

Biology 222 – Evolution – Syllabus – Spring 2022

Professor Daniel E. Bunker

IMPORTANT: THE FIRST TWO WEEKS (AT LEAST) WILL BE
ONLINE ON WEBEX

<https://njit.webex.com/meet/dbunkernjit.edu>

Summary: Evolution is happening right now in every living species on planet Earth. Evolutionary biology is not about bones and fossils – they are just helpful clues nature has left for us. Evolutionary biology is all about genes and populations, mutations and natural selection, reproduction and survival. Evolution cuts across and unifies the biological sciences – from genetics and molecular biology to ecology and conservation biology to disease and medicine, evolution informs our understanding. Indeed, as the renowned geneticist Theodosius Dobzhansky observed, “Nothing in biology makes sense except in the light of evolution.”

Learning Objectives

Upon successful completion of this course, students will:

- Understand evolutionary mechanisms including genetic drift and natural selection
- Understand how to construct and interpret phylogenetic trees
- Understand the history and geography of life on Earth
- Understand the species concept and mechanisms of speciation
- Understand mechanisms of evolution of life history, sexual selection, coevolution, and evolution of disease.

Course prerequisites: (BIOL 201 and BIOL 202 or R120 201 and R120 202) and (BIOL 205 and BIOL 206 or R120 205 and R120 206) with grade of C or better.

Bio 222-002 meets: Tuesday and Thursday, 10:00 am – 11:20 am

Location: CKB G-08

Bio 222-004 meets: Tuesday and Thursday, 1:00 pm – 2:20 pm

Location: CKB G-08

Required Materials:

1. **Text: Evolution, by Bergstrom and Dugatkin, 2nd Edition.** ISBN: 978-0-393-92592-0, Norton & Co. Note that they offer the text as a more affordable eBook. **IMPORTANT: The 2nd edition is very different from the 1st edition which is not an acceptable substitute. ORDER THE BOOK RIGHT NOW!!!**
2. A computer with a webcam that can run Respondus and Lockdown Browser.

Grading:

Attendance and Participation	10%
Quizzes	10%
In-class activities	20%
Exam 1	15%
Exam 2	15%
Exam 3	15%
Exam 4	15%

Grading scale:

A	90-100	C	70-78
B+	88-90	D	60-70
B	80-88	F	0-60
C+	78-80		

Contact info and office hours:

Email: dbunker@njit.edu

Office hours: Tuesday and Thursday 2:30 – 4:00 pm. I will usually be in my WebEx room during office hours but please email me to confirm! I am also available by appointment: dbunker@njit.edu

Office location: <https://njit.webex.com/meet/dbunkernjit.edu>

Course Web page: Canvas (<https://canvas.njit.edu>).

We will use Canvas for coursework submission, for announcements, for exams and quizzes, and for various activities. If you have not used NJIT canvas before, go here

<<https://ist.njit.edu/ucid/>>, or call the NJIT helpdesk for assistance (973 596 2900). Be sure to check your NJIT email or set it to forward to your everyday email account. Check Canvas regularly for assignments, quizzes, announcements, etc. Your course grades can be found on canvas as well.

How the course will work:

Class meetings: Evolution will be BEGIN ONLINE, BUT HOPEFULLY will transition to FACE TO FACE after the first two weeks. Changes will be announced. Check your email and Canvas. We will meet synchronously at our assigned class meeting time for the first two weeks on WebEx: <https://njit.webex.com/meet/dbunkernjit.edu>

- We will generally cover one chapter/topic each day that the course meets. You will generally read the chapter and review the pre-recorded lecture BEFORE the class meets. Then in class we will have a quiz on the material, a discussion of the quiz results, a time for questions about the chapter. Most days we will have some sort of activity that will help you better understand the topic. All of these activities are REQUIRED. These activities happen when they are scheduled and cannot be made up!! However I will drop a few quiz, attendance, and activities scores.
- FOR EACH LECTURE, you will:
 - READ the chapter in the textbook, Bergstrom and Dugatkin, BEFORE CLASS
 - REVIEW the pre-recorded lecture posted to Canvas, BEFORE CLASS
 - Note that I also post the lecture slides themselves.
 - ATTEND class (whether by webex or in person)
 - Take the QUIZ at the beginning of class.
 - QUIZZES will be on canvas, using Respondus and Lockdown Browser (see EXAMS, below).
 - This is the only time the quiz is available!!
 - Participate in discussions and activities
- EXAMS
 - There are four exams. The exam are not cumulative, although topics covered later in the course do build upon fundamentals (e.g., natural selection, reading phylogenies)
 - All exams AND quizzes will be on Canvas and will require both Respondus and Lockdown Browser. You MUST have a computer and a webcam that are capable of

running Respondus and Lockdown Browser. Contact the Dean of Students if you need assistance acquiring the necessary hardware. When we return to FACE TO FACE we will STILL USE Respondus and Lockdown Browser!! So bring your machine to class with you!

- We use Respondus simply to verify that your work is your own and to prevent cheating on exams. Cheating on exams violates the NJIT honor code and also devalues your degree – if NJIT is known for cheating, future employers or schools will not trust that you have learned anything from your NJIT courses. When your classmates cheat, they are devaluing your college degree and stealing from you. Cheating in any form will not be tolerated in Bio 222.
- Note: Each chapter also has learning objectives and flashcards which are posted on Canvas and which you may find useful.

Makeup Policy:

Exams can only be made up with permission from the Dean of Students or with prior approval from Prof. Bunker. If you miss an exam for unforeseen circumstances, plead your case to the Dean of Students – I will abide by whatever they ask me to do. If you have a reasonable reason for missing an exam, you must contact me BEFORE the scheduled exam in order to be able to make it up. Quizzes, participation, and activities cannot be made up. They happen in real time!! I will drop at least two of each of these from your grade – if you miss more than that your grade will suffer.

Disability accommodations:

If you need accommodations due to a disability please contact the Office of Accessibility Resources and Services to discuss your specific needs. A Letter of Accommodation Eligibility from the Disability Support Services office authorizing your accommodations will be required.

Academic Integrity:

You are expected to abide by the NJIT Code of Student Conduct <<https://www5.njit.edu/doss/policies/conductcode/index.php>> and the NJIT University Code on Academic Integrity <<http://www5.njit.edu/policies/sites/policies/files/academic-integrity-code.pdf>>, which you agreed to do upon entering NJIT. Please re-read the NJIT University Code on Academic Integrity, which describes conducts that are considered unethical and thus unacceptable (cheating, violating the US Copyright law, etc), as well as consequences for violating the Code. I will not tolerate cheating – it is my responsibility to protect my honest students from cheaters and I will do so. Cheating during exams will not be tolerated, nor will any form of plagiarism.

Cellular Phones: All cellular phones must be switched off during all class times.

Key Dates:

Jan. 24: Last day to add/drop.	Mar. 14-19: Spring break
Jan. 24: Last day to withdraw with 100% refund	April 5: Last day to withdraw.
Jan. 31: Last day to withdraw with 90% refund	April 5: Exam 3
Feb. 8: Exam 1.	April 28: Last day of classes for Evolution
Feb. 14: Last day to withdraw with 50% refund	April 28: Exam 4
March 3: Exam 2	May 3: NO CLASS – Friday schedule
Mar. 7: Last day to withdraw with 25% refund	

Course outline, assignments, and exam schedule:

Day	Date	Topic/Chapter	Assignment
Tue	18-Jan	An Overview of Evolutionary Biology	Read Ch. 1
Thu	20-Jan	Early Evolutionary Ideas and Darwin's Insight	Read Ch. 2
Tue	25-Jan	Natural Selection	Read Ch. 3
Thu	27-Jan	Phylogeny and Evolutionary History	Read Ch. 4
Tue	1-Feb	Inferring Phylogeny	Read Ch. 5
Thu	3-Feb	Exam review	Bring your questions!!
Tue	8-Feb	Exam 1	Study for exam!
Thu	10-Feb	Transmission Genetics and Genetic Variation	Read Ch. 6
Tue	15-Feb	The Genetics of Populations	Read Ch. 7
Thu	17-Feb	Evolution in Finite Populations	Read Ch. 8
Tue	22-Feb	Evolution at Multiple Loci	Read Ch. 9
Thu	24-Feb	Genome Evolution	Read Ch. 10
Tue	1-Mar	Exam review	Bring your questions!!
Thu	3-Mar	Exam 2	Study for exam!
Tue	8-Mar	The Origin and Evolution of Early Life	Read Ch. 11
Thu	10-Mar	Major Transitions	Read Ch. 12
Tue	22-Mar	Evolution and Development	Read Ch. 13
Thu	24-Mar	Species and Speciation	Read Ch. 14
Tue	29-Mar	Extinction and Evolutionary Trends	Read Ch. 15
Thu	31-Mar	Exam review	Bring your questions!!
Tue	5-Apr	Exam 3	Study for exam!
Thu	7-Apr	Sex and Sexual Selection	Read Ch. 16
Tue	12-Apr	The Evolution of Sociality	Read Ch. 17
Thu	14-Apr	Coevolution	Read Ch. 18
Tue	19-Apr	Human Evolution	Read Ch. 19
Thu	21-Apr	Evolution and Medicine	Read Ch. 20
Tue	26-Apr	Exam review	Bring your questions!!
Thu	28-Apr	Exam 4	Study for exam!
Tue	3-May	NO CLASS - Friday Schedule!!!	

NO FINAL EXAM during final exam period!!!!