

**BIOLOGY 205-003: FOUNDATIONS OF BIOLOGY:
ECOLOGY AND EVOLUTION**

INSTRUCTOR:	Dr. Ellen Wisner	PHONE:	973-642-4975
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OFFICE HOURS:	W, R: 1:00pm - 2:30pm	COURSE TWITTER:	@EMWisner, #BIOL205
COURSE SCHEDULE:	T, R: 10:00 - 11:25AM; GITC 1100	COURSE WEBSITE:	http://moodle.njit.edu/

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 OUTCOMES:

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) ■ **COREQUISITE:** Foundations of Ecology and Evolution Lab (BIOL 206)

REQUIRED MATERIALS: An iClicker & CP NJIT BIO How Life Works & LP Access Card; ISBN: 1-4641-7316-8.

GRADING POLICY & SCALE: Grades will be determined by performance on exams, quizzes, and class participation. There will be three exams, the first two exams will be worth 100 points each, and the final exam will be worth 150 points. There will be three in-class quizzes that will be worth 25 points each and the lowest quiz grade will be dropped.

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Assignments	Points
Quizzes (25 pts each)	50 points
Class Participation (iClickers, online quizzes, 2- minute essays)	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	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 mini-essay 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. NOTE: There will be 3 to 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. I will post the grades for participation points three times during the year on: 10/7, 11/6, and 12/11. Each time I post them I will give you 5 extra points, allowing you to miss up to 3 classes (for excused or unexcused reasons) without losing any points.

MAKE UP EXAMS AND QUIZZES: Make up exams will be possible only with a doctor's or a dean's letter or with prior approval. If you have a serious reason for missing an exam, you must talk to me BEFORE the scheduled exam period to notify me that you cannot take the exam. You are then responsible for arranging with me to make up the test within two days. **There are no make-up quizzes. 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: <http://www.njit.edu/academics/pdf/academic-integrity-code.pdf>. This code will be enforced in this course. If you have any questions about this policy, please come and talk to me about it.

MOODLE: We will be using Moodle for our class website (<http://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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TENTATIVE 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	TOPICS	READING AND/OR ASSIGNMENT
Week 1 9/1 – 9/5	Course overview, pretest, importance of ecology and evolution, and the scientific method	Syllabus and Chapter 1
Week 2 9/8 – 9/12	Statistics, The Properties of Life, Mini-genetics Review and Genetic Variation	Case Study #1; Statistics Primer (On Moodle), Online Genetics Primer
Week 3 9/15 – 9/19	Population Genetics & Hardy-Weinberg	Section 21.1 – 21.3 9/18 Quiz 1
Week 4 9/22 – 9/26	Natural Selection & Genetic Drift	Sections 21.3 -21.5
Week 5 9/29 – 10/3	Mechanisms of Evolution: Gene Flow, Sexual Selection & Mutation	Section 21.6; Section 45.7 10/2 EXAM 1
Week 6 10/6 – 10/10	Speciation	Chapter 22; Case Study #4
Week 7 10/13 – 10/17	Phylogenetics & History of Life on Earth	Chapter 23
Week 8 10/20 – 10/24	Diversity of Bacteria & Microbiome	Case 5, Section 26.1 10/21 Quiz 2
Week 9 10/27 – 10/31	Human Evolution	Chapter 24
Week 10 11/3 – 11/7	Animal Behavior	Chapter 45 11/4 EXAM 2
Week 11 11/10 – 11/14	Population Ecology and Species Interactions	Chapter 46; Sections 47.2 & 47.3
Week 12 11/17 – 11/21	Community Ecology and Ecosystems	Sections 47.1 & 47.6 & Chapter 25 11/18 Quiz 3
Week 13 11/24 – 11/28	Global Climate Change; THANKSGIVING BREAK: NO CLASS ON 27 th	Online reading and 48.1 – 48.3
Week 14 12/1 – 12/5	Conservation Biology & Disease Ecology	Chapter 48.4 - 48.5 and Online Reading
Week 15 12/8 – 12/12	Wrap-up/Review ** Last day of class is 12/9	Online Reading
FINALS	FINAL EXAM WEEK: DECEMBER 15-19, 2014	