

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

<b>INSTRUCTOR:</b>	Dr. Caroline DeVan	<b>EMAIL:</b>	<a href="mailto:caroline.m.devan@njit.edu">caroline.m.devan@njit.edu</a>
<b>OFFICE:</b>	340D Central King Bldg.	<b>VIRTUAL OFFICE HOURS:</b>	M: 10:30AM- 12:00PM F: 1:00pm – 2:30PM
<b>COURSE SCHEDULE:</b>	M & R: 2:30 PM - 3:50PM	<b>COURSE WEBSITE:</b>	<a href="https://canvas.njit.edu/">https://canvas.njit.edu/</a>
<b>COURSE LOCATION:</b>	CTR ATRIUM & Canvas WebEx	<b>OFFICE PHONE:</b>	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 use 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 **iClicker (II or Plus)** is required for this course.

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I use iClickers to determine participation and attendance for every synchronous class (see Course Assessments below). In order to be able to participate both remotely or in-person, the **iClicker REEF** app is required for this course: <http://iclicker2.wpengine.com/students/apps-and-remotes/apps>.

**GRADING POLICY & SCALE:** Grades will be determined by the percentage of the total possible points earned, following the standard grade scale to the right. Grades are not curved. No individual extra credit opportunities will be available, but an extra credit assignment may be available for the whole class. Your grade for this course will be based on the components in the table below. You can choose some aspects of how your grade is calculated by determining the weight of each component as a percentage of your total semester grade, within the given ranges. Your final grade will be the highest of the two possible grades: the grade that results from your selected weight (your %) or the one resulting from the standard weight (standard %). You will select your % in the middle of the semester (by

Wednesday March 24). Standard calculations for each assessment are described below and will be posted to Canvas so you can keep track of your progress in the course.

Letter Grade	Percentage
A	90 – 100
B+	85 – 90
B	80 – 85
C+	75 – 80
C	70 – 75
D	60 – 70
F	0 – 60

Grades	% Range	Standard %	Your %
<i>Participation &amp; In-Class Group Work (15 pts)</i>	N/A	3%	N/A
<i>Learning Journals (10 pts) – 10 required, 1 pt each</i>	N/A	2%	N/A
<i>Homework (50 pts) – 10 assignments, 5 pts each</i>	9-11%	10%	
<i>Quizzes (50 pts) – 10 quizzes, 5 pts each</i>	9-11%	10%	
<i>Exams (150 pts) – 3 exams, 50 pts each</i>	25-35%	30%	
<i>Final Exam (100 pts) - Cumulative</i>	18-22%	20%	
<i>Focal Organism Project (125 pts) - individual &amp; group work</i>	20-30%	25%	
<b><i>Total (500 pts)</i></b>	<b><i>100%</i></b>	<b><i>100%</i></b>	<b><i>100%</i></b>

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### **MODES OF ASSESSMENT:**

**Participation.** Participation points are earned during class by answering iClicker questions (some must be answered correctly, but not all), completing in-class assignments, and participation in class discussions. There will be 3-7 iClicker questions per synchronous lecture. If you gain 80% of the available clicker points you will receive full credit (15 points). This cut-off will compensate for ~3 missed classes or should you experience technological issues.

**Learning Journals.** You will complete 10 learning journal assignments (1 point each), approximately 1 per week. These journals will give you an opportunity to assess your learning and improve your meta-cognition skills. You will submit your notes as well as answer a prompt each week.

**Homework.** Assignment points are earned by completing online Canvas assignments. These homework assignments will generally be preparing you for in-class work or your Focal Organism Project. There will be 10 assignments (5 points each), approximately 1 per week, due by noon on Thursdays.

**Quizzes.** You will complete 10 in-class quizzes (5 points each), approximately 1 per week. These quizzes will usually be on Thursdays except for weeks when you had an exam (and the last week of class). These quizzes will be administered through Canvas for the first 20 minutes of class. They will be based on the previous week's material, including any required reading, and watching (videos).

**Exams.** There will be three exams during the semester, each worth 50 points. Each exam will primarily focus on a specific unit of material, but each consecutive exam will build on knowledge from previous units. The final exam will be worth 100 points and will be during the final exam period. All exams will be administered online using Canvas and will be open-notes, open-book and will use primary scientific literature which will be provided to you in advance. Further details about exams will be communicated with you in advance in class and through emails. Details will also be posted to Canvas.

**Focal Organism Project.** Early in the semester you will choose a focal organism. Throughout the first half of the semester, you will complete assignments that will require you to do some research on your focal organism and share it with your classmates. These assignments will culminate in a final project that considers the effects of climate change on your species and its ecosystem. This project will consist of an individual blog post (50 pts) and a group presentation (35 pts). You will have the opportunity to give and receive feedback on your blog post (15 pts) and presentation (10 pts) and you will also complete a self and group evaluation (15 pts). Further details about the project will be communicated with you in advance in class and through emails. Details will also be posted to Canvas.

**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.

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**TECHNOLOGY POLICY:** Cell phones and computers are allowed in the classroom to facilitate note-taking and for use with clickers but all ringtones should be silenced. Online you are expected mute yourself unless you are asking a question or participating in a class discussion. You are not required to turn on your webcam, but you are encouraged to do so at appropriate points (e.g., in break-out rooms, during class discussion). Everyone should refrain from using your devices for non-class related purposes. If they become a distraction you will be asked to put them away. To minimize distractions, I recommend turning off all notifications or using airplane mode while in class. If you must answer a phone call, step outside the classroom or mute yourself *before* answering.

**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.

### Student Services and Inclusion Statement

**NJIT Non-discrimination Policy** New Jersey Institute of Technology reaffirms its commitment to a policy of non-discrimination on the basis of race, sex, sexual orientation, age, religion, ethnic origin, handicap or veterans' status in its employment policies, educational programs and activities under university control.

***In this course, each person in the class is an integral part of the course and has something of value to contribute. I strive to promote an inclusive environment in my class, and I expect all participants in the class to be respectful of others' perspectives and opinions whenever engaging in the course.***

***Mental, emotional and physical health can have a large impact on learning and so I also strongly encourage students to utilize all campus resources as needed. I am here to help facilitate your learning and so please let me know about course concerns as soon as possible so I can help resolve them.***

Please see the last page of this syllabus for student support services available at NJIT.

### Communication with instructor

**"In-person" communication during class and office hours and Canvas message app are the preferred forms of communication.** If you do talk to me before/during/after class asking me to do a task, please send a follow-up email through the Canvas message app. You can email me directly as well, but I may respond more slowly. When emailing me through the Canvas app or directly please indicate your full name and the course you are in as part of the email subject line. I will be checking the Canvas messaging app and my email regularly throughout the work week during normal business hours. Outside of these times I will respond to messages and emails as soon as possible, but do not expect an immediate reply.

**Office hours:** Office hours are open times when you can discuss with me any questions or concerns you have about the course or course material. Office hours will be held each week at the regularly scheduled times via WebEx – use the CISCO WebEx link on the left-hand menu of our course website and then look for Office Hours to make an individual 30-minute appointment. These appointments allow for student privacy, but if multiple students want to meet as a group for the same appointment this can be accommodated. Some weeks additional slots will open in the Office Hours link, but if none of the available times work for you, you are encouraged to set up an appointment.

**Appointments:** I am always happy to make an appointment with a student. Ideally appointments should be made in advance. To schedule an appointment, you should message me through the Canvas app – be sure to include your name, the class you are in, and the times you are available to meet in your message. All appointments will be made through WebEx.

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**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**

**COVID-19 SAFETY REQUIREMENTS:** All persons physically present in any biology department facility or NJIT classroom shall comply fully with the NJIT COVID-19 safety policy at all times. Masks must be worn before entry to all departmental facilities or classrooms and social distancing guidelines must be followed. Individuals who are unable to wear a face masks due to medical reasons should contact the Office of Disability Services or Human Resources. Students who enter a classroom without wearing a mask properly, or remove their mask, will be cautioned by the instructor. The same is true for students who disregard the seating order or guidelines for social distancing. Students with obvious symptoms of respiratory illness should not come to campus and will be asked to leave. Students who do not comply with a request by a department instructor to adjust their behavior, in accordance with the University Policy, will be subject to disciplinary actions. Instructors have the right to expel the student or terminate the class session at which any student fails to comply with the University Policy. Please see NJIT's Pandemic Recovery Plan for more information and updates: <https://www.njit.edu/pandemicrecovery/>.

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**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.

\*\* HW due Thursdays by noon; in-class quizzes every Thursday (except Quiz 10 which will be on Monday); no quizzes during weeks with an exam.

\*\*\* Final Exam will be during the final exam period which is May 7-13. Do not make travel plans until the final exam schedule is posted. The final exam schedule will be posted here: <http://www.njit.edu/registrar/exams/>

**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 #	DATE	MEETING TOPIC & LEARNING OUTCOMES*	ASSIGNMENTS**
1	R – 1/21	Course & Content Introduction (L.O. 12)	Pretest
2	M – 1/25	What is Life? Global Patterns of Biodiversity (L.O. 2, 10, 11)	HW 1
	R – 1/28	Global Climate Change; Scientific Method (L.O. 1 & 2); Quiz 1	
3	M – 2/1	Ecology: Intro to Populations (L.O. 6)	HW 2
	R – 2/4	Ecology: Populations - Growth & Dynamics (L.O. 6); Quiz 2	
4	M – 2/8	Ecology: Communities I (Interactions) (L.O. 7 & 8)	HW 3
	R – 2/11	Ecology: Biogeography, Succession & Disturbance (L.O. 7, 8, 11); Quiz 3	
5	M – 2/15	Ecology: Ecosystems (L.O. 8)	Focal Organism Blog Draft Due
	R – 2/18	Ecology: Biogeochemical Cycling (L.O. 9); Quiz 4	
6	M – 2/22	Exam 1	HW 4
	R – 2/25	Ecology: Climate Change & Conservation Biology (L.O. 9, 10, 12)	
7	M – 3/1	Evolution: History of Life, Human Evolution (L.O. 5, 12)	Focal Organism Blog Peer Reviews Due
	R – 3/4	Intro to Evo & Population Genetics (L.O. 1 - 3); Quiz 5	
8	M – 3/8	Evolution: Variation, Mutation & Selection I (L.O. 2 & 3)	Focal Organism Group Presentation Due
	R – 3/11	Focal Organism Presentations	

9	M – 3/15 R – 3/18	<b>SPRING BREAK! NO CLASS!</b>	
10	M – 3/22	<b>Evolution: Selection II (L.O. 3)</b>	<b>Presentation Reviews Due HW 5</b>
	R – 3/25	<b>Evolution: Sexual Selection (L.O. 3); Quiz 6</b>	
11	M – 3/29	<b>Review of Evolution, Adaptations (L.O. 2 &amp; 3)</b>	<b>HW 6</b>
	R – 4/1	<b>Life History &amp; Population Demographics (L.O. 6 &amp; 11); Quiz 7</b>	
12	M – 4/5	<b>Exam 2</b>	<b>HW 7</b>
	R – 4/8	<b>Evolution: Genetic Drift &amp; Gene Flow (L.O. 2 &amp; 3)</b>	
13	M – 4/12	<b>Evolution: Species &amp; Speciation I (L.O. 3)</b>	<b>HW 8</b>
	R – 4/15	<b>Evolution: Speciation II (L.O. 3); Quiz 8</b>	
14	M – 4/19	<b>Evolution: Phylogeny I (L.O. 4)</b>	<b>HW 9</b>
	R – 4/22	<b>Evolution: Phylogeny II (L.O. 4); Quiz 9</b>	
15	M – 4/26	<b>Exam 3</b>	<b>HW 10</b>
	R – 4/29	<b>Evolution: Coevolution &amp; Human Evolution (L.O. 3, 4 &amp; 12)</b>	
16	M – 5/3	<b>Biology of Disease (L.O. 12); Quiz 10</b>	
	5/7 to 5/13	<b>Cumulative Final Exam ***</b>	

**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.

**Converged Instructional Delivery Mode:** This course will include some students physically in the classroom and some attending remotely. If you will be attending in person (i.e., physically in the classroom), you must indicate that using the Back2Classroom app: <https://back2classroom.njit.edu> and follow the safety requirements below. If you are attending remotely, use the CISCO WebEx link on the left-hand menu of our course website. Regardless of which way you attend, the class will be held synchronously meaning everyone is expected to attend class either in person or remotely during the scheduled class period. Please see my attendance policy below.

**Academic Dishonesty Policy:** There is ZERO tolerance for academic dishonesty in this course which includes both cheating and plagiarism. The punishment for dishonesty in this course will be a zero on the assignment and a consultation with the Dean of Students after which further action may be required. Please ask us if you have any questions. You should also read NJIT's Academic Integrity Code: <https://www.njit.edu/doss/policies/conductcode/index.php>

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Your classroom as well as your college experience is meant to be a place where the free flow of ideas is encouraged and nurtured. It is not acceptable for any community member to make hurtful and demeaning remarks, or otherwise disrupt your learning experiences or your safety.

As such, there are many NJIT support systems and policies of which you should be aware.

<p style="text-align: center;"><b>Basic Needs</b></p> <p>Students who face challenges securing their food or a safe and stable place to stay are urged to contact the Dean of Students (doss@njit.edu). If you are comfortable doing so, please notify me as well.</p> <p><u>Food Insecurity:</u> If you are experiencing food insecurity, there is a food pantry on campus for your convenience (You must bring your UCID). Campus Center, Room 478 See: <a href="https://www.njit.edu/foodpantry/">https://www.njit.edu/foodpantry/</a> for more information.</p> <p style="text-align: center;"><b>Student Parents</b></p> <p>If circumstances arise that necessitate your absence from class - such as the illness of a child, closing of day care for inclement weather, etc. - please contact me as soon as possible so we may make arrangements to keep you up-to-date with course material and activities. If you should need any other kind of assistance for circumstances relating to your status as a student and parent, please consider contacting the Dean of Students and Campus Life at 973.596.3466 for a referral to appropriate services including on and off campus support.</p>	<p style="text-align: center;"><b>Emergency Support</b></p> <p><u>Crises Happen:</u> If you experience a life emergency and are unsure which support services to turn to, NJIT Public Safety can connect you to emergency support systems - call 973.596.3111.</p> <p>For medical, psychological or psychiatric emergencies you can also call: University Hospital Crisis 973.623.2323</p> <p>If you want to report a concern about another students' well-being you can also reach out to the NJIT CARE Team (<a href="https://www.njit.edu/care/">https://www.njit.edu/care/</a>) or the Dean of Students Office.</p> <p style="text-align: center;"><b>Consensual, Healthy Personal &amp; Professional Relationships</b></p> <p>Your body is your own and NJIT strives to protect its community members from any unwanted advances. Title IX prohibits discrimination based on sex, including harassment, domestic and dating violence, sexual assault, and stalking. Sexual violence undermines students' academic success. Anyone dealing with sexual misconduct should consider talking to someone about their experience, so he/she/they can get the support needed.</p> <p><b>Confidential Resource:</b></p> <ul style="list-style-type: none"> <li>● <a href="#">Center for Counseling and Psychological Services (C-CAPS)</a> Campbell Hall, Room 205 (Main Level)   973.596.3414</li> </ul> <p><b>Non-Confidential Resources:</b></p> <ul style="list-style-type: none"> <li>● <a href="#">NJIT Public Safety</a> 973.596.3111</li> <li>● <a href="#">Dean of Students Office</a>, 255 Campus Center   973.596.3466</li> </ul>	<p style="text-align: center;"><b>Mental Health and Stress Management</b></p> <p>Center for Counseling and Psychological Services (C-CAPS) is committed to advancing the mental health and wellbeing of its students. If you or someone you know is feeling overwhelmed, depressed, and/or in need of support, services are available. <a href="https://www.njit.edu/counseling/gethelp">https://www.njit.edu/counseling/gethelp</a></p> <p>Diminished mental health, including significant stress, mood changes, excessive worry, or problems with eating and/or sleeping can interfere with optimal academic performance. The source of symptoms might be related to your course work; if so, please speak with me. However, problems with relationships, family worries, loss, or a personal struggle or crisis can also contribute to decreased academic performance. Please seek out help as needed.</p> <p style="text-align: center;">Campbell Hall, Room 205 (Main Level)   973.596.3414</p> <p style="text-align: center;"><b>Special Accommodations</b></p> <p>If you have a disability or a personal circumstance that will affect your learning in this course, please let me know as soon as possible so that we can discuss the best ways to meet your needs. Any student who needs accommodation for disabilities should also contact the Office of Accessibility Resources and Services (OARS): <a href="https://www.njit.edu/studentssuccess/accessibility">https://www.njit.edu/studentssuccess/accessibility</a></p> <p style="text-align: center;">Kupfrian Hall, Room 201973.596.5417   <a href="mailto:oars@njit.edu">oars@njit.edu</a></p> <p style="text-align: center;"><b>Religious/Cultural Observance</b></p> <p>Students who have religious or cultural observances that coincide with this class should let me know by email within the first two weeks of class. I strongly encourage you to honor your cultural and religious holidays! However, if I do not hear from you within the first two weeks, I will assume that you plan to attend all class meetings.</p> <p style="text-align: center;"><b>Supporting Academic Integrity</b></p> <p>Our community functions best when its members treat one another with honesty, fairness, respect, and trust. The college promotes the assumption of personal responsibility and integrity and prohibits all forms of academic dishonesty and misconduct.</p> <p style="text-align: center;"><b>Issues of Concern (Non-Emergency)</b></p>
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		Alert the Dean of Students Office (doss@njit.edu) about issues of concern, including academic and non-academic violations ( Life Office to issues of concern ( Life Office to issues of concern ( <a href="https://www5.njit.edu/doss/reporting/">https://www5.njit.edu/doss/reporting/</a> )).
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