2018 Syllabus for Biology 221: Ecology Lab

Monday 1:20pm–5:20pm; 251 ISC

Instructor: Dr. Althea A. ArchMiller
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Office Hours: Mon/Wed 10:30-11:00 & T/Th 10:30-12:00

The schedules and policies associated with this course may be subject to revision or change as a consequence of changing circumstances or events. Reasonable notification will be provided to students prior to any major changes in course policies or procedures.

Course Description & Goals

This field course will provide students with a foundation in ecological principles through hands-on work in the field. Students will develop their skills in framing scientific questions, arriving at testable hypotheses, and collecting, analyzing, and presenting data. After a brief introduction to the field, students will work in groups of 3–4 to select and develop their own group research projects. Research projects will be presented as scientific posters in a poster session at the end of the semester. Additional indoor laboratories will introduce students to modeling ecological processes, using data spreadsheets and applying statistics in ecology.

The primary goal of this course is to enhance your understanding of ecology, which includes the complex interactions between organisms and their environment, through interactive, hands-on activities in the field and laboratory.

Learning Outcomes

1. Observe and identify organisms
2. Detect and interpret ecological interactions amongst organisms
3. Investigate the relationships between organisms and the environment
4. Accurately and effectively document field observations with field notes and data collection
5. Link field observations with key ecological concepts and relevant scientific literature
6. Execute the scientific method using reproducible research methods
7. Present scientific research results in the form of a scientific poster

Required Textbook: McMillan, V.E. 2012. *Writing Papers in the Biological Sciences*. 5th ed. New York: Bedford/St. Martin's.

Attendance Policy

Attendance in labs is required. If you miss a lab, you are responsible for getting the material you missed. Dr. ArchMiller also values the educational experience afforded by student participation in co-curricular activities; however, you are responsible for notifying Dr. ArchMiller of scheduled absences (e.g., co-curricular activities) at the beginning of the semester, or as soon as that information is available (but no less than 24 hours in advance). You must make up any missed assignments either before your absence or

before the next class meeting. Any work missed because of a valid, college-recognized emergency absence (accompanied by a written excuse) must be made up as soon as possible after your return. Assignments are due at the beginning of the class period unless otherwise specified. Late assignments will be penalized 10% per day.

MOST LABS WILL BE OFF-CAMPUS. Please arrive promptly for class and prepared for a walk *in all types of weather*. Please, bring the following items to each lab:

Sturdy shoes for walking	Rain gear	Hand lens (optional)
Sunscreen and/or sunhat	Calculator	Field guides (optional)
Water bottle	Pencil or waterproof pen	Field notebook (3-ring binder)

YOU ARE REQUIRED TO MAINTAIN FIELD NOTES each day that you are in the field. Field note forms will be provided for the first three labs. Please also bring a 3-ring binder for storing your notes and to write in during lab. Research-specific data sheets will be required for every day that you are in the field collecting data.

Participation

You will be working in groups, so participation—while it does not affect your grade directly—is essential to the quality of everyone's learning. Furthermore, a record throughout the semester of exemplary participation and attendance can help in the case of a borderline final grade. Active participation nurtures learning, and will improve the quality of future recommendation letters from your instructors.

Accommodations for Students with Disabilities

In accordance with the Americans with Disabilities Act, Concordia College and your instructor are committed to making reasonable accommodations to assist individuals with documented disabilities to reach their academic potential. Such disabilities include, but are not limited to, learning or psychological disabilities, or impairments to health, hearing, sight, or mobility. If you believe you require accommodations for a disability that may impact your performance in this course, you must schedule an appointment with Disability Services to determine eligibility. Students are then responsible for giving instructors a letter from Disability Services indicating the type of accommodation to be provided; please note that accommodations will not be retroactive. The Disability Services office is in Academy 106, phone 218-299-3514; https://www.concordiacollege.edu/directories/offices-services/counseling-center-and-disabilityservices/disability/

Academic Integrity (from Student Handbook)

"Students are responsible for maintaining and encouraging academic integrity at the college. We expect all students to act with integrity in the classroom and in completing and submitting assignments. Ultimately, students bear the responsibility of ensuring the integrity of their own work. Students are expected to meet at least the minimal requirements of each course with work of appropriate quality.

"At no time is cheating on examinations, quizzes, or assignments acceptable at Concordia. Students are also expected to exercise appropriate caution to avoid plagiarism on written assignments."

I will not tolerate any instance of academic dishonesty. Instances of academic dishonesty will result in either a failing grade for that activity or for the course, according to the perceived intent and extent of the instance(s) of academic dishonesty. All academic integrity violations will be reported to the Office of Academic Affairs.

Respect for Diversity

It is my intent that students from diverse backgrounds and perspectives be well-served by this course, and that the diversity that students bring to this class be viewed as a resource. Please let me know ways to improve the effectiveness of the course for you, personally, or for other students or student groups. As a student in this class, you are required to treat other members of the class with respect and kindness; disrespectful, rude, or exclusive behavior will not be tolerated.

FINAL GRADES will be based on the following items. (Your lab grade is 30% of your final Ecology grade)

Category	Item	Details	Points	Total	%
Lab Assignments				50	17%
	Understanding Experimental Design	Due Sept 7	10		
	Library assignment	Due Sept 14	20		
	R Tutorials	Due Sept 24	10		
	Isle Royale: Graded Questions	Due Nov 9	10		
Datasheets				50	17%
	Guided Datasheet Wk 1	Due Sept 10	10		
	Guided Datasheet Wk 2	Due Sept 17	10		
	Guided Datasheet Wk 3	Due Sept 24	10		
	Blank Field Datasheet	Due Sept 24	5		
	Completed Field Datasheets	Due Oct 15	15		
Research Assignments				100	33%
	Draft Proposal	Due Sept 17	20		
	Final Proposal	Due Oct 1	30		
	Data Entry	Due Oct 14	5		
	Data Appendix	Due Nov 2	15		
	Results HTML	Due Nov 16	15		
	Peer Assessments	Due Nov 26	15		
Research Poster		Due Dec 7		100	33%
	Scientific Merit		50		
	Presentation & Format		50		
			Total 300		100%

Biology Department Policy on Use of Electronic Devices

All electronic devices (including cellular phones) must be set to silent during scheduled lecture and laboratory sessions. Although I expect you may occasionally wish to take photographs with your cell phone or other electronic device, I also expect you to be respectful with your use of cell phones during lab. **Distracting or inappropriate use of electronic devices will not be tolerated.**

Percentage	Grade
≥ 94	A
90-93.9	A-
87-89.9	B+
83-86.9	B
80-82.9	B-
77-79.9	C+
73-76.9	C
70-72.9	C-
67-69.9	D+
60-66.9	D
< 60	F

Course Schedule

Week	Topic(s)	Assignments and Due Dates
Week 1: Sept 3	Introduction to Long Lake Taking Good Field Notes Framing Research Questions	**9/7 Experimental Design (SimUText)**
Week 2: Sept 10	Long Lake Ecology Effects of Fire on Plant Communities Sampling and Identification in the Field	**9/10 Form Research Groups (In lab check)** **9/10 Week 1 Guided Datasheet** **9/14 Library Assignment (Moodle)**
Week 3: Sept 17	Introduction to Buffalo River Diversity of Benthic Macroinvertebrates Wet Sampling: Identification in the Field ****Symposium Week****	**9/17 Week 2 Guided Datasheet** **9/17 Draft Proposal (Printed)**
Week 4: Sept 24	Introduction to R & TIER Protocol	**9/24 R Tutorials (In lab check)** **9/24 Blank Field Datasheet (In lab check)** **9/24 Week 3 Guided Datasheet**
Week 5: Oct 1	Research Projects: Data Collection	**10/1 Final Proposal (Printed w/Draft)**
Week 6: Oct 8	Research Projects: Data Collection	
Week 7: Oct 15	Intro to Data Analysis & Making a Data Appendix	**10/14 Data Entry (OSF)** **10/15 Complete Field Datasheets (printed)**
Week 8: Oct 22	Fall Break – **No Lab**	
Week 9: Oct 29	Registration Advising – **No Formal Lab** Groups meet with instructor by appt	**11/2 Data Appendix (OSF)**
Week 10: Nov 5	SimUText Ecobeaker Isle Royale: Predator Prey Dynamics	**11/9 Isle Royale (SimUText)**
Week 11: Nov 12	Data Analysis & Plotting	**11/16 Results HTML (OSF)**
Week 12: Nov 19	Thanksgiving Open Lab	
Week 13: Nov 26	Draft Poster Presentation	**11/26 Poster Draft after lab (OSF)** **11/26 Peer Assessments (in lab)**
Week 14: Dec 3	Open Lab Work with Research Groups	**12/7 Final Poster (OSF)**
Week 15: Dec 10	No Lab **Poster Session** (ISC 325 Commons) Friday, December 14, 2:00-4:00pm	

****Open Science Framework (OSF)****

Students in this lab are required to sign up for a free Open Science Framework (OSF) account at https://osf.io/

Syllabus Acknowledgement

I, _____, have received a copy of the syllabus for BIOL 221, Ecology Lab, and understand all of the policies and procedures outlined herein.

SIGNATURE _____ Date _____

Use of Photographic Likeness Release

For good and valuable consideration, I authorize Dr. ArchMiller to record photographs of me and use, reproduce, modify, distribute, and exhibit such photographs, in whole or in part, without restrictions or limitation for marketing and instructional purposes.

I release Dr. ArchMiller, Concordia College, its successors and assigns, agents, and all persons for whom it is acting from any liability by virtue of any blurring, distortion, alteration, optical illusion, or use in composite form, whether intentional or otherwise, that may occur or be produced in the photographic process and waive any right that I may have to inspect or approve the finished recordings.

PRINTED NAME _____

SIGNATURE _____ Date _____

Optional Information

PREFERRED NAME OR NICKNAME _____

MAJOR _____

CONTACT PHONE NUMBER _____

WHERE'S "HOME?" _____

MEDICAL ISSUES THE INSTRUCTOR SHOULD BE AWARE OF _____

_____

FAVORITE ANIMAL _____

FAVORITE PLANT _____

FAVORITE ECOSYSTEM AND WHY _____

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