

Fall 2020

BIOL 205-001: Foundations of Biology: Ecology & Evolution I

Caroline Devan

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Devan, Caroline, "BIOL 205-001: Foundations of Biology: Ecology & Evolution I" (2020). *Biology Syllabi*. 66.
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Biology 205: Foundations of Biology - Ecology and Evolution, FALL 2020, Section 001

Lectures: Monday & Wednesday – 9:00am – 10:20am; NJIT CKB G08 & ONLINE via WebEx

Pre-requisite: Concepts of Biology (BIOLOGY 200)

Co-requisite: Foundations of Ecology and Evolution Laboratory (BIOLOGY 206)

Instructor: Dr. Caroline DeVan (Preferred pronouns: She/Her/Hers)

Email: caroline.m.devan@njit.edu,

Office phone: 973-596-5404 (if Bio Office is closed, dial 5404 from courtesy phone by elevator)

Office: NJIT CKB 340F - in the NJIT Biology Office suite

Office Hours: Thursday 10:00am – 1:00pm; and by appointment

Emergency Phone: 973-596-3111 – Public Safety (Non-emergency: 973-596-3120)

Course Description: *Why should you want to study Ecology and Evolution?* Ecology and evolutionary biology are fundamental to our understanding of 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 and ecology affect our everyday lives.

Course Goal: Students will understand how the major principles of Ecology and Evolution determine the functioning of all life on earth.

Course-Level Learning Outcomes:

By the end of this course, 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 how 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.

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.

Required Course Materials:

Textbook: 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.

iClicker: An iClicker is required for this course. 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>.

Website: <http://canvas.njit.edu/>, login with your NJIT UCID. **Canvas will automatically assign your email as your NJIT e-mail address and this will be where all messages sent through Canvas will go.** You can try to change your contact information on Canvas, but you should also make sure you forward your NJIT email to your normal email (directions on Canvas).

Course Policies:

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 mask 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/>.

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>

Technology policy: Cell phones and computers are allowed in class to facilitate note-taking and for use with clickers but all ringtones should be silenced. Please 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 distraction, I recommend turning off all notifications or using airplane mode while in class. If you must answer a phone call, step outside the classroom *before* answering.

Course materials policy: All course materials (including recordings of lectures) are for students' own use only (no sharing or posting anywhere).

Grades and Assessments:

Course Grade: 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.

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

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 % at the end of the semester (by Thursday Dec 10). Note that this does not guarantee that everything will be graded by this date and you will not yet have taken Exam 2.

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.

Modes of Assessment:

Grades	% Range	Standard %	Your %
<i>Exam 1 (100 pts)</i>	<i>22-25%</i>	<i>22.25%</i>	
<i>Exam 2 (100 pts)</i>	<i>22-25%</i>	<i>22.25%</i>	
<i>Focal Organism Project (200 pts)</i>	<i>40-48%</i>	<i>44.5%</i>	
<i>Participation & Assignments (50 pts)</i>	<i>10-12%</i>	<i>11%</i>	<i>N/A</i>
<i>Total (450 pts)</i>	<i>100%</i>	<i>100%</i>	<i>100%</i>

Exams. There will be two exams, each worth 100 points. Each exam will primarily focus on a specific unit of material with Exam 2 building on previous knowledge. 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 in advance. Further details about exams will be communicated with you in advance in class and through emails. Details will also be posted as an announcement on Canvas and will be available on the Course Instruction Plan (link posted to Canvas).

Focal Organism Project. Early in the semester you will be assigned a focal organism. Throughout 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 and presentation that will have both group and individual components. With your group you will create an online resource describing your organisms and you will present your findings to the class through a virtual presentation. Further details about the project will be communicated with you in advance in class and through emails. Details will also be posted as an announcement on Canvas and will be available on the Course Instruction Plan (link posted to Canvas).

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. You will be able to miss up to 3 classes (for any reason – excused or unexcused) without losing participation points.

Assignments. Assignment points are earned by completing online Canvas assignments. These assignments will primarily be preparation for the next week's class and will involve watching videos and/or completing a reading before finishing the assignment. There will be approximately one assignment per week usually made available after class on Monday at 10:30 AM and due the following Sunday by 5PM. The lowest assignment grade per semester will be dropped allowing you to miss one assignment without penalty.

Calculating Participation & Assignment Points: To determine how many participation & assignment points you have, first figure out the total number of in-class participation points that were available and add them to the total online assignments 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 & assignments points were made available and you earned 125 of them, then you have 42 of the possible 50 in your final grade; $(125/150) * 50 = 41.66$ participation points. I will post the grades for participation points three times during the year on: 10/5, 11/11, and 12/10. **Each time I post them I will give you 10 extra points**, allowing you to miss up to 3 classes (for any reason - no excuse necessary) without losing any points. **In addition, the lowest weekly assignment grade will be dropped** and will not be included in your total.

Make up exams: 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.

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.

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. Note: this advice came from students who took the course in-person pre-COVID-19 pandemic.

“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 canvas such as the assignment and homework because it really does help enforce the material and will help you when the exams come around.”

“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.”

“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 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.”

Advice from Dr. DeVan – “When studying for an exam – use the learning objectives and concept maps to organize and frame the material. Think of how the examples from class illustrate the concepts, don't just memorize the examples. You should also test yourself – ask yourself questions about the material and then ask me if you need to!”

For more advice and information on how to best succeed in this course, please see the Canvas section titled “Study Support” where more advice is posted and there are many different resources and tips to increase your learning! You can also talk with me directly. **I am here to help and I am looking forward to working with you!**

The following schedule is tentative and may change, changes will be posted to Canvas.

* The Learning Outcomes (L.O.) refer to the Course-Level Learning Outcomes listed in the syllabus.

** Exam 2 will be during the final exam period which is Dec 15 – 21. 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/>

WEEK #	DATE	MEETING TOPIC & LEARNING OUTCOMES*	READING ASSIGNMENTS
1	W – 9/2	Course & Content Introduction (L.O. 12)	Syllabus, Pretest
2	T – 9/8	(Mon schedule) What is Life? Global Patterns of Biodiversity (L.O. 2, 10, 11)	Chapter 1, Sections 44.3-44.4
	W – 9/9	Global Climate Change; Scientific Method (L.O. 1 & 2)	Sections 44.3-44.4
3	M – 9/14	Intro to Evo & Population Genetics; Intro to Stats (L.O. 1 - 3)	Sections 19.1-19.2
	W – 9/16	Evolution: Variation, Mutation & Selection I (L.O. 2 & 3)	Sections 19.1-19.3
4	M – 9/21	Evolution: Selection II (L.O. 3)	Sections 19.1-19.3
	W – 9/23	Evolution: Sexual Selection (L.O. 2 & 3)	Sections 19.1-19.3
5	M – 9/28	Evolution: Genetic Drift & Gene Flow (L.O. 2 & 3)	Section 19.2
	W – 9/30	Review of Evolution, Adaptations (L.O. 2 & 3)	Section 18.1, Chapter 19
6	M – 10/5	Exam 1	
	W – 10/7	Ecology: Populations – Life History & Demographics (L.O. 3)	Sections 18.1, 45.1-45.3
7	M – 10/12	Ecology: Populations - Growth & Dynamics (L.O. 6)	Sections 45.3-45.5
	W – 10/14	Ecology: Interactions - Competition & Niches (L.O. 7)	Section 45.6
8	M – 10/19	Ecology: Interactions & Coevolution (Mutualism & Predation) (L.O. 7)	Section 45.6
	W – 10/21	Ecology: Communities I (Trophic Cascades) (L.O. 7 & 8)	Section 45.6, 46.1-46.2
9	M – 10/26	Ecology: Biogeography (L.O. 11)	Sections 44.1-44.2, 45.6
	W – 10/28	Ecology: Communities II (Succession & Disturbance) (L.O. 7, 8)	Sections 45.6, Chapter 47
10	M – 11/2	Ecology: Ecosystems (L.O. 8)	Section 44.5
	W – 11/4	Ecology: Biogeochemical Cycling (L.O. 9)	Sections 46.3
11	M – 11/9	Ecology: Climate Change & Conservation Biology (L.O. 9, 10, 12)	Chapter 47
	W – 11/11	Disease Ecology (L.O. 12)	Online readings Individual Project due
12	M – 11/16	Evolution: Speciation I (L.O. 3)	Sections 18.1 – 18.2
	W – 11/18	Evolution: Speciation II (L.O. 3)	Section 18.3
13	M – 11/23	Project Presentations	Group Project due
	W – 11/25	No Class – Friday Schedule – Happy Thanksgiving!	
14	M – 11/30	Evolution: Phylogeny I (L.O. 4)	Chapter 20
	W – 12/2	Evolution: Phylogeny II (L.O. 4)	Chapter 20
15	M – 12/7	Evolution: History of Life (L.O. 5)	Chapter 20
	W – 12/9	Evolution: Human Evolution (L.O. 5)	Chapter 20

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;">Basic Needs</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 Spring 2020 hours: Mondays 2-5pm Tuesdays 11am – 2pm, 4-7pm Wednesdays 9am-7pm Thursdays 9am-5pm or by appointment (foodpantry@njit.edu)</p> <p style="text-align: center;">Student Parents</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;">Emergency Support</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 (https://www.njit.edu/care/) or the Dean of Students Office.</p> <p style="text-align: center;">Consensual, Healthy Personal & Professional Relationships</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>Confidential Resource:</p> <ul style="list-style-type: none"> • Center for Counseling and Psychological Services (C-CAPS) Campbell Hall, Room 205 (Main Level) 973.596.3414 <p>Non-Confidential Resources:</p> <ul style="list-style-type: none"> • NJIT Public Safety 973.596.3111 • Dean of Students Office, 255 Campus Center 973.596.3466 	<p style="text-align: center;">Mental Health and Stress Management</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. https://www.njit.edu/counseling/gethelp</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: right;">Campbell Hall, Room 205 (Main Level) 973.596.3414</p> <hr/> <p style="text-align: center;">Special Accommodations</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): https://www.njit.edu/studentssuccess/accessibility</p> <p style="text-align: right;">Kupfrian Hall, Room 201973.596.5417 oars@njit.edu</p> <hr/> <p style="text-align: center;">Religious/Cultural Observance</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;">Supporting Academic Integrity</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;">Issues of Concern (Non-Emergency)</p> <p>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 (https://www5.njit.edu/doss/reporting/).</p>
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