

Fall 2020

BIOL 345-01: Evolution

Instructor: Dr. Benjamin Duval

Basic Course Information:

Lecture Time: Tuesdays and Thursdays, 9:05 – 10:20 am

Prerequisite: BIOL 112

Textbook: Emlen and Zimmer (2015) Evolution; Making Sense of Life (2nd edition)

<https://www.amazon.com/Evolution-Making-Sense-Carl-Zimmer/dp/1936221551> (Links to an external site.)

Instructor Information:

Email: benjamin.duval@nmt.edu

Office: 319 Jones Annex

Office Hours: Tuesday & Thursday 11:00am-noon

Learning Objectives:

Students should be able to:

- Understand that thinking about evolution is not separate from biology; all form and function is a product of evolution.
- Articulate and explain common misconceptions about evolution.
- Understand and discuss the fundamental mechanisms of evolution.
- Appreciate the time scale and diversity of life produced by evolution.
- Understand the historical context of evolutionary thought as compared to modern thinking.

Course Expectations:

General: Adherence to the NM Tech Student Code of Conduct, including all policies related to Academic Dishonesty and research integrity will be enforced in this course. All infractions will be discussed with the student, then referred to the Office of Academic Affairs or the Graduate Office if necessary. Take time to familiarize yourself with these policies:

<http://www.nmt.edu/cat-university-policies/3441-policies-and-procedures-at-new-mexico-tech>

Learning environment: Learning depends on engagement, and engagement depends on both the relationship between students and instructors and the general learning environment. I will do my part to come to class prepared with interesting material and a science-based lecture style that includes active learning techniques. I expect you to come to class prepared by completing the assigned reading and willing to participate in your own learning. Furthermore, I expect you to cultivate a positive and welcoming learning environment for you and your fellow students. Discriminatory acts or behaviors that negatively affect our learning environment for others will not be tolerated.

Accommodations for Disabilities: Pursuant to the Americans with Disabilities Act, I am happy to accommodate people with disabilities (learning, physical, etc), people with chronic illnesses, and people with other conditions or circumstances that will potentially interfere with course work. It is your responsibility to let me know in the first week of the course (including providing me with a letter from Counseling and Disability Office if you require extra time or other special circumstances on quizzes or exams), or as soon as you are aware of problems, so that we can plan appropriate accommodations together.

Electronic Devices (phones, computers, etc): Please refrain from using electronic devices during class. Switch cell phones to silent/vibrate.

Group Work: I encourage group work on all assignments, except those explicitly stated to be *individual evaluations*. You are free to assume that an assignment is meant to be worked on together unless otherwise directed. If you work in groups on an assignment, simply list the members of your group on the top of the assignment.

Attendance/Absence: Attendance is **mandatory even though we are online**. There will be no make-up exams, quizzes, except under extraordinary circumstances for which documentation exists.

Grading Scheme:

Exams (60%): There will be 3 exams (20% of your final grade for each), and you will have one week's notice of take-home exams.

Participation (20%): Part of the grade will be attendance to Zoom class meetings, part of the grade will rely on your personal involvement in the class such as working on group assignments, asking questions in class, and interacting with me in person or via phone calls or Zoom.

Written Activities (20%):

- Homework will consist of a variety of study questions that will be assigned for work outside of class. Homework assignments should be turned in on time for credit. Late assignments will not be accepted. You can work on homework individually or in groups.
- 200-word essays will be required for any assigned literature reading, and due in class the day of the paper discussion

Class Schedule (*Tentative*):

Date	Lecture Topic
18-Aug	Course Introduction & What is Evolution?
20-Aug	Early Earth, Geology & Importance of Time I
25-Aug	Early Earth, Geology & Importance of Time II
27-Aug	Paper Discussion (Woese 1998)
1-Sept	Phylogeny & Classification, History of Scientific Insight
3-Sept	EXAM I
8-Sept	Background Genetics
10-Sept	Variability & Heredity
15-Sept	Variability & Heredity Overflow
17-Sept	Population Genetics & Drift
22-Sept	Populations and Selection
24-Sept	Evolution of Phenotypes
29-Sept	Natural Selection
1-Oct	Natural Selection & Fitness Landscapes
6-Oct	Overflow & Spandrels Discussion
8-Oct	EXAM II
13-Oct	Adaptation, Genes to Traits II

15-Oct	Adaptation, Genes to Traits II (*TBD)
20-Oct	Sex
22-Oct	Sexual Selection
27-Oct	Life History & Parental Care I
29-Oct	Life History & Parental Care II
3-Nov	Overflow & Red Queen Discussion
5-Nov	EXAM III
10-Nov	Speciation I
12-Nov	Speciation II
17-Nov	Macroevolution I
19_Nov	Macroevolution II
24-Nov	No Class
26-Nov	Thanksgiving
1-Dec	Evolutionary Ecological Interactions
3-Dec	Societal/Social Implications of Evolution
4 to 10-Dec	Finals week