

EEB 318: Principles of Evolution
Department of Ecology & Evolutionary Biology
University of Toronto

Course Syllabus
Fall 2014

Course Description:

Principles and practice of evolutionary biology since Darwin. Topics may include: phylogeny, speciation, mutation and neutral evolution, population genetic variation, quantitative genetics, molecular and genome evolution, natural selection and adaptation, phylogenetics, speciation, evolutionary conflict and cooperation, evolution of development, and levels of selection.

Prerequisite: (BIO120, BIO220)/BIO150. This means that you must have taken BIO150 already, or have taken both BIO120 and BIO220 already (or equivalent at another university).

Exclusions: EEB323/324. This means that if you have taken or are currently enrolled in either of these 2 courses, then you can't take EEB318.

Time and Location:

Tuesdays 11am-12pm and Thursdays 11am-1pm, MB 128

Course Instructors:

Professor Asher Cutter (course coordinator, asher.cutter@utoronto.ca), Office hours TBA

Professor Art Weis (stephen.wright@utoronto.ca), Office hours TBA

Teaching Assistant: Cedric Aria (cedric.aria@utoronto.ca), Office hours TBA

Course Assistant: Penelope Gorton (p.gorton@utoronto.ca)

Course Policy on Email Usage:

Your email message must include in the Subject line the course identifier and a concise and clear statement of purpose [e.g., EEB 318: I would like more background reading]; otherwise it is likely to be deleted, along with spam messages and messages potentially containing viruses.

Course Website:

This course has important information available through the UofT Portal on Blackboard. You will need to use your UTOR ID to login online at <http://portal.utoronto.ca>

Readings:

The required textbook for this course is "Evolution" by Douglas Futuyma (2013, 3rd edition, Sinauer), and is available through the UofT Bookstore. The Bookstore offers both hardcover and loose-leaf versions of the text (the loose-leaf version is cheaper). Additional required readings from the primary literature will be provided through Blackboard. You will get the most out of the readings and lectures (and the course in general) if you read the assigned chapters in "Evolution" *before* coming to class. The original research papers also will be discussed in class, and may be difficult to understand if you haven't read them ahead of time. The concepts covered in lectures follow the material covered in the book fairly closely, so do the readings before class!

Clickers:

Electronic clickers are required, and will be used in the classroom to work through evolutionary scenarios in an interactive fashion. Purchase of used or new iClickers is available through the Bookstore.

Purpose and Objectives of the Course:

The main objective of this course is to provide students an overview of the major concepts in evolutionary biology and for students to develop an intuitive understanding about how the evolutionary process works.

Organization of the Course:

This course consists of 22 lectures by the instructors, based on the textbook readings and readings of original scientific articles. A weekly tutorial session by the instructors and TA will help reinforce the concepts covered in class.

The following topics will be covered (instructor initials in parentheses):

1. History of Evolutionary Thought (AC)
2. Origins and Patterns of Genetic Variation (AC)
3. Genetic Drift (AC)
4. Natural Selection and Adaptation (AC)
5. Population Genetics (AC)
6. Molecular Evolution of Genes and Genomes (AC)
7. Life History Evolution (AW)
8. Speciation (AW)
9. Phylogenetics and Macroevolution (AW)
10. Evolutionary Conflict and Cooperation (AW)
11. Evolution of Development (AW)
12. Evolutionary Origins of Biodiversity (AW)
13. Evolutionary Science in Human Society (AW)

Evaluation:

Each of the 3 exams will be weighted equally.

Midterm Exam 1 (33.3%): Thurs. Oct. 9, 2014 (material from first portion of course)

Midterm Exam 2 (33.3%): Thurs. Nov. 6, 2014 (material from middle portion of course)

Final Exam (33.3%): fall exam period (material from last portion of course)

All exams will consist of multiple choice and short-essay questions, emphasizing the understanding of concepts (rather than factoids) through depictions of hypothetical evolutionary scenarios or real data in need of interpretation. Exams are not cumulative, but the concepts build throughout the course and so you are responsible for this building of knowledge. Exams will include material both from lecture and in the assigned readings, but will emphasize topics covered in lecture.

The previous year's exams will be made available as study aids through Blackboard; no answer keys will be provided for these study aids. If you attend lectures and think about the material, read the textbook and articles before each class, and study from past exams and your notes, then you should perform well in this course. No study aids of any type are permitted during the

exams. You must bring a pencil to each exam. The midterm exams last approximately 1 hour and 40 minutes each; the final exam lasts 2 hours. The midterm exams will take place in a location to be announced.

Students who have a legitimate reason for missing an exam (consult University guidelines for details) must inform the instructor within 24 hours. It is the student's responsibility to ensure they have the proper documentation for missed exams and to follow proper procedures. Students missing an exam with a legitimate excuse will write a **make-up exam that may be of a different format** than the in-class exam (short-answer, problems, essays). Note that in the past, students generally find the make-up exams to be harder than the in-class exams.

Academic Integrity:

Academic integrity is one of the cornerstones of the University of Toronto. It is critically important both to maintain our community which honours the values of honesty, trust, respect, fairness and responsibility and to protect you, the students within this community, and the value of the degree towards which you are all working so diligently.

According to Section B of the University of Toronto's Code of Behaviour on Academic Matters (<http://www.utoronto.ca/govcncl/pap/policies/behaveac.html>) which all students are expected to know and respect, it is an offence for a student:

- To use someone else's ideas or words in your own work without acknowledging that those ideas/words are not your own with a citation and quotation marks, i.e., to commit plagiarism.
- To include false, misleading or concocted citations in your work.
- To obtain unauthorized assistance on any assignment.
- To provide unauthorized assistance to another student.
- To submit your own work for credit where it has been previously obtained in more than one course without the permission of the instructor.
- To falsify or alter any documentation required by the University. This includes, but is not limited to, doctor's notes.
- To use or possess an unauthorized aid in any test or exam.

There are other offences covered under the Code, but these are the most common. Please respect these rules and the values which they protect.