Urban Ecological Field Studies

BIOSC 1221
Fall 2021

INSTRUCTOR

Dr. Sara Kuebbing
Assistant Professor, Department of Biological Sciences
Email: sara.kuebbing@pitt.edu

Lab hours: F, 8:30-12:50
Lab Room: 170 Crawford Hall
(*Please note: owing to ongoing spread of the highly-contagious Delta variant,* ***we will rarely meet in our lab classroom, and will instead meet outside as much as possible****. In the syllabus I indicate where we'll meet for each class period, and any changes to our meeting location will be shared with students via email and Canvas announcements.)*
Office hours: Office hours will take place through Zoom on Mondays from 9-10AM. You may access the zoom link for office hours through our course's Canvas page. I am available for additional office hours as needed; please email me to request specific times to meet.

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COURSE DESCRIPTION

This one-credit lab will introduce students to the study of urban ecology and a variety of field research techniques commonly used in the study of urban ecosystems. Urban ecology—the study of ecosystems found in cities and urbanized landscapes—is an integrative field that seeks to understand ecological interactions in human-dominated landscapes. In some senses, urban ecosystems differ fundamentally from "in-tact natural areas" found in more rural regions; urban ecosystems tend to be hotter, more polluted, more fragmented, and hold a higher proportion of nonnative species than surrounding rural ecosystems. However, the same ecological processes that determine species distributions and species interactions are relevant to human and non-human organisms living in urban and rural systems. This lab will use learning modules to introduce students to some of the major conceptual themes in urban ecology as well as introduce them to common field techniques used in the study of urban ecosystems.

COURSE OBJECTIVES

By the end of this lab, you will be able to do the following:

(1) describe fundamental concepts in urban ecology and common field techniques used in urban ecology research;
(2) design studies and collect and analyze data to test urban ecology concepts; and
(3) communicate urban ecology research in written and oral forms.'

COURSE POLICIES

Class Times: This lab will meet in-person during our scheduled time throughout the semester unless the University's Pandemic operating policy changes. In the event of a change to the course schedule, students will be notified over email and Canvas.

Software Platforms: In this course we will use Canvas as the Learning Management System for sharing files and zoom links (if necessary). You can access my zoom office hours through the Canvas platform.

Course Materials: I will provide all course material on Canvas, regardless of the University operating posture.

University Risk Operating Posture: Depending on University's current operating posture, the delivery of the course may vary. Under elevated and guarded risk, we will continue with the regular course schedule (see below) and we will meet in-person during our lab time. Under a high-risk operating posture, we will not meet in person and all meetings will occur remotely over zoom. I will announce any changes to any mode of instruction on Canvas and via email.

COVID-19 Safety: We will follow the University guidelines for mitigating risk of infection of the SARS-CoV-2 virus:

- When we are indoors, we will all wear face masks that cover our mouth and nose.
- When we are outdoors and we can maintain a six-foot distance from each other, course participants may opt to remove their face covering.
- Dr. Kuebbing will provide necessary disinfecting supplies (hand sanitizer, sanitizing wipes, etc.) for hand hygiene and wiping off any shared lab equipment.
- If you're feeling unwell (fever, cough, sniffles, body aches, loss of sense of taste and smell), please stay home and contact Dr. Kuebbing ASAP. Dr. Kuebbing will work with you to make up missed course periods and assignments.
- If you have tested positive for COVID-19 or have been advised by a medical professional to quarantine because you have been exposed to someone who has tested positive for COVID-10, please stay home and contact Dr. Kuebbing ASAP. Dr. Kuebbing will work with you to make up missed course periods and assignments.

Excused Absences: Safety is our number one goal of this semester. If you need to miss class this semester because of your own health, or the health of friends of family, please notify me as soon as possible of your absence so I can excuse you from class and develop a class make-up plan with you.

Course Changes: I will announce any changes to our modes of instruction, course adjustments, or other course changes on Canvas as needed.

LAB DESIGN

I have designed this lab to provide you the opportunity to create, design and implement a variety of urban ecology experiments through learning modules, as well as lab exercises based on on-going urban ecology and sustainability projects on campus. These labs will allow you to explore different urban organisms and introduce you to a suite of methods and techniques. For each module or lab exercise, I will provide you a list of background reading material or online videos that you are expected to read or watch prior to that lab. I will also provide background information on the module, as well as the types of data that we will be able to collect.

Each Module will consist of the following three-week schedule:

Week 1:

Before Class: Students are expected to complete all course readings and/or watch an asynchronous short lecture or other recorded content. While reading the background material, students should think of 2-3 good research questions they could address.

Assignment Due in Class: Each student will complete the Course Reading Worksheet. This is an individual assignment.

Week 1 In-Class Activities: Students will all meet to discuss the module readings, ask questions, and develop research project ideas. By end of this class period, students will have divided into small research groups of 3-4 students each focused on a specific research question.

Week 2:

Before Class: Working with their research group, students will bring to Week 2 class the following items: (1) A completed Lab Report Worksheet that outlines the group's research question and hypothesis, the independent and dependent variables they will measure, and the predicted relationship (a figure) of their variables; (2) A draft of their research Methods; and (3) a data sheet and/or data table for data collection.

Assignment Due in Class: Each group will submit a Lab Report Worksheet, their draft Methods, and a blank data sheet.

Week 2 In-Class Activities: Students will meet during the scheduled class period to discuss their experimental design and research methods in small groups with Dr. Kuebbing and begin collecting data. The students and instructor will work together to answer any questions, adapt the data collection methods and data sheet, and discuss the statistical analysis for the data.

Week 3:

Before Class: Students will work in their groups to refine their methods and data collection procedures.

Assignment Due in Class: None.

Week 3 In-Class Activities: Students will have this full lab period for data collection and/or analysis.

PREREQUISITES

A 'C' or better in Ecology (BIOSC 0370) OR Ecosystem Ecology (GEOL 1641).

ENROLLMENT

16 students

COURSE READINGS

There is no assigned textbook. Dr. Kuebbing will provide electronic versions of course readings for each module on the course Canvas site.

COURSE EXPECTATIONS

Missed Course Periods: If you are unable to attend a course period, Dr. Kuebbing will provide alternative assignments for you to complete. These will likely be individual meetings with Dr. Kuebbing to discuss either the module concepts, research project design, or research results.

Late Assignments: The maximum score you can achieve on any given assignment will be 10% lower for each day you turn in your assignment late. Assignments are due on their scheduled day and must be submitted through Canvas. This penalty will not be assessed if you have an excused absence (see above).

Pandemic Accommodations: We are still operating during a pandemic, and there are likely many ways that this could affect your learning or ability to fully participate in the course. I have created this course to be as flexible as possible for student attendance and participation, and I do not anticipate my expectations to change in the event of a change in the University's operating posture. We should be able to complete all of our lab activities regardless of the University's operating posture, and students should expect for our course to run as planned despite operating posture changes.

ASSESSMENT

To assess how well you meet course objectives, you will be graded on the various worksheets and assignments, as outlined below.

	Points
Course Reading Worksheet (4 total)	100 (25 points per worksheet)
Lab Report Worksheet (4 total)	200 (50 points per worksheet)
Lab Exercises	100 (50 points per exercise)
Weekly *iNaturalist* Observation Record	160 (20 points/week)
Scientific Memo (2 total)	600 (300 points per memo)
Modified Lab Report Worksheet (2 total)	200 (100 points per lab report)
Final Presentations	200
Total points	1560**

**I do not grade on a curve and I am unlikely to offer extra credit opportunities. Your grades will be based on percentage of total points you earn and based on the following scale: 90's = A range; 80's = B range; 70's = C range; 60's = D range; <50 = F.

Lab Exercises & Worksheets: The first two labs will have lab exercises that focus on teaching skills or techniques (e.g., data analysis lab) and introducing students to concepts in urban ecology (e.g., sustainable landscaping). More details on lab exercises will be provided that day in lab and lab exercises will be due the following lab period. Course Reading and Lab Report worksheets are described above.

Course Reading Worksheet: For each of our four modules, you will complete readings to give you background on urban ecology concepts and to generate ideas for ecological questions and hypotheses you can test in the lab. To help you think critically about the readings, you will complete a course reading worksheet for each module.

Lab Report Worksheets: For each of our four learning modules, you will complete a brief worksheet that outlines your key question, hypothesis, and data you will collect. This worksheet will help you think critically about your field experimental design and what data you need to collect to answer your key question. Each module group will turn in a single worksheet, but everyone in the group is responsible for explaining competently all parts of the experiment (from question and design to data collection).

Final Lab Assignments: Each module will have a final assignment that summarizes your experimental design, key question and hypothesis, relevant background information, and the data you collected and analyzed for that module. For two of our modules (Urban Pollinators and Urban Forests), you will write a Scientific Memo and for the remaining two modules you will write a modified lab report. Both assignments are group assignments, and more details about the assignments will be provided in class.

Weekly iNaturalist Phenology observations: One of our learning modules will focus on recording the fall phenology (timing of life history events) of individual plants selected by students to monitor throughout the semester. The objective of this activity is to hone your ability to observe seasonal changes in urban ecosystems but will also be incorporated into your data collection for our Fall Phenology learning module. To complete this activity, you will need to pick 5-10 individual plants to monitor on a weekly basis. You will log your weekly observations using the free, community science online platform *iNaturalist* (www.inaturalist.org).

Oral Lightning Presentations: At the end of the semester, each student will present a short 'lighting presentation' on a topic of their choice. Students may present any of the four research modules results or independent biological research they have participated in other labs or over the summer. This presentation will be a five-minute presentation consisting of no more than 5 slides and be followed by 8 minutes of Q&A from the class. More details about the presentations and grading rubrics are available on Canvas.

COURSE SCHEDULE

Week	Topic	Meeting Location	Assignments Due
1 (August 27)	Introduction to Urban Ecology	Outside Clapp Hall (side door entrance off Fifth Avenue)	Introductory Readings
2 (September 3)	Introduction to Data Analysis	Schenley Plaza outdoor tables	'Exploring Urban Gradients' Exercise Due.
3 (September 10)	**Module 1** (Introduction to Urban Pollinators)	Phipps Center for Sustainable Landscaping (CSL)	Course readings; Course Reading Worksheet
4 (September 17)	**Module 1** (Research Design & Data Collection - Urban Pollinators)	Phipps CSL	Group Lab Report Worksheet, Sample Data Sheet, Draft Methods.
5 (September 24)	**Module 1** (Data Collection - Pollinators)	Phipps CSL	
6 (October 1)	**Module 2** (Urban Phenology)	Entrance to Carnegie Library (off of Schenley Drive Extension)	Course readings & Course Reading Worksheet; Urban Pollinator Sustainability Memo Due
7 (October 8)	**Module 2** (Fall phenology)	Entrance to Carnegie Library (off of Schenley Drive Extension)	Group Lab Report Worksheet, Sample Data Sheet, Draft Methods.
8 (October 15)	**FALL BREAK – No CLASS**		
9 (October 22)	**Module 3** (Urban Wildlife)	TBD	Course readings & Course Reading Worksheet.
10 (October 29)	**Module 3** (Urban Wildlife)	TBD	Group Lab Report Worksheet, Sample Data Sheet, Draft Methods.
11 (November 5)	**Module 3** (Urban Wildlife)	TBD	
12 (November 19)	**Module 4** (Urban Forests)	Cathedral Lawn	Urban Wildlife Modified Lab Report Worksheet Due; Course readings & Course Reading Worksheet.
13 (November 26)	**NO CLASS – Happy Thanksgiving!**		
14 (December 3)	**Module 4** (Urban Forests)	TBD	Group Lab Report Worksheet, Sample Data Sheet, Draft Methods.
15 (December 10)	Final Lab Presentations	TBD	Phenology Modified Lab Report Due; Urban Forests Scientific Memo; Final Presentations

DISABILITY RESOURCE SERVICES

If you have a disability for which you are or may be requesting an accommodation, you are encouraged to contact both your instructor and the Office of Disability Resources and Services, 140 William Pitt Union, 412-648-7890, as early as possible in the term. Disability Resources and Services will verify your disability and determine reasonable accommodations for this course.

ACADEMIC INTEGRITY POLICY

Cheating/plagiarism will not be tolerated. Students suspected of violating the University of Pittsburgh Policy on Academic Integrity, noted below, will be required to participate in the outlined procedural process as initiated by the instructor. A minimum sanction of a zero score for the quiz, exam or paper will be imposed. (For the full Academic Integrity policy, go to www.provost.pitt.edu/info/ai1.html.)

E-MAIL COMMUNICATION POLICY

Each student is issued a University e-mail address (username@pitt.edu) upon admittance. This e-mail address may be used by the University for official communication with students. Students are expected to read e-mail sent to this account on a regular basis. Failure to read and react to University communications in a timely manner does not absolve the student from knowing and complying with the content of the communications. The University provides an e-mail forwarding service that allows students to read their e-mail via other service providers (e.g., Hotmail, AOL, Yahoo). Students that choose to forward their e-mail from their pitt.edu address to another address do so at their own risk. If e-mail is lost as a result of forwarding, it does not absolve the student from responding to official communications sent to their University e-mail address. To forward e-mail sent to your University account, go to http://accounts.pitt.edu, log into your account, click on **Edit Forwarding Addresses**, and follow the instructions on the page. Be sure to log out of your account when you have finished. (For the full E-mail Communication Policy, go to www.bc.pitt.edu/policies/policy/09/09-10-01.html.)

TURNITIN

Students agree that by taking this course all required papers may be subject to submission for textual similarity review to Turnitin.com for the detection of plagiarism. All submitted papers will be included as source documents in the Turnitin.com reference database solely for the purpose of detecting plagiarism of such papers. Use of Turnitin.com page service is subject to the Usage Policy and Privacy Pledge posted on the Turnitin.com site.