NJIT BIOLOGY

Course Syllabus

SPRING 2020

BIOLOGY 205-002: FOUNDATIONS OF BIOLOGY: ECOLOGY AND EVOLUTION

INSTRUCTOR:	Dr. Caroline DeVan	**EMAIL:**	caroline.m.devan@njit.edu
OFFICE:	340D Central King Bldg.	**OFFICE HOURS:**	T & F: 10:00AM- 11:30AM
COURSE SCHEDULE:	M & R: 1:00 PM - 2:20PM	**COURSE WEBSITE:**	https://canvas.njit.edu/
COURSE LOCATION:	CKB G08	**OFFICE PHONE:**	973-596-5404

COURSE DESCRIPTION: Ecology and evolutionary biology are fundamental to our understanding how life on earth functions. This course focuses on understanding the major principles in these fields and on how ecology and evolution affect ***all*** life on earth. Throughout the class we will use current examples to see how evolution affects our everyday lives.

COURSE OBJECTIVES:

Students are able to:

1. Design an experiment and use statistics to test whether there is a significant difference between two treatment groups.
2. Explain how biological variation is produced and maintained.
3. Explain the mechanisms that lead to evolution within a population and the formation of new species.
4. Analyze a phylogenetic tree, and explain how organisms are related to each other based on this tree.
5. Describe the basic series of events that occurred during the evolutionary history of life.
6. Explain and predict how a population will change in size over time.
7. Assess the importance of a given species interaction and hypothesize why it may have evolved.
8. Describe how energy flows through a community and explain how species influence community structure.
9. Predict how changes to biogeochemical processes may change ecosystems.
10. Describe how humans affect biodiversity and why biodiversity is important.
11. Outline how the environment affects species and species distribution.
12. Justify why the study of ecology and evolution is important to people.

PREREQUISITES: Concepts in Biology (BIOL 200)

CO-REQUISITE: Foundations of Ecology and Evolution Laboratory (BIOL 206).

REQUIRED MATERIALS:

- We will the FREE online textbook Open Stax Biology 2e: https://openstax.org/details/biology-2e, supplemented with additional readings. All readings will be provided via links on the course website, but I recommend you download the (free) OpenStax Biology 2e text. All additional materials will be added to the course website.
- An **i▶Clicker (II or Plus)** is required for this course.

BIOLOGY 205-002: FOUNDATIONS OF BIOLOGY: ECOLOGY AND EVOLUTION

GRADING POLICY & SCALE: Grades will be determined by performance on exams, quizzes, and class participation (see Modes of Assessment below). Grades will be determined by the percentage of the possible points earned, following the standard grade scale below. Grades are not curved. Do not ask for extra credit. Your grades will be posted to Canvas so you can keep track of your progress in the course.

Assignments	Points
Quizzes (25 pts each)	50 points
Class participation & Assignments	50 points
Exam 1	100 points
Exam 2	100 points
Final Exam	150 points
Total	**450 points**

Letter Grade	Total Number of Points	Percentage
A	405 – 450	90 – 100
B+	382.5 – 405	85 – 90
B	360 – 382.5	80 – 85
C+	337.5 – 360	75 – 80
C	292.5 – 337.5	70 – 75
D	225 – 292.5	60 – 70
F	0 – 225	0 - 60

PARTICIPATION & ASSIGNMENT POINTS: Participation points are earned by answering iClicker questions (some must be answered correctly, but not all) and in-class assignments. Assignment points are earned by completing online Canvas assignments. There will be approximately one assignment per week with deadlines noted on Canvas. To determine how many participation & assignment points you have, first figure out the total number of in-class participation points that were available and add them to the total online assignments points that were available. Then calculate the percentage of these that you earned and multiply the result by 50. For instance, if by the end of the semester a total of 150 possible participation & assignments points were made available and you earned 125 of them, then you have 42 of the possible 50 in your final grade; (125/150)* 50 = 41.66 participation points. I will post the grades for participation points three times during the year on: 2/27, 4/9, and 5/8. Each time I post them I will give you 10 extra points, allowing you to miss up to 3 classes (for excused or unexcused reasons) without losing any points. NOTE: There will be 3-7 iClicker questions per lecture. *Bringing someone else's clicker to class is cheating.* If you are caught clicking in for someone else, both people involved will lose ALL of their clicker points. You will be able to miss up to 3 classes (for any reason – excused or unexcused) without losing participation points.

MAKE UP EXAMS AND QUIZZES: Make up exams will be possible with a doctor's or a dean's letter or with prior approval. If you do miss an exam, make sure to contact me within two days of the missed exam. *Because the lowest of your three quizzes gets dropped, you will not be able to take a makeup quiz.* Instead, your missed quiz will count as the dropped quiz.

ELECTRONICS / CELL PHONE POLICY: The use of cell phones is not allowed in class. If you are caught using a cell phone, or another electronic device (iPod, etc.), you will lose points from your grade. Laptops can be used to take notes in class; however, if you abuse this privilege by using them for non-class related purposes, you will lose points.

ACADEMIC INTEGRITY: The University's academic integrity policy can be found here. This code will be enforced in this course. If you have any questions about this policy, please come and talk to me about it.

BIOLOGY 205-002: FOUNDATIONS OF BIOLOGY: ECOLOGY AND EVOLUTION

Accommodations: Please let me know if you require accommodations for a disability or if you have any concerns about the course as soon as possible so that I can work with you to resolve them. I am here to help!

How to Succeed in Foundations of Ecology and Evolution: *Below is advice from real students who recently took the class. All are direct quotes on how to succeed in this course.*

"MOST IMPORTANT, GO TO CLASS. The main key to success in the class is to go to class and listen carefully to the lectures."

"You have to engage. Your physical presence in a seat does not count as engagement…Don't just sit there, ask questions, answer questions, speak to your neighbors, fill out the worksheets. The more you engage and participate, the less you have to study."

"What I think made me successful in Bio 205 was taking advantage of all of the resources available such as the office hours and all of the study guides and resources put up on Moodle such as the assignment and homework because it really does help enforce the material and will help you when the exams come around."

"When I would prepare for the exams for this class or any class I would study it as if I had to go in the lecture the next time and teach this material. By doing this it helped me to apply the concepts rather than just having to do a very monotonous memorization."

"I think what made me successful was always skimming through what we were going to learn about in lecture that day before class. Then coming to class and paying full attention in class & taking rough notes. Then after class I would read the book and rewrite my notes after."

"I read the textbook material before going to the class and also looked over the power points. I would then make list of questions that I would have from my readings and the questions that may have arose from the previous lectures. After that I would go to Dr. Devan's office hours to get further insight into the material."

"GO TO OFFICE HOURS! If you do not understand a concept, there is a high chance that you will not understand it if you do not ask for help, so please go to office hours."

For more advice and information on how to best succeed in this course, please see the Moodle section titled "Metacognition" where more advice is posted and there are many different resources and tips to increase learning! You can also talk with me directly.

I am here to help and I am looking forward to working with you! ~Prof. DeVan

CANVAS: We will be using Canvas for our class website (https://canvas.njit.edu/). If you are a non-matriculated student, you will need an NJIT UCID to get access to the site. If you do not already have one, you can request one at https://myucid.njit.edu/. PLEASE be sure that you have gone into your profile and changed your preferred e-mail to an account you check regularly. You will automatically be assigned an NJIT e-mail address and this will be the default unless you change it.

Note: Below is a tentative schedule, any changes will be posted to Canvas

* The Learning Outcomes (L.O.) refer to the Course-Level Learning Outcomes listed in the syllabus.
** The final exam schedule will be posted here: http://www.njit.edu/registrar/exams/
***Do not schedule travel during the final exam period until after the NJIT final exam schedule has been announced.

BIOLOGY 205-002: FOUNDATIONS OF BIOLOGY: ECOLOGY AND EVOLUTION

COURSE OUTLINE: ***NOTE: The final exam WILL be held during the final exam period listed below. DO NOT make arrangements to leave town prior to this, as taking the exam early will NOT be an option.***

WEEK	LECTURE TOPIC	READING ASSIGNMENTS
Week 1 1/20 – 1/23	M: ***No Class*** (Martin Luther King Jr. Day) R: Course & Content Introduction **First day of class is 1/23**	Syllabus
Week 2 1/27 – 1/30	M: What is Life? Intro to Biodiversity (Pretest) (L.O. 2, 10, 11) R: Population Genetics & Variation, Scientific Method (L.O. 1 & 2)	Chapter 1
Week 3 2/3 – 2/6	M: Scientific Method & Stats, Intro to Evolution (L.O. 1 - 3) R: Evolution: Selection I (L.O. 3)	Sections 19.1, 19.3 Sections 19.1, 19.3
Week 4 2/10 – 2/13	M: ***Quiz 1;*** Online Class: Evolution: Selection II (L.O. 3) R: Evolution: Sexual Selection (L.O. 2 & 3)	Sections 19.1, 19.3 Sections 19.1, 19.3
Week 5 2/17 – 2/20	M: Evolution: Adaptations (L.O. 2 & 3) R: Evolution: Genetic Drift & Gene Flow (L.O. 2 & 3)	Section 18.1 Section 19.2
Week 6 2/24 – 2/27	M: Review of Evolution R: **Exam 1**	Section 18.1, Chapter 19 **2/27 EXAM 1**
Week 7 3/2 – 3/5	M: Ecology: Populations - Growth & Dynamics (L.O. 6) R: Ecology: Populations - Demographics & Life History (L.O. 3 & 6)	Sections 45.3-45.5 Sections 45.1-45.2
Week 8 3/9 – 3/12	M: Ecology: Interactions - Competition & Niches (L.O. 7) R: Ecology: Interactions & Coevolution (Mutualism & Predation) (L.O. 7)	Section 45.6 Section 45.6
Week 9 3/16 – 3/19	**MARCH 15-22: SPRING BREAK – NO CLASS THIS WEEK**	
Week 10 3/23 – 3/26	M: ***Quiz 2;*** Online Class: Evolution: Phylogenetics (L.O. 4) R: Evolution: Speciation I (L.O. 3)	3/23 QUIZ 2, Chapter 20 Sections 18.1 – 18.2
Week 11 3/30 – 4/2	M: Evolution: Speciation II (L.O. 3) R: Evolution: Phylogeny (L.O. 4)	Section 18.3 Chapter 20
Week 12 4/6 – 4/9	M: Evolution: History of Life & Human Evolution (L.O. 5) R: **EXAM 2**	Chapter 20 **4/9 EXAM 2**
Week 13 4/13 – 4/16	M: Ecology: Biogeography & Communities I (L.O. 7, 8, 11) R: Ecology: Communities II (L.O. 7 & 8)	Sections 44.1 – 44.2, 45.6 Sections 45.6, 46-1-46.2
Week 14 4/20 – 4/23	M: Ecology: Ecosystems – Carbon Cycling (L.O. 9 R: ***Quiz 3;*** Online Class - Climate Change (L.O. 9, 10, 12)	Sections 46.3 4/23 QUIZ 3, Sections 44.5, 46.3
Week 15 4/27 – 4/30	M: Ecology: Climate Change (L.O. 9, 10, 12) R: Ecology: Conservation Biology (L.O. 10 & 12)	Section 44.5 Online readings
Week 16 5/4 – 5/7	M: Disease Ecology & Course Wrap-Up (L.O. 12) R:TBD	Online readings Final Exam during Final Exam Week
FINALS	**FINAL EXAM WEEK: MAY 8-14, 2020**	