

Course ID:	Course Title:	Winter 2018
BIO 301	Principles of Evolutionary Biology	Prerequisite: BIO 211, 213
		Credits: 3

Class Information		Instructor Information		Important Dates	
Days:	Tues/Thurs	Instructor:	Dr. Matthew Morris, PhD	First day of classes:	Thu, Jan. 4
Time:	4-5:15 pm	Email:	Matthew.Morris@ambrose.edu	Last day to add/drop, or change to audit:	Sun, Jan. 14
Room:	A2210	Phone:	403-410-2000 ext. 6932	Last day to request revised exam:	Mon, Mar. 5
Lab/Tutorial:	NA	Office:	A2158	Last day to withdraw from course:	Fri, Mar. 16
		Office Hours:	Wed 1-4 or by appointment	Last day to apply for coursework extension:	Mon, Mar. 26
Final Exam:	Mon April 16 9 am -12 pm, A2141			Last day of classes:	Wed, Apr. 11

Course Description

An introduction to the evolutionary processes that shape variation within and between populations and species. Topics include heredity, mutation, genetic drift, natural selection and adaptation, sexual selection, speciation, macroevolution, and implications for conservation and medicine.

Expected Learning Outcomes

1. Gain a deep understanding and appreciation for the natural world as understood through an evolutionary lens.
2. Understand the processes (e.g. natural selection, non-random mating, genetic drift, mutation, gene flow) by which populations evolve.
3. Contrast artificial, natural, and sexual selection.
4. Contrast adaptive and non-adaptive evolution.
5. Assess evidences for evolution from the fossil record, genome scans, and contemporary observations.
6. Describe the speciation process.
7. Relate the principles of evolution to Christian stewardship.

Textbooks

Zimmer C (2013) *The tangled bank: an introduction to evolution*. 2nd edition. Rogers and Company.

Additional readings will be provided throughout the semester.

Course Schedule

Date	Topic	Text Chapters	Due
Jan 4	Defining evolution	Evolution	
Jan 9	Darwin and <i>The Origin of Species</i>	Darwin	
Jan 11	Deep time	Rocks	Evolution; Darwin; Rocks
Jan 16	Phylogenies	Tree of Life	
Jan 18	Genotypes	Evolution's Molecules/ Raw Materials	Tree of Life; Molecules/Raw Materials
Jan 23	Phenotypes		Homework 1
Jan 25	PROGRAM DAY, NO CLASS		
Jan 30	Natural selection	Ways of Change	Homework 2, paper topic
Feb 1	Sexual selection	Sex and Family	Ways of Change; Sex
Feb 6	HWE and the "forces" of evo		
Feb 8	HWE and the "forces" of evo		Homework 3
Feb 13	Empirical studies		
Feb 15	MIDTERM		Midterm
Feb 20	READING BREAK		
Feb 22	READING BREAK		
Feb 27	Adaptation		Homework 4
March 1	Adaptation II	Adaptations	Adaptations
March 6	Neutral evolution		First paragraph and 5 references
March 8	Speciation I	Origin of Species	Origin of Species
March 13	Speciation II		
March 15	Coevolution	Intimate partnerships	Homework 5
March 20	Macroevolution	Macroevolution/ Radiations	Intimate; Macro/Rad
March 22	Macroevolution II		
March 27	Human-induced evolution		Research paper
March 29	Evolutionary medicine	Evolutionary Medicine	Evolutionary Medicine
April 3	Human evolution	The History in Our Genes A New Kind of Ape	Homework 6
April 5	Evolution of behaviour	Minds and Microbes	History; Ape; Minds
April 10	Review		

Chapter titles in bold indicate the first and second editions have different titles for the same content

Note the first edition does not have the chapter "A New Kind of Ape" – but has that content strewn throughout the textbook. Those with the first edition must still provide a chapter summary for that chapter (borrow from friend).

Requirements:

This course consists of 3 hours of lectures per week. The midterm and final exam will be a combination of multiple choice questions, as well as short and long answer questions. While most questions will be based on lecture material, the textbook reading will absolutely help in the understanding of this material.

Homework problems will be assigned throughout the semester. A single major review paper will be due in the latter half of the semester.

Brief (one page) summaries of each textbook chapter will be handed in. **See schedule above.**

Attendance:

While attendance at lectures is not mandatory, it will help ensure success on course exams and assignments.

Grade Summary:

Midterm – 20%

Final – 30%

Homework – 15% (3% per assignment, lowest grade dropped, 6 total)

Research paper – 20%

Textbook review – 15%

The available letters for course grades are as follows:

Grad	Percent	Grade Point Value	Description
A+	96-100	4.00	Outstanding
A	92-96	4.00	Excellent - superior performance, showing comprehensive understanding of subject matter.
A-	88-92	3.70	
B+	83-88	3.30	
B	78-83	3.00	Good-clearly above average performance with knowledge of subject matter generally complete.
B-	73-78	2.70	
C+	68-73	2.30	
C	64-68	2.00	Satisfactory – basic understanding of the subject matter. Grade point average below 2.00 is not sufficient for promotion.
C-	60-64	1.70	Minimum grade required if needed as a prerequisite course
D+	55-60	1.30	
D	50-55	1.00	Minimal pass – marginal performance; generally insufficient preparation for subsequent courses in the same subject.
F	<50	0	Fail – unsatisfactory performance or failure to meet course requirements.

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.

Late assignment policies

Homework cannot be submitted late without cause and approval from the professor. **Assignments are due at the start of lecture; anything after the start of lecture will be considered late.** The penalty for late assignments are as follows:

5%/day for late assignments that have been communicated to the professor ahead of time.

10%/day for late assignments if the professor has to track you down to find out what is going on.

0% on any assignments passed in one week after the due date, unless otherwise stated by the instructor. *These assignments will still be "graded" so that you can have feedback before the exam, even if your official grade is 0.*

Plagiarism policy

See below for Ambrose's statement defining plagiarism and outlining 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.
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. Quoting nearly word-for-word from a source, changing only the occasional word, even if it is referenced.
6. Submitting an assignment in which >30% of the content is properly quoted and cited; 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.
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.

A tutorial explaining some of the above can be found at:

<http://library.acadiau.ca/sites/default/files/library/tutorials/plagiarism/>

Penalties for plagiarism

For a first offense in any one of my classes, a zero on the assignment with no chance of rewriting it, and a note in your academic file.

For a second offense in any one of my classes, a zero in the class, and a notice on your transcript.

For a third offense in any one of my classes, recommendation for expulsion from the university.

Note that Ambrose has an appeal process in place if you feel that allegations of plagiarism are unfounded.

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

Classroom Etiquette:

It is expected that students will take an active role in the learning process. This includes: (a) regular class attendance, (b) reading course material in advance of class, and (c) engaging in discussions during class.

In respect to the professor and to your fellow students, we ask that you:

- a) Turn your phone off during class and that you don't use it for texting during lecture or lab
- b) Not have conversations with the people beside your during lecture – it is very distracting to the people around you
- c) Use your laptops for lecture material and assignments only – that you are not using the internet or facebook during class time.
- d) Arrive to lecture and lab on time
- e) Don't come to class or lab with your ipod or equivalent.

These will help to maximize the learning experience for you and your fellow students (and will keep your professor in a good mood).

Textbook summaries

I expect you to read your textbook and submit a one page per chapter (minimum) summary of what you found most relevant in that chapter (double-spaced, normal margins, 12 pnt font). Include questions you have or things you did not understand.

Research Paper:

Your research paper is worth 20% of your overall mark. It is to be ten pages minimum, double-spaced, and should reflect a depth of research and understanding. Peer-reviewed, scientific sources should be cited both in text, e.g. (Morris et al. 2017; Wang 2017) and in a References section at the end of the paper. There is no set number of references required, but better research will likely result in a better grade. Topics need to be approved by the instructor no later than **January 30**.

Your paper will be a review of a topic in evolutionary biology. You should be making an argument in your review paper, while informing your audience about the latest discoveries in that topic. Topics could include, but are not limited to:

Adapting to high altitude	Adapting to pollution
Evolution of mimicry	Evolution of antibiotic resistance
Adaptive radiation of Victorian Lake cichlids	Speciation in Darwin's finches
Evidences of evolution in the human fossil record	Genomic evidences for human evolution
Human-induced evolution of fishes	Human-induced evolution of hunted game
The role of gene duplication in speciation	The role of chromosomal inversions in speciation
Evolution of species pairs in Canadian fishes	The role of phenotypic plasticity in speciation
Evolution to urban environments	Evolution of selfishness
Evolution of inbreeding avoidance	Does altruism exist?
The evolution of flightless animals on islands	Constraints on evolution
Pick a species and research its evolutionary history	Exaptation
Evolution and climate change	How has evolutionary biology changed since Darwin?

Ambrose University Academic 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.

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.

Exam Scheduling

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.