

Fall 2020

## **BIOL 385-H01: Evolution of Animal Behavior Lab**

Caroline Devan

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**Evolutionary Animal Behavior Laboratory: BIOLOGY 385, FALL 2020**

**Class Meeting Time:** Tuesday – 12:30pm – 4:50pm; synchronously online via CISCO WebEx

**Prerequisites:** Foundations of Ecology and Evolution Lecture and Lab (BIOL 205 & 206)

**Instructor: Dr. Caroline DeVan**

**Email:** [caroline.m.devan@njit.edu](mailto: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 online only)

**Office Hours:** Mon & Wed: 10:30am – 12:00pm; OR by appointment

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

**Course Description:** This is a research based course focused on designing and conducting experiments in animal behavior. Students will gain experience with experimental design, and all labs will be inquiry based with students designing experiments to test hypotheses. Topics in animal behavior that will be explored include: foraging, predator avoidance, animal movement, altruism and human evolution.

**Mode of Instruction:** This course will be held synchronously online. To attend use the CISCO WebEx link on the left-hand menu of our course Canvas page. The class is synchronous meaning everyone is expected to attend class remotely during the scheduled class period. Some labs will have an *optional* face to face component. Please see NJIT's Pandemic Recovery Plan for more information and updates: <https://www.njit.edu/pandemicrecovery/>.

**Course-Level Learning Outcomes:**

By the end of this course, students are able to:

1. Describe and analyze animal behavior using principles of evolutionary biology
2. Use observation and experiments to investigate animal behavior
3. Use quantitative methods to describe and analyze data
4. Locate and evaluate scientific literature
5. Communicate science in both written and oral formats
6. Work in groups to design, conduct and interpret scientific studies

**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/middlestates/sites/middlestates/files/lcms/docs/2012/academic-integrity-code.pdf>

**Required Course Materials:** Research notebook (physical or digital); computer with webcam & a good internet connection. You may also want a head-set to aid in online class discussions. Please contact the Dean's office ASAP if you need a webcam:

<https://www.njit.edu/do/contact.php>. You will also need access to Microsoft Office Suite (or similar) for data analysis. NJIT provides free access to students - <http://ist.njit.edu/software-available-download/>. All readings and materials for the course will be posted to Canvas.

### Grades and Assessments:

**Grading Policy:** Grades will be determined by performance on the assessments found in the table below. More detailed descriptions of each assessment follow the table.

Letter Grade	Percentage
A	90 – 100
B+	85 – 90
B	80 – 85
C+	75 – 80
C	65 – 75
D	50 – 65
F	0 – 50

As this course is Honors/Writing Intensive there will be two major writing assignments. These two assignments are the formal lab report and the project proposal. Each of these will be submitted twice, once as an ungraded draft, and then as a final version. Deadlines for both draft and final versions of these writing assignments are listed on the course schedule and will be posted to Canvas. You will also present these major assignments in class through either poster presentations, lightening talks, or final presentations.

Your final grade will be determined by dividing the points you have earned by the total points shown in the table below and applying it to the grading scale found in the table above. Your grades will be posted to the course website so you can keep track of your progress in the course.

**Make-ups/late submissions:** Assignments can be made up with appropriate documentation (i.e., a doctor's note or note from the Dean of Students). If you miss an assignment, please notify Dr. DeVan as soon as possible. Late materials will be accepted; however, you will lose 10% points for each day that the assignment is late.

**Group Work:** For all group work, a peer-evaluation and self-evaluation will be performed as a portion of the grade for that assessment.

### Grading Points by Assessment Type

Assessments	Total Points
In Class Lab Assignments - 10 points per class (drop lowest one)	120
7 Post Lab Assignments (10 points each)	70
Paper Discussions (4 total)	25
Reading Reports (4 total) + Primary Literature Assignment	30
Independent Research Project & Formal Lab Report	155
<b>Total</b>	<b>400</b>

### ***Assessment Descriptions:***

*In Class Lab Assignments:* Labs completed in class will be worth 10 points. These points will come from collecting and analyzing data, interpreting and communicating results and working with your peers.

*Post-Lab Assignments:* Seven (7) of the in-class labs will also have a post-lab assignment which will require additional analysis and discussion of results. These will generally be done in groups. Each post-lab is worth 10 points.

*Paper Discussions:* There will be 4 paper discussions throughout the semester. In groups, you will be responsible for selecting a paper on an assigned topic and then leading a discussion on that topic (10 pts). For all other discussions, you are expected to participate in the class discussion (5 pts per discussion). Selected papers will be posted by the third week of class on the course website.

*Reading Reports:* ALL discussion papers will require a reading report that will be due before class. Each reading report will be worth 5 points.

*Independent Research Project & Formal Lab Report:* Students will design and implement an independent research project on animal behavior. This project will require the development of an ethogram (15 points) and some preliminary research (annotated bibliography = 12 points). Students will write a project proposal (25 points) that they must get approved by the instructor before implementing their project. They will also share and discuss their proposals with their peers (5 pts). Students will have ~4 weeks to collect data (4 progress reports worth 2 points each). After implementation of the research project, students will analyze their data and present their results to the class (5 pts). Then they will write up a formal lab report of their project. The draft formal lab report will be worth 10 points and the final formal lab report will be worth 50 points. Students will also share their results with their peers in a pre-recorded presentation (25 points).

### **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 classes 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 both NJIT and Rutgers-Newark.

*Note: this is a tentative schedule, any changes will be posted to course website. Red indicates an assignment that is part of your Independent Project.*

DATE	TOPICS	READINGS AND/OR ASSIGNMENTS
Sept 1	Introduction to Animal Behavior, Lab 1: Observations	Syllabus
Sept 8	<b>Monday Schedule – No Class! Happy Labor Day!</b>	
Sept 15	Lab 2: Ethograms & Activity Budgets Workshop: Reading Scientific Literature	Post Lab 1 <b>Primary Literature Assignment</b>
Sept 22	Lab 3: Describing & Quantifying Behavior Ethogram Peer Review Workshop: Experimental Design	Post Lab 2 <b>Ethogram Draft 1</b>
Sept 29	Analysis for Lab 3: Describing Behavior Workshops: Data Analysis & Scientific Writing	Post Lab 3
Oct 6	Lab 4: Optimal Foraging of Squirrels <b>Individual Meetings @ Project Proposals</b>	<b>Annotated Bibliography Draft 1</b> <b>Ethogram Final Draft</b> <b>Proposal Approval Form</b>
Oct 13	Analysis for Lab 4 Workshop: Data Management Lab 5: Optimal Foraging <b>Project Proposal Protocol Peer Discussion</b>	<b>Draft of Project Proposal Due (Friday - Oct 16)</b>
Oct 20	<b>Paper Discussion #1</b> Lab 6: Frog Mating Behavior <b>Independent Project Data Collection</b>	<b>Read paper for Discussion #1</b> Post Lab 4
Oct 27	<b>Paper Discussion #2</b> Lab 7: Hungry Birds (game) <b>Independent Project Data Collection</b>	<b>Read paper for Discussion #2</b>
Nov 3	<b>Paper Discussion #3</b> <b>Independent Project Data Collection</b>	<b>Read paper for Discussion #3</b>
Nov 10	<b>Paper Discussion #4</b> Lab 8: Evolution of Cooperation <b>Independent Project Data Collection</b>	<b>Final Project Proposal Due</b> <b>Read Paper for Discussion #4</b>
Nov 17	Formal Lab Report Writing Seminar <b>Data Analysis of Independent Project Data</b> Lab 9 – Independent Project Results	<b>Mini-presentation of Independent Project Results – post by 11/23</b>
Nov 24	<b>Online Class! Happy Thanksgiving</b>	<b>Annotated Bibliography Draft 2</b> <b>Draft of Formal Lab Report (on Independent Project)</b>
Dec 1	Lab 11: Evolution of Behavior	Lab 10 due
Dec 8	Lab 12: Animal Movement <b>Final Student Presentations</b>	Lab 11 due Lab 12 due <b>Presentations on Independent Project</b> <b>Final Formal Lab Report due 12/10</b>

**All assignments are due at Monday night at 9pm unless otherwise noted.**

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 (<a href="mailto:doss@njit.edu">doss@njit.edu</a>). 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 <b>Spring 2020 hours:</b> Mondays 2-5pm Tuesdays 11am – 2pm, 4-7pm Wednesdays 9am-7pm Thursdays 9am-5pm or by appointment (<a href="mailto:foodpantry@njit.edu">foodpantry@njit.edu</a>)</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: right;">Campbell Hall, Room 205 (Main Level)   973.596.3414</p> <hr/> <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: right;">Kupfrian Hall, Room 201973.596.5417   <a href="mailto:oars@njit.edu">oars@njit.edu</a></p> <hr/> <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> <p>Alert the Dean of Students Office (<a href="mailto:doss@njit.edu">doss@njit.edu</a>) 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>).</p>
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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 **Rutgers**-wide support systems and policies of which you should be aware.

**Basic Needs & Emergency Support**

Students who face challenges securing their food or a safe and stable place to stay are urged to contact the Dean of Students. If you are comfortable doing so, please notify Dr. Maier or myself.

Food Insecurity: If you are experiencing food insecurity, there is a food pantry (pantryRUN) on campus for your convenience (You must bring your RUID)

Robeson Campus Center, Room 236

**Fall 2019 hours:**

Tuesday & Wednesday: 1:00-6:00,  
Friday: 1:00-3:00,  
Saturday 11:00-2:00.

Crises Happen: If you experience a life emergency and are unsure which support services to turn to, Rutgers Newark has an emergency support system connecting many resources.

973.353.5063 | [careteam@rutgers.edu](mailto:careteam@rutgers.edu)

**Special Accommodations**

If you have a disability or a personal circumstance that will affect your learning in this course, please let Dr. Maier or myself 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 Disability Services.

Robeson Campus Center, Room 219  
973.353.5375 | [ODS@newark.rutgers.edu](mailto:ODS@newark.rutgers.edu)

**Religious/Cultural Observance**

Students who have religious or cultural observances that coincide with this class should let Dr. Maier and myself 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.

**Student Parents**

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 Student Life at 973.353.5063 for a referral to appropriate services including on and off campus support.

**Mental Health and Stress Management**

Rutgers Counseling Center 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.

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.

Blumenthal Hall, Room 101 | 973.353.5805

**Consensual, Healthy Personal & Professional Relationships**

Your body is your own and Rutgers 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.

**Confidential Resources:**

- [Violence Prevention & Victim Assistance](#)  
Blumenthal Hall, Room 203 | 973.353.1918
- [Counseling Center](#)  
Blumenthal Hall, Room 101 | 973.353.5805
- [Health Services](#)  
Blumenthal Hall, Room 104 | 973.353.5231

**Non-Confidential Resources:**

- [Rutgers Police](#) 973.353.5111 ext 200
- [University Avenue Title IX and ADA](#)  
Robeson Campus Center, Room 316b | 973.353.1906