

Fall 2022, Syllabus 01:450: 306:01
Global Ecosystems and Biodiversity
M-Wed 3:50pm-5:10 pm

Location: Tillet 230, Livingston Campus
Professor: Dr. Laura Schneider
Email: laura.schneider@rutgers.edu
Office hours: Monday 2-3 pm, or by appointment
Course website: Rutgers Canvas course website



[What is biodiversity and why does it matter to us?](#)

I. Course Description

This course is center on understanding the importance of biodiversity in a changing world. The course is an introduction to the science explaining patterns and process shaping biodiversity in the planet. The course focuses on understanding the relationships between living organisms (animals, plants and microbes) and their environment (climate, geology, soils), emphasizing the spatial and temporal patterns in their distributions over the face of the Earth. In this course, students will be exposed to theories in ecology, evolutionary biology, geology and physical geography. By the end of the course, students should have an understanding of the general patterns and processes influencing biodiversity, a comprehensive knowledge of terminology and an introduction of major issues related to biodiversity conservation and society.

II. Course Format

The material of the course is explored through lectures, readings of foundational papers, documentaries and the discussion of the book *An Immense World* (see below). The course is divided in three major units: 1) Biodiversity Theories and concepts; 2) Explaining species geographic distributions; and 3) Biodiversity and Society. Course material (readings) will range

from introductory to intermediate level, and some concepts will require basic algebra and understanding of basic biology. This course will introduce new vocabulary which should be reviewed on regularly. The assignments consist critical essays about class readings and a class project based on the use of field data collected by instructor.

III. Curriculum Learning Goals



a) SAS Core Curriculum Learning Goals

This course fulfills three credits towards Natural Sciences requirements in the Rutgers School of Arts and Sciences Core Curriculum.

NS-1: Understand and apply basic principles and concepts in the physical or biological sciences

b) Learning Goals for the Geography major and minor

This course fulfills 3 credits towards the major and minor in Geography. Upon completion of this course, students will be able to:

- Understand and apply the terminology and frames of reference used in physical and social environmental research. (Environment Track learning goal 1)
- Identify and explain key physical and social environmental issues (e.g., environmental justice, climate change, and land-surface transformation) (Environment I Track learning goal 2)

c) Learning Goals for the Environmental Studies major and minor

This course fulfills 3 credits towards the minor in Environmental Studies. Upon completion of this course, students will be able to:

- be able to articulate, both orally and in writing, the core principles, concepts, and theories that form the field's interdisciplinary foundation in the humanities, social sciences and natural sciences. (Environmental Literacy learning goal)

IV. Grades and Assignments

In order to succeed in this course, students need to attend and participate in class, complete the assigned readings before class, lead at least once class discussion, submit written assignments, develop successfully a class project, and pass the midterm and final exams.

Participation	5	points
Class presentation	10	points
Class Project	10	points
Mid-term take home exam:	25	points

Assignments (4 reaction papers):	25	points
Final Exam	25	points
Total:	100	points

The grading system for the course is as follows: The grading system for the course is as follows: A (90-100), B+ (85-89), B (80-84), C+ (75- 79) C (70-74) and D (60-69), F (less than 59).

Class participation will be assessed by oral participation of students during class time. The instructor will expect students to active participate during class and provide questions about readings at least twice during the semester.

Participation will be graded using the following rubric:

5 points	4 points	3 points	2 points	0-1 point
Actively supports, engages and listens to peers (ongoing)	Makes a sincere effort to interact with peers (ongoing)	Limited interaction with peers	Virtually no interaction with peers	No interaction with peers
Arrives fully prepared at almost every session	Arrives mostly, if not fully, prepared (ongoing)	Preparation, and therefore level of participation, are both inconsistent	Rarely prepared and rarely participates	Never prepared
Plays an active role in discussions (ongoing)	Participates constructively in discussions (ongoing)	When prepared, participates constructively in discussions	Comments are generally vague or drawn from outside of the assigned material	Never participates
Comments occasionally advance the level and depth of the dialogue	Makes relevant comments based on the assigned material (ongoing)	When prepared, makes relevant comments based on the assigned material	Demonstrates a noticeable lack of interest (on occasion)	Demonstrates a noticeable lack of interest in the material (ongoing)

There will be a mid- term take home exam, this will be an open book and 12 hours to answer. The date for the mid-term is Monday Oct 24th. It will be available on canvas by 9 am Oct 24th, and it has to be return with answers by end of the day. Please make sure you sign the honor pledge (information at the end of the syllabus).

The class project centers on quantifying and comparing of plant biodiversity in the tropics to temperate ecosystems. The data will be provided by the instructor and the guidelines will be posted after the midterm.

The final exam is in person and scheduled for Monday December 19, 4pm in Tillet 230.

Be sure to familiarize yourself with the REGIS site and Warning grade system here:

<https://scarlethub.rutgers.edu/registrar/faculty-staff/>

V. Technology requirements, required text, readings and media sources

Technology requirements

- Access to Rutgers online teaching tools (Canvas).
- Access to Forms and google documents (through Rutgers)
- Applications to access podcasts.

Please visit the Rutgers Student Tech Guide page for resources available to all students. If you do not have the appropriate technology for financial reasons, please email Dean of Students deanofstudents@echo.rutgers.edu for assistance. If you are facing other financial hardships, please visit the Office of Financial Aid at <https://financialaid.rutgers.edu/>.

Required readings

- Wilson, E. O. *The biodiversity of life*. Harvard University Press. 2010. ISBN 9780674058170
- Young Ed. *An immense world: how animal senses the hidden realm around us*. Penguin Random House. 2022. ISBN 9780593133231
- Additional readings will be available on course canvas site

Media

- *BBC Planet Earth* (Streaming Rutgers Library)
- *Podcasts* (selected episodes from popular podcast about biodiversity in everyday life)

VI. Class policies and expectations

Students are expected to attend class meetings on M-W from 3:50 to 5:10 pm. Students will be asked to discuss readings during class times and lead the discussion for one of the chapters of *An immense world*. Students should make every effort possible to personally attend class on time. Students are expected to attend all classes; if you expect to miss one or two classes, please use the University absence reporting website <https://sims.rutgers.edu/ssra/> to indicate the date and reason for your absence. An email is automatically sent to me. Reporting an absence does not automatically "excuse" missed work.

Make-up exams and extensions on assignments will be given only after approval of the instructor.

Please refer to the document to the following link for class etiquette:

<https://rlc.rutgers.edu/node/443>

Face coverings: For the fall 2022 semester, face coverings continue to be required in all indoor teaching spaces, libraries, and clinical settings. Compliance is mandatory.

Masks must be worn during class meetings when indoors. Masks should conform to CDC guidelines and should completely cover the nose and mouth:

<https://www.cdc.gov/coronavirus/2019-ncov/prevent-getting-sick/about-face-coverings.html>

Workload expectations: It is expected that in addition to lecture time students will need to spend an additional time outside of class to study and for project work to achieve a satisfactory grade in the course. While grades tend to be correlated with amount of time devoted to study and work, they are based on the quality of the work, not the hours of effort.

Honor pledge:

All students will need to sign the Rutgers Honor Pledge on every major exam, assignment, or other assessment as follows: **On my honor, I have neither received nor given any unauthorized assistance on this examination and assignments.**

Rutgers University takes academic dishonesty very seriously. By enrolling in this course, you assume responsibility for familiarizing yourself with the Academic Integrity Policy and the possible penalties (including suspension and expulsion) for violating the policy. As per the policy, all suspected violations will be reported to the Office of Student Conduct. Academic dishonesty includes (but is not limited to):

- Cheating
- Plagiarism
- Aiding others in committing a violation or allowing others to use your work
- Failure to cite sources correctly
- Fabrication
- Using another person's ideas or words without attribution, including re-using a previous assignment
- Unauthorized collaboration
- Sabotaging another student's work

If you are ever in doubt, consult your instructor.

VI. Student wellness resources

Access helpful mental health information and resources for yourself or a friend in a mental health crisis on your smartphone or tablet and easily contact CAPS or RUPD.

Bias Incident Reporting and Support (DICE) <https://diversity.rutgers.edu>

The Division of Diversity, Inclusion, and Community Engagement works to advance, promote and advocate for inclusiveness, diversity, and equity at Rutgers University.

If you believe you are the victim of or a witness to an alleged bias incident, you may report the incident, in person or by phone, to the Dean of Students Office, Residence Life staff, or another member of the Student Affairs staff <https://diversity.rutgers.edu/resources/bias-and-crisis-support>. Individuals may also report an alleged bias incident online <http://studentaffairs.rutgers.edu/for-students/bias/bias-incident-reporting/>

Counseling, ADAP & Psychiatric Services (CAPS)

(848) 932-7884 / 17 Senior Street, New Brunswick, NJ 08901/ <http://health.rutgers.edu/medical-counseling-services/counseling/>

CAPS is a University mental health support service that includes counseling, alcohol and other drug assistance, and psychiatric services staffed by a team of professional within Rutgers Health services to support students' efforts to succeed at Rutgers University. CAPS offers a variety of services that include: individual therapy, group therapy and workshops, crisis intervention, referral to specialists in the community and consultation and collaboration with campus partners.

Crisis Intervention: <http://health.rutgers.edu/medical-counseling-services/counseling/crisis-intervention/>

Report a Concern: <http://health.rutgers.edu/do-something-to-help/>

Violence Prevention & Victim Assistance (VPVA)

(848) 932-1181 / 3 Bartlett Street, New Brunswick, NJ 08901 / www.vpva.rutgers.edu/

The Office for Violence Prevention and Victim Assistance provides confidential crisis intervention, counseling and advocacy for victims of sexual and relationship violence and stalking to students, staff and faculty. To reach staff during office hours when the university is open or to reach an advocate after hours, call 848-932-1181.

Disability Services

(848) 445-6800 / Lucy Stone Hall, Suite A145, Livingston Campus, 54 Joyce Kilmer Avenue, Piscataway, NJ 08854 / <https://ods.rutgers.edu/>

Rutgers University welcomes students with disabilities into all of the University's educational programs. In order to receive consideration for reasonable accommodations, a student with a disability must contact the appropriate disability services office at the campus where you are officially enrolled, participate in an intake interview, and provide documentation. The documentation supports your request for reasonable accommodations, your campus's disability services office will provide you with a Letter of Accommodations. Please share this letter with your instructors and discuss the accommodations with them as early in your courses as possible. To begin this process, please complete the Registration form on the ODS web site at: <https://ods.rutgers.edu/students/registration-form>.

Reporting of sexual harassment, sexual assault, dating or domestic violence, and/or stalking

Reports of sexual harassment, sexual assault, dating or domestic violence, and/or stalking may be made using any of the following options:

1. Report to a Title IX Coordinator directly (a list of each campus's Title IX Coordinator is provided below). Such a report may be made at any time (including during non-business hours) via telephone or email, or by mail to the address listed for the Title IX Coordinator.
2. Report online, using the reporting form posted here.
Individuals may also report crimes of sexual violence to the Rutgers University Police Department. Just in Case Web App: <http://codu.co/cee05e>

VII. Intellectual property rights statement

Lectures and materials utilized in this course, including but not limited to videocasts, podcasts, visual presentations, assessments, and assignments, are protected by United States copyright laws as well as Rutgers University policy. As the instructor of this course, I possess sole copyright ownership. You are permitted to take notes for personal use or to provide to a classmate also currently enrolled in this course. Under no other circumstances is distribution of recorded or written materials associated with this course permitted to any internet site or similar information-sharing platform without my express written consent. Doing so is a violation of the university's Academic Integrity Policy.

Course Schedule (Topics are subject to change)

Week	Date	Lecture Topic	Readings for class discussion	Assign. Due dates
1. Class set up/Concept of biodiversity	Wed, Sept 7th	Class set up. Global Ecosystems and Biodiversity	What is biodiversity and why does it matter to us?	
2. Theories and Concepts explaining diversity	Monday Sept 12	Why there are so many species? The concept of species	Wilson Chapter 4	
	Wed, Sept 14	The meaning of biodiversity	Wilson Ch 2	
3. Theories and concepts: Evolution I	Monday Sept 19	Biodiversity through time- Geological periods	Gould, Book of Life. (On canvas)	
	Sept 21st	Physical template	Planet Earth (BBC): Episode 1 from pole to pole. Chapter 1 An immense world (IW)	Assignment 1 available.
4. Theories and concepts: Evolution II	Monday Sep 26th	Evolutionary theory	Wilson, Ch. 5 and 6	Critical essay Due
	Sep 28th	Speciation/Natural Selection	Student presentation Chapter 2 and 3 (IW)	
5. Theories and concepts: Continental Drift	Monday Oct 3 rd	Extinction. Continental Drift.	Wilson, Ch 11.	
	Oct 5th	Validation of Continental Drift.	EJ Gould: Validation Continental Drift	Critical essay on Gould (due Mon Oct 4th)
6. Explaining Species	Monday Oct 10th	Interaction among Organisms		

Distributions, gradients and disturbances	Oct 12th	Ecological Disturbances and Succession	Student presentation Chapter 4 and 5	Class discussion
7. Biodiversity gradients	Mon Oct 17 th	Biodiversity Gradients Estimating alpha and beta biodiversity.		
	Oct 19th	Biotic interactions	Student presentation Chapter 6 and 7	Class discussion
8. Biomes and Ecosystems	Monday Oct 24th	Midterm take home exam.		
	Oct 27 st	The biodiversity of Mid-Atlantic Ecosystems.	Walk in Livingston Ecopreserve	
9. Biomes and Ecosystems	Monday Oct 31 st	Dispersal and Immigration	Lomolino Chapter 13	
	Nov 2 nd	Biomes overview	Lomolino, Chapter 5. Student presentations Chapter 8-9	Class discussion
10. Island biogeography	Monday Nov 7 th	Terrestrial Biomes	Discussion of PPT files from students.	
	Nov 9 th	Island Biogeography	Lomolino, Chapter 13	Class discussion
11. Mapping spatial distribution of Species	Monday Nov 14 th	Mapping species distributions (Class exercise)	Using Geographic information systems	
	Nov 16th	The era of Anthropocene: Invasive Species	Podcast Reply all- #140 30-50 Feral Hogs Presentation Chapters 9-10	Reaction paper on podcast
12. Biodiversity and Society	Monday Nov 21th	The era of Anthropocene: Conservation	Wilson, E.O. Chapter 12 and 13	

Thanksgiving break	Wed Nov 23 rd	Thanksgiving-Friday classes		
13. Biodiversity and Climate Change	Monday Nov 28 th	Class project (excel): How to measure biodiversity?	Class project	
	Nov 30 th	Assessing biodiversity loss: Climate Change?	Student presentations Chapter 11-12 IW	Class discussion
14. Biodiversity and Society: Anthropocene	Monday Dec 5 th	Assessing biodiversity loss: Deforestation		
	Dec 7 th	Visualization: the use of GIS and Remote Sensing		
15. Class Project	Monday Dec 12	Assessing biodiversity loss: Age of Anthropocene	Wilson Chapter 13	
	Dec 14 th .	Presentations of Class Project		
FINAL EXAM	Tuesday Dec 19, 4pm, Tillet 230.			