

New Jersey Institute of Technology
BIOL205 Foundations of Biology: Ecology and Evolution

Instructor: Dr. Ellen Wisner

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Course Website: <http://moodle.njit.edu>

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Class Meeting Times: Monday, Tuesday, Wednesday and Thursday 12:00 – 2:15pm

Class Meeting Location: Kupfrian Hall Room 208

Office Hours: By Appointment

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.

Prerequisite: Concepts in Biology (BIOL 200)

Corequisite: Foundations of Ecology and Evolution Laboratory (BIOL 205)

Required Materials: iClicker & Text Book: CP NJIT BIO How Life Works & LP Access Card.
ISBN: 1-4641-7316-8

TENTATIVE Schedule of topics

DATE	MEETING TOPIC	NOTES/READING ASSIGNMENTS/EXAMS
M – 7/6	Course Overview, Importance of ecology and evolution, Pre-Test, Scientific Method	Chapter 1
T – 7/7	Scientific method, statistics, and mini genetics review	Statistics Primer (On Moodle); Genetics Primer (On Moodle)
W – 7/8	Origin and maintenance of genetic variation & population genetics; Hardy-Weinberg Equilibrium	Sections 21.1 – 21.3
R – 7/9	MINI-EXAM 1; Natural Selection	Section 21.4 & Case Study 4 (in book)
ONLINE ASSIGNMENT #1 DUE SUNDAY 7/12 by 11:59pm		
M – 7/13	Mechanisms of Evolution	Section 21.4, 21.5
T – 7/14	Mechanisms of Evolution	Sections 21.6, 45.6 & 45.7
W – 7/15	Speciation	Chapter 22
R – 7/16	MINI-EXAM 2; Speciation	
ONLINE ASSIGNMENT #2 DUE SUNDAY 7/19 by 11:59pm		
M – 7/20	Phylogenetics	Chapter 23.1 – 23.2
T – 7/21	Phylogenetics	
W – 7/22	History of Life on Earth	Sections 23.3 – 23.4
R – 7/23	MINI-EXAM 3; Human Evolution	Section 24.1 – 24.2
ONLINE ASSIGNMENT #3 DUE SUNDAY 7/26 by 11:59pm		
M – 7/27	Human Evolution	Sections 24.3 – 24.5
T – 7/28	Human Evolution & Population Ecology	Sections 46.1 – 46.2
W – 7/29	Population Ecology	Section 45.3
R – 7/30	MINI-EXAM 4; Community Ecology	Sections 47.1 – 47.4
ONLINE ASSIGNMENT #4 DUE SUNDAY 8/2 by 11:59pm		
M – 8/3	Community Ecology & Ecosystems	Sections 47.5 – 47.6; Chapter 25
T – 8/4	Ecosystems & Global Climate Change	Sections 48.1 – 48.3
W – 8/5	Conservation Biology	Sections 48.4 – 48.5
R – 8/6	MINI-EXAM 5	

Grading Policy: Grades will be determined by performance on exams and participation. There are five scheduled “mini-exams”. Your lowest exam grade will be dropped. Each exam is worth 100 points

Grades	Points
Mini-Exams (Top Four Mini-Exam Grades)	400
Class participation (iClickers, online quizzes, and in-class work)	50
Total	450

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. I will calculate this participation by adding up all of the possible participation points, figuring out what proportion you have earned, and then multiplying that proportion by 50.

Make up exams: Because the lowest of the five exam grades is dropped, there are no makeup exams. Any missed exam will count as the dropped exam.

Academic Dishonesty: 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:

- ✓ <http://academicintegrity.rutgers.edu/academic-integrity-at-rutgers>
- ✓ <http://studentconduct.rutgers.edu/>
- ✓ <http://www.njit.edu/academics/integrity.php>

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.