after it is due (e.g. Due: Monday, handed in on Tuesday)	20%
Assignment is turned in 2 calendar days after it is due (e.g. Due: Monday, handed in Wednesday)	30%
Assignment is turned in 3 calendar days after it is due (e.g. Due: Friday, handed in on Monday)	40%
Assignment is turned in 4 calendar days after it is due (e.g. Due: Monday, handed in on Friday)	50%
Assignment is turned in 5 or more calendar days after it is due	100%

Attendance:

Regular attendance will be essential for success on all exams and assignments. No points will be subtracted from your grade for non-attendance. However, in-class assignments and unannounced in-class quizzes cannot be made up and, **if missed, will receive a grade of zero.**

Grade Summary:

Activity	Percent of Grade
Lecture Exam I	15%
Lecture Exam II	15%
Lab Reports and/or Assignments (4)	15%
Unannounced Formative Lecture Quizzes (4)	10%
Term Project Poster Presentation	15%
Final Exam	30%

Grade Scheme:

A+	95-100%	Excellent	C+	65-70%	Satisfactory
A	90-95%	Excellent	C	62.5-65%	Satisfactory
A-	85-90%	Excellent	C-	60-62.5%	Satisfactory
B+	80-85%	Good	D+	55-60%	Minimal Pass
B	75-80%	Good	D	50-55%	Minimal Pass
B-	70-75%	Good	F	Below 50%	Fail

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 no longer mailed out.

Policies:

Communication

All students have received an Ambrose e-mail account upon registration. It is the student's responsibility to check this account regularly as the Ambrose email system will be the professor's instrument for notifying students of important matters (cancelled class sessions, extensions, requested appointments, etc.) between class sessions. If students do not wish to use their Ambrose accounts, they will need to forward all messages from the Ambrose account to another personal account.

Registration

During the **Registration Revision Period** students may enter a course without permission, change the designation of any class from credit to audit and /or voluntary withdraw from a course without financial or academic penalty or record. Courses should be added or dropped on the student portal by the deadline date; please consult the List of Important Dates. After that date, the original status remains and the student is responsible for related fees.

Students intending to withdraw from a course after the Registration Revision Period must apply to the Office of the Registrar by submitting a "Request to Withdraw from a Course" form or by sending an email to the Registrar's Office by the **Withdrawal Deadline**; please consult the List of Important Dates on the my.ambrose.edu website. Students will not receive a tuition refund for courses from which they withdraw after the Registration Revision period. A grade of "W" will appear on their transcript.

Exam Scheduling

Students wishing to withdraw from a course, but who fail to do so by the applicable date, will receive the grade earned in accordance with the course syllabus. A student obliged to withdraw from a course after the Withdrawal Deadline because of health or other reasons may apply to the Registrar for special consideration.

Students, who find a conflict in their exam schedule must submit a Revised Examination Request form to the Registrar's Office by the deadline date; please consult the List of Important Dates. Requests will be considered for the following reasons only: 1) the scheduled final examination slot conflicts with another exam; 2) the student has three final exams within three consecutive exam time blocks; 3) the scheduled final exam slot conflicts with an exam at another institution; 4) extenuating circumstances. Travel is not considered a valid excuse for re-scheduling or missing a final exam.

Electronic Etiquette

Students are expected to treat their instructor, guest speakers, and fellow students with respect. It is disruptive to the learning goals of a course or seminar and disrespectful to fellow students and the instructor to use electronics for purposes unrelated to the course during a class session. Turn off all cell phones and other electronic devices during class. Laptops should be used for class-related purposes only. Do not use iPods, MP3 players, or headphones. Do not text, read, or send personal emails, go on Facebook or other social networks, search the internet, or play computer games during class. Some professors will not allow the use of any electronic devices in class. The professor has the right to disallow the student to use a laptop in future lectures and/or to ask a student to withdraw from the session if s/he does not comply with this policy. Repeat offenders will be directed to the Dean. If you are expecting communication due to an emergency, please speak with the professor before the class begins.

Academic Policies

It is the responsibility of all students to become familiar with and adhere to academic policies as stated in the Academic Calendar. 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.

Extensions

Although extensions to coursework in the semester are at the discretion of the instructor, students may not turn in coursework for evaluation after the last day of the scheduled final examination period unless they have received permission for a course Extension from the Registrar's Office. Requests for course extensions or alternative examination time must be submitted to the Registrar's Office by the deadline date; please consult the List of Important Dates. Course extensions are only granted for serious issues that arise "due to circumstances beyond the student's control."

Appeal of Grade

An appeal for change of grade on any course work must be made to the course instructor within one week of receiving notification of the grade. An appeal for change of final grade must be submitted to the Registrar's Office in writing and providing the basis for appeal within 30 days of receiving notification of the final grade, providing

the basis for appeal. A review fee of \$50.00 must accompany the appeal. If the appeal is sustained, the fee will be refunded.

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 college. 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.

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