SYLLABUS FOR Biology 19500

Year 1 Bio Lab: Disease Ecology, Spring 2019
Tuesday 1:30-4:30pm, Thursday 1:30-2:30pm

PEOPLE

Instructor: Dr. Catherine Searle
Lilly Hall G-331
Email: searlec@purdue.edu

TAs: Spencer Siddons
Lilly Hall G-365
Email: ssiddon@purdue.edu

Morgan Sparks
Lilly Hall G-365
Email: sparks35@purdue.edu

All office hours are by appointment.

COURSE DESCRIPTION

The course will engage students in authentic research while acquiring the necessary skills and concepts to be a successful biology major. Our research topic will be disease ecology in freshwater systems. We will begin with a series of skill and knowledge building laboratories, and then transition into independent research projects that culminate in presentation of the data in a poster session and written report. Students will learn the fundamentals of disease ecology, basic laboratory techniques, how to perform scientific experiments, and communicating findings to other scientists and the public.

LEARNING OBJECTIVES

By the end of the course, students will be able to:

- Perform basic laboratory techniques needed to succeed as a Biology major
- Work effectively as a member of a team
- Design and execute experiments
- Record, analyze, interpret, and display biological data
- Read and critique research articles
- Clearly explain research in written and oral formats

MATERIALS

Text: There is no text for this course. Instead, you will be provided with handouts (including sections of the lab manual) each class. Handouts can also be downloaded from Blackboard.

Lab notebook: Each student will be given a notebook to record procedures, observations, data, and conclusions. These will be graded twice during the course. You may take your notebook home, but it is recommended that you leave it in class.

WHAT TO BRING TO CLASS

1) Take-home quiz (weeks 1-5 only). The take-home quizzes and lab manual (containing information necessary to complete the quiz) will be available on Blackboard at least 2 days in advance. You do NOT need to print the lab manual; it will be provided to you in class.
2) Folder or binder to store materials. You will need a place to store handouts you are given during class, ideally a 3-ringed binder. I recommend that you bring this folder to all classes since materials provided in one lab will be useful for future labs.
3) Lab notebook (if you choose to take it home)
4) Any assignments that are due that day. See schedule below for due dates.

BLACKBOARD

We will be using Blackboard Learn. You will be able to download the lab manuals, the pre-lab quizzes, assignment instructions, and other handouts you are given during class. We will also do our best to keep the grade book portion of Blackboard up to date for your reference throughout the semester.

GENERAL COURSE GUIDELINES

1) ***Attendance***. Class attendance is mandatory for this course. Each lab day will be a unique experience building from the preceding days and cannot be "made up" outside of scheduled lab time. If you must miss class due to an extreme event, it is imperative that you let Dr. Searle know **as soon as possible**. She will determine whether or not the absence is excused on a case-by-case basis.
2) ***Lab manual***. In the first 5 weeks, you will receive sections of the lab manual in class. You will not turn in your lab manual at the end of the term. Notes and drawings in the manual are purely for your benefit.
3) ***Ethical behavior in the classroom***.

   Statement of Academic Integrity

   The commitment of acts of cheating, lying, and deceit in any of their diverse forms such as: fabrication of data, plagiarism and copying during homework, projects, or examinations is dishonest and will not be tolerated.

   Definition of Academic Dishonesty

   Purdue University prohibits dishonesty in connection with any University activity. Cheating, plagiarism or knowingly furnishing false information to the University are examples of dishonesty. Students caught cheating will receive a zero for the assignment or exam and possibly additional punishments depending on the severity of the infraction. If a student is caught a second time violating the academic integrity code, then the student will automatically receive a failing grade in the course. Furthermore, individual case(s) may be referred to the Dean of Students office.
4) ***Classroom accommodations***. Students with disabilities must be registered with Adaptive Programs in the Office of the Dean of Students before classroom accommodations can be provided. If you have a disability that requires academic adjustments, please discuss your needs with me as soon as possible.
5) ***Emergency procedures***. In the event of a major campus emergency or circumstance beyond the instructor's control, course requirements, deadlines and grading percentages are subject to change.

ASSESSMENTS

Late assignments. Assignments turned in late will receive a 10% reduction off the final score each day (e.g., 0-24 hours = -10%, 24-48 hours = -20%). Late assignments will not be accepted more than 5 days late. Assignments are considered late if they are submitted more than 10 minutes after the beginning of class on the day they are due.

A. **Class participation**. Each week there are a total of 10 participation points that can be earned. Being actively engaged and working on the lab activity earns 10 points, moderate participation and engagement earns 5 points, and no participation or absence earns 0 points.
B. **Pre-lab quizzes**. During the first 5 weeks of class, there will be a pre-lab, take-home quiz that will cover important concepts pertaining to that lab as well as concepts from the preceding week. The quiz must be turned in as a hard copy; you can either print it or write answers on a sheet of paper.
C. **Lab notebook**. Each lab, you will be writing in your lab notebook. You will turn in your notebook after week 5 and again at the end of the term for credit.
D. **Experimental brainstorm and proposal**. Each individual will brainstorm questions and hypotheses, and groups will design an experiment to test one of these hypotheses. This activity will be completed in class and you will only turn in one experimental proposal per group.
E. **Reflections**. As a class, we will be discussing research ethics, two papers from the primary literature, and future plans at the end of the course. Afterwards, you will write a short summary of your thoughts on these topics.
F. **Lab skills modules.** During the second half of the semester, each student will complete four short assignments to ensure that they understand basic lab skills. You should complete these assignments with your groups during lab periods when you have extra time.
G. **Group presentations**. There will be two short group presentations. All group members are expected to participate for full credit. Students will be assessed both individually and as a group.
H. **Research poster and presentation**. Each group will analyze and present the data from their experiment in the form of a poster at the end of the semester. The poster session will take place in the Lilly lobby and will be attended by faculty and graduate students in the Biology department. This poster will represent the culmination of many weeks of work. Students will be assessed both individually and as a group.
I. **Project write-up.** Each student will turn in a formal write-up of their group's research project. Students can use figures and ideas developed as a group for their write-ups, but all the text must be their own.
J. **Extra credit.** Students can obtain extra credit for attending research seminars throughout the semester. Research seminars are a great way to learn about research being conducted at Purdue and other universities. A list of seminars related to ecology or infectious disease will be posted on Blackboard each week. To receive credit, submit a summary of the seminar to your TA within one week of the seminar date (see details on Blackboard). Each seminar is worth 10 possible points and students may earn credit for attending a maximum of three seminars throughout the semester (30 possible extra credit points). <u>This will be the only course of extra-credit offered in this course</u>.

Item	Points
Individual:	
Class participation (15 @ 10 pts)	150
Pre-lab quizzes (10 @ 15pts)	150
Lab notebook (weeks 1-5: 100pts, 6-16: 60 pts)	160
Week 4 experimental design plan	20
Experiment brainstorm	20
Reflections (4 @ 30 pts)	120
Lab skills modules (4 @ 20 pts)	80
Final paper	90
Group-assigned:	
Experimental proposal	30
Group presentations (2 @ 40 pts)	80
Final research poster and presentation	100
Total points	**1000**

Grading scale (% of available points)

A	> 93	C	73-76.9
A-	90-92.9	C-	70-72.9
B+	87-89.9	D+	67-69.9
B	83-86.9	D	63-66.9
B-	80-82.9	D-	60-62.9
C+	77-79.9	F	59.9 or below

SCHEDULE

Week	Date	General topic	Activities	Assessment
1	Tues, Jan 8	Introduction and *Daphnia* basics	Splitting beakers, Identifying infections	Take-home quiz (in class)
	Thurs, Jan 10		Infecting *Daphnia*	Take-home quiz
2	Tues, Jan 15	Data collection	Types of data, Measuring independent variables	Take-home quiz
	Thurs, Jan 17		Collect data from week 1 exposures	Take-home quiz
3	Tues, Jan 22	Behavior and disease	Set up feeding assay, Reading primary literature	Take-home quiz
	Thurs, Jan 24		Collect data from feeding assay	Take-home quiz
4	Tues, Jan 29	Abiotic effects on disease	Design and set up mini-experiment	Take-home quiz Experimental design plan
	Thurs, Jan 31		Data analysis	Take-home quiz
5	Tues, Feb 5	Disease ecology in the field	Field sampling	Take-home quiz
	Thurs, Feb 7		Wrap-up of pre-set labs	Take-home quiz Turn in notebook for first check

Week	Date	General topic	Activities	Assessment
6	Tues, Feb 12	Project development	1st primary literature discussion, Start development of project	Experiment brainstorm
	Thurs, Feb 14		Research opportunities, Finalize project topic	1st paper discussion reflection
7	Tues, Feb 19	Project preparation	2nd Primary literature discussion, Plan for experiment and create a timeline	Experiment design
	Thurs, Feb 21		Begin experiment preparation	2nd paper discussion reflection
8	Tues, Feb 26	Project	Research ethics, Begin experiments	
	Thurs, Feb 28			Research ethics reflection due
9	Tues, Mar 5	Project	Presentation of group's introduction and methods	Group presentation #1
	Thurs, Mar 7			
10	Tues, Mar 12	Spring break	No class	
	Thurs, Mar 14		No class	
11	Tues, Mar 19	Project	Discuss details of poster-making	
	Thurs, Mar 21			
12	Tues, Mar 26	Project	Group presentation of primary literature	Group presentation #2
	Thurs, Mar 28			
13	Tues, Apr 2	Project and analysis	Basic graphs, Review of data analysis	
	Thurs, Apr 4		Data analysis & graphing	
14	Tues, Apr 9	Project analysis	Data analysis & graphing	
	Thurs, Apr 11		Data analysis & graphing	Last day to complete lab skills modules
15	Tues, Apr 16	Project analysis	Finalize poster development	
	Thurs, Apr 18		Practice poster presentation	Final research poster due
16	Tues, Apr 23	Project presentation	Poster and presentation	Final poster presentation
	Thurs, Apr 25		Wrap-up	Final reflection, Final paper, turn in notebook for final check

There is no final exam in this course. The schedule is subject to change at the instructor's discretion.