

**BIOLOGY 205-021: FOUNDATIONS OF BIOLOGY:
ECOLOGY AND EVOLUTION**

INSTRUCTOR:	Dr. Andrew Mashintonio	EMAIL:	afm8@njit.edu
OFFICE:	337D Central King Bldg.	OFFICE HOURS:	By Appointment Only
COURSE SCHEDULE:	M,T,W,R: 1:00pm-3:15pm	COURSE WEBSITE:	http://moodle.njit.edu
COURSE LOCATION:	CKB 317		

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.

COURSE OBJECTIVES:

Students are able to:

1. Design an experiment and use statistics to test whether there is a significant different 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 205).

REQUIRED MATERIALS:

- ⊗ CP NJIT BIO How Life Works & LP Access Card. ISBN: 1-4641-7316-8.
- ⊗ An [i>Clicker \(II or Plus\)](#) is required for this course.

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GRADING POLICY & SCALE: Grades will be determined by performance on exams and class participation. There will be five scheduled “mini exams”. The lowest exams will be dropped. Each exam is worth 100 points.

Assignments	Points
Class participation (iClickers, online quizzes, 2-minute essays)	50 points
Mini-Exams (Top Four Mini-Exam Grades)	400 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	65 – 75
D	225 – 292.5	50 – 65
F	0 – 225	0 - 50

PARTICIPATION POINTS: Participation is worth 50 out of 450 points. Participation points are earned by answering iClicker questions (some must be answered correctly, but not all), online Moodle assignments, and by completing in-class assignments. To determine how many participation points you have, first figure out the total number of in-class participation 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 points were made available and you earned 125 of them, then you have 41.7 of the possible 50 in your final grade; $(125/150) * 50 = 41.7$ participation points.

MAKE UP EXAMS AND QUIZZES: *There are no make-up quizzes. Because the lowest of the five exam grades is dropped, if you miss a quiz, it will count as your 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](#). The Rutgers academic integrity policy can be found [here](#). This code will be enforced in this course. The course has a zero tolerance policy for academic dishonesty, including plagiarism and cheating. Instances of dishonesty will be punished by a zero on the assignment and consultation with the Academic Integrity Officers to determine if further action is required. If you have any questions about what constitutes plagiarism or cheating, please ask your instructors or refer to the academic integrity websites for Rutgers and NJIT:

MOODLE: We will be using Moodle for our class website (<https://moodle.njit.edu>). If you are a Rutgers 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 http://moodle.njit.edu/rutgers_students.php. 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.

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COURSE OUTLINE: **TENTATIVE** Schedule of topics

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 AND/OR ASSIGNMENT
Week 1 7/4 – 7/8	M: School Closed T: Course Overview, Importance of ecology and evolution, Pre-Test, Scientific Method W: Scientific method, statistics, and mini genetics review R: Origin and maintenance of genetic variation & population genetics; Hardy-Weinberg Equilibrium **First day of class is 7/5**	T: Chapter 1 W: Statistics Primer (On Moodle); Genetics Primer (On Moodle) R: Sections 21.1 – 21.3
Week 2 7/11 – 7/15	M: Mini Exam 1; Natural Selection T: Mechanisms of Evolution W: Mechanisms of Evolution R: Speciation	M: Section 21.4 & Case Study 4 (in book) T: Section 21.4, 21.5 W: Sections 21.6, 45.6 & 45.7 R: Chapter 22
ONLINE ASSIGNMENT #1 DUE THURSDAY 7/14 by 11:59 PM		
Week 3 7/18 – 7/22	M: Mini Exam 2; Speciation T: Phylogenetics W: Phylogenetics R: History of Life on Earth	M: T: Chapter 23.1 – 23.2 W: R: Sections 23.3 – 23.4
ONLINE ASSIGNMENT #2 DUE THURSDAY 7/21 by 11:59 PM		
Week 4 7/25 – 7/29	M: Mini Exam 3; Human Evolution T: Human Evolution W: Human Evolution & Population Ecology R: Population Ecology	M: Section 24.1 – 24.2 T: Sections 24.3 – 24.5 W: Sections 46.1 – 46.2 R: Section 45.3
ONLINE ASSIGNMENT #3 DUE THURSDAY 7/28 by 11:59 PM		
Week 5 8/1 – 8/5	M: Mini Exam 4; Community Ecology T: Community Ecology & Ecosystems W: Ecosystems & Global Climate Change R: Conservation Biology	M: Sections 47.1 – 47.4 T: Sections 47.5 – 47.6; Chapter 25 W: Sections 48.1 – 48.3 R: Sections 48.4 – 48.5
ONLINE ASSIGNMENT #4 DUE THURSDAY 8/4 by 11:59 PM		
Week 6 8/8	M: Mini Exam 5	
FINAL	FINAL EXAM: AUGUST 8, 2016	