Introduction to the Course
This course on Ecology is designed for those students enrolled in the Biology Major or Environmental Studies Program. Throughout this semester we will explore the topics of ecological processes that shape the distribution and abundance of organisms.

Pre-requisites
Any of the following satisfy the pre-requisite requirements for this course: BIOL 16a (Evolution and Biodiversity), BIOL 60b (Evolution), a score of 5 on the AP Biology Exam, or permission of the instructor. If you do not meet any of these requirements please contact me immediately.

Office Hours: Mondays 10:00 – 11:45 am; additional times available by appointment.

Course Goals and Learning Objectives:

Knowledge: Students will know the basic principles of ecology and understand how these principles shape the distribution and abundance of organisms.

By the end of the semester, students will be able to:
- Explain the importance of Variation in ecology (such as variation among individuals, populations, communities, and ecological processes).
- Evaluate how history influences the current composition and functioning of ecosystems.
- Explain how organisms interact and are both dependent and independent of one another.
- Describe and explain how community composition and ecosystem function relate.
- Apply the power of Natural Selection (and other mechanisms of evolution) to interpret the natural world.
- Apply ecological concepts in different ecosystem settings and at different scales.
- Evaluate the impact of both climate change and biodiversity shifts on ecological relationships.

Skills: A successful student in this course will understand how ecologists make observations, apply the scientific method and evaluate research. (That is, think like an ecologist.)

By the end of the semester, a successful student will:
- Demonstrate a mastery of ecological language.
- Be able to make observations about the natural world.
- Apply taxonomic identification tools to distinguish among species.
- Translate observations into interesting ecological questions.
- Employ ecological language to communicate scientific ideas to an audience of their peers.
- Employ the scientific method and distinguish between a hypothesis and a theory.
- Critically analyze scientific information.

Major Topics

Adaptation & Natural Selection: How does evolution shape the morphology, physiology, and behavior of organisms?
Biogeography & History: Why do species only occur in some of the habitats where they can live?
Populations: How and why do populations (and gene frequencies) grow and decline?
Communities: How do organisms interact with each other? How are communities assembled? How do they function?
Ecosystems: How do energy and matter flow through ecosystems?
Behavioral Ecology: What behaviors help animals adapt to their environments?
Humans & Ecology: How do humans depend on healthy ecosystems and how are we changing these ecosystems?
Readings:
Robert E. Ricklefs and Rick Relyea
(On reserve in the library, available in the bookstore, available as e-book (much cheaper) previous edition ok if student willing to proactively align readings.)

Additional readings:
Articles from the primary literature, book chapters, reports from governmental and non-governmental agencies and other readings will be posted on LATTE. Reading assignments will (generally) be moderate. It is assumed that you have done the assigned reading carefully before coming to class, as we will typically discuss themes from the reading during class.

Communication, Technology and Active Engagement:
We will make use of LATTE, check this frequently to catch course updates. Email will typically yield the quickest response. As a student in this course, you will be expected to be an active participant in the learning community. The overall success of the course is dependent on your commitment to the material and fellow classmates. This means that attendance and completing the readings or other assignments prior to class are essential to an active discussion and essential to your success on the quizzes and exams.

Electronic Device Policy: You may not use your computer or other electronic devices during class, except for designated work periods. Just as it is not appropriate to talk on your phone during class, it is not appropriate to text, surf the web or use apps. I request that you turn off electronic devices while in the room. It is distracting to both me and other students in the course and will impede your performance on in-class activities. I will ask you to set these devices aside as needed.

Accommodation:
If you are a student who needs academic accommodations because of a documented disability on record at Brandeis, please contact me. Letters of accommodation should be presented at the start of the semester to ensure provision of accommodations. Accommodations cannot be granted retroactively.

Academic Integrity:
You are expected to be familiar with, and to follow, the University's policies on academic integrity. Please consult Brandeis University Rights and Responsibilities for all policies and procedures. All policies related to academic integrity apply to in-class and take-home work, assignments, exams and quizzes. Students may only collaborate on assignments with permission from the instructor. Allegations of alleged academic dishonesty will be forwarded to the Director of Academic Integrity. Sanctions for academic dishonesty can include failing grades and/or suspension from the University.

Grading Policies:
I assume that you will be in class, prepared (having done whatever reading or homework was due for that day), and take part in classroom discussions. Repeated absence from class, lack of preparation, or missing pre- and post-class submissions will show up in the participation portion of your grade. Some graded assignments will be announced in advance and some will not. Please talk to me if you are having trouble getting to class or preparing for class – I want you to get the most from the class that you can.

Your grade will be determined as follows:

<table>
<thead>
<tr>
<th>Component</th>
<th>Weight (%)</th>
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</thead>
<tbody>
<tr>
<td>Midterm 1</td>
<td>15</td>
</tr>
<tr>
<td>Midterm 2 (cumulative from start of course)</td>
<td>25</td>
</tr>
<tr>
<td>Final Exam (cumulative from start of course)</td>
<td>30</td>
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<tr>
<td>Graded assignments (homework, some in-class activities, quizzes, etc.)</td>
<td>20</td>
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<td>Additional credit/no-credit assignments</td>
<td>5</td>
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<tr>
<td>Participation</td>
<td>5</td>
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<tr>
<td><strong>Total</strong></td>
<td><strong>100</strong></td>
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Types of Assignments:

Reading Assignments
These will usually be moderate, although sometimes they will be heavier. I would much rather have you read a moderate amount carefully than a large amount poorly. I reserve the right to have additional pre-class surveys due, pop quizzes or short in-class writings if that seems necessary to help people prepare well.

Exams (In-Class)
We will have three in-class exams. Each exam will be cumulative up to that point in the semester and will consist of short-answer and multiple-choice questions.

Quizzes (In-Class)
We will have several short quizzes in class; these will typically be closed-book, and will consist mostly of short-answer, multiple-choice, and word-matching questions. They are intended to assess your understanding of the vocabulary and concepts of ecology.

Homework Assignments
Several times throughout the semester you will have homework assignments (there will be up to about five or six of these). These will not be brutally difficult, ten-hour-long problem sets, but you will have to put concentrated effort into these assignments. While it is easy to glance at an equation, graph, or model and think you understand it, really exploring such materials can greatly increase your understanding. These assignments will help you prepare for the exams, and can help you recognize if you need help on any of the material in particular.

Additional Credit/No-Credit Assignments
Over the course of the semester there will be a small number of credit/no-credit assignments, such as a short sample test, an initial questionnaire, and possibly others. You will receive full credit on these for good-faith efforts, as they will help you (and the staff) throughout the class.

Course Schedule:
A tentative course schedule can be found online in Latte and will be solidified at the end of week 1 when our course population has stabilize.