SYLLABUS
ENR 4345

Methods in Aquatic Ecology
Fall 2019

COURSE OVERVIEW

Instructors

Instructor: Dr. Lauren M. Pintor

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Office: 473C Kottman Hall

Office Hours: By Appointment

Teaching Assistant: Krystal Pocock

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Office: 465 Kottman Hall

Office Hours: By Appointment

Course description

This course will introduce students to different methods and techniques used in the field of aquatic sciences. An equally important goal of this course will be to introduce students to methods in study design and data analysis and interpretation. Students should leave the class with a toolbox of knowledge and skills needed to study, monitor and manage biological, chemical and physical components of aquatic ecosystems.

Course learning outcomes

By the end of this course, students should successfully be able to:

1) Use and critically evaluate methods and techniques used by aquatic scientists to study, monitor and manage aquatic ecosystems.
2) Design and execute research and monitoring studies in the field of aquatic sciences.
3) Develop and advance skills in data management, data manipulation and visualization of data through graphs and tables.
4) Organize, analyze and interpret data and metrics collected on the physical, chemical and biological components of aquatic ecosystems using basic statistics and statistical programs.

COURSE MATERIALS AND TECHNOLOGIES

Textbooks

REQUIRED

- No textbook is required, but readings may be assigned throughout the course and will be available through Carmen. Readings will be announced both in class and on Carmen.

- Slides with either full or partial notes from lecture presentations will also be available on Carmen. If you miss a class for which only partial lecture notes are provided, it will be your responsibility to get the notes generated during the class from a fellow classmate.

RECOMMENDED

1. Zale, A.V., D.L. Parrish, & T.M. Sutton, Fisheries Techniques. Third Edition
2. Hauer, F.R. & G.A. Lamberti. Methods in Stream Ecology. Second Edition Wetzel, R.G. & G.E. Likens. Limnological Analysis. Third Edition.

Course technology

For help with your password, university e-mail, Carmen, or any other technology issues, questions, or requests, contact the OSU IT Service Desk. Standard support hours are available at https://ocio.osu.edu/help/hours, and support for urgent issues is available 24x7.

- **Self-Service and Chat support:** http://ocio.osu.edu/selfservice
- **Phone:** 614-688-HELP (4357)
- **Email:** 8help@osu.edu
- **TDD:** 614-688-8743

BASELINE TECHNICAL SKILLS NEEDED

- Basic computer and web-browsing skills

- Navigating CarmenCanvas

REQUIRED EQUIPMENT & SOFTWARE

- Computer: current Mac (OS X) or PC (Windows 7+) with high-speed internet connection

- Microsoft Office 365: All Ohio State students are now eligible for free Microsoft Office 365 ProPlus through Microsoft's Student Advantage program. Full instructions for downloading and installation can be found https://ocio.osu.edu/kb04733.

GRADING AND FACULTY RESPONSE

How your grade is calculated

Your course grade will be evaluated on data analysis problem sets, short quizzes, attendance and participation, and a final exam.

Data Analysis Activity Sheets

To develop skills in data management, data manipulation and analysis, you will participate in data analysis activities during class. Your progress and mastering of these skills will be assessed through written answers to activities that you'll begin during class and complete on your own outside of class. Problem sets will be comprised, but not limited to, summarizing, reporting and graphing data collected during labs, reporting the results of statistical analyses and answering short synthesis questions. There will be six graded problem sets due over the semester.

Quizzes

There will be weekly online quizzes. These will be very short, timed quizzes (3-5 multiple choice or true/false questions) that will assess your recall of key terms, methods and equipment demonstrated and used during the Monday lab periods. These quizzes will help prepare you for questions that will appear on the final exam. Quizzes will be taken online, outside of class time.

Final Exam

The final exam will be cumulative and will assess your recall, understanding and evaluation of field and laboratory methods covered during the class. The exam will also include data analysis and interpretation activities similar to those performed as part of the data analysis activities.

There is **NO make-up exam** except for valid reasons (e.g., medical excuse). If you are sick, you must have a note signed by your medical doctor (i.e. a licensed physician) and dated the same day as the exam and excusing you from the class period. Otherwise, you will receive a zero on the exam. The instructor will determine if your excuse is valid. If you do *not* have a reasonable excuse for missing an exam then you will receive a zero for the exam.

ASSIGNMENT CATEGORY	POINTS
Data Analysis Activity Sheets (6 total, 100 points each)	600
Quizzes (9 total, 10 or 20 points per quiz)	100
Attendance & Participation	50
Final Exam	200
Total	**950**

See course schedule, below, for due dates.

Late assignments

The penalty for late assignments is 10% of the assignment total per day. We will not extend deadlines for any reason. There should be extenuating circumstances for missing a scheduled activity, quiz or exam. In these cases, *early* arrangements will need to be coordinated.

**IMPORTANT: You must contact the instructors PRIOR TO a planned conflict to make arrangements for modified deadlines. Otherwise, no arrangements will be made. If you are ill the day of an assignment/exam, you must reach out to the instructors with verification of your absence on the day of the missed deadline, otherwise no accommodations will be made. If you would like any clarification on this, don't hesitate to reach out.

Grading scale

93–100: A
90–92.9: 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
Below 60: E

ATTENDENCE & PARTICIPATION

The laboratory meetings will be composed primarily of field and lab activities related to the physical, chemical and biological sampling of aquatic ecosystems. Please complete any assigned readings before attending the labs and bring any handouts with you. Waders, boots or other wading shoes will be available for the field trips. However, if you prefer your own, please bring them with you. Please dress for outdoor fieldwork & possible inclement weather. Make sure to bring water into the field with you and wear sunscreen. For our lab with the Ohio Department of Natural Resources, you will be required to meet the class at the DNR's District 1 Office (1500 Dublin Road, Columbus, OH 43215).

OTHER COURSE POLICIES

Academic integrity policy

OHIO STATE'S ACADEMIC INTEGRITY POLICY

Academic integrity is essential to maintaining an environment that fosters excellence in teaching, research, and other educational and scholarly activities. Thus, The Ohio State University and the Committee on Academic Misconduct (COAM) expect that all students have read and understand the University's *Code of Student Conduct*, and that all students will complete all academic and scholarly assignments with fairness and honesty. Students must recognize that failure to follow the rules and guidelines established in the University's *Code of Student Conduct* and this syllabus may constitute "Academic Misconduct."

The Ohio State University's *Code of Student Conduct* (Section 3335-23-04) defines academic misconduct as: "Any activity that tends to compromise the academic integrity of the University, or subvert the educational process." Examples of academic misconduct include (but are not limited to) plagiarism, collusion (unauthorized collaboration), copying the work of another student, and possession of unauthorized materials during an examination. Ignorance of the University's *Code of Student Conduct* is never considered an "excuse" for academic misconduct, so I recommend that you review the *Code of Student Conduct* and, specifically, the sections dealing with academic misconduct.

If we suspect that a student has committed academic misconduct in this course, we are obligated by University Rules to report my suspicions to the Committee on Academic Misconduct. If COAM determines that you have violated the University's *Code of Student Conduct* (i.e., committed academic misconduct), the sanctions for the misconduct could include a failing grade in this course and suspension or dismissal from the University.

If you have any questions about the above policy or what constitutes academic misconduct in this course, please contact us.

Other sources of information on academic misconduct (integrity) to which you can refer include:

- The Committee on Academic Misconduct web pages (COAM Home)
- *Ten Suggestions for Preserving Academic Integrity (Ten Suggestions)*
- *Eight Cardinal Rules of Academic Integrity* (www.northwestern.edu/uacc/8cards.htm)

Copyright disclaimer

The materials used in connection with this course may be subject to copyright protection and are only for the use of students officially enrolled in the course for the educational purposes associated with the course. Copyright law must be considered before copying, retaining, or disseminating materials outside of the course.

Statement on title IX

Title IX makes it clear that violence and harassment based on sex and gender are Civil Rights offenses subject to the same kinds of accountability and the same kinds of support applied to offenses against other protected categories (e.g., race). If you or someone you know has been sexually harassed or assaulted, you may find the appropriate resources at http://titleix.osu.edu or by contacting the Ohio State Title IX Coordinator, Kellie Brennan, at titleix@osu.edu

Your mental health

A recent American College Health Survey found stress, sleep problems, anxiety, depression, interpersonal concerns, death of a significant other and alcohol use among the top ten health impediments to academic performance. Students experiencing personal problems or situational crises during the quarter are encouraged to contact the College of Pharmacy Office of Student Services in room 150 Parks Hall (614-292-5001) OR OSU Counseling and Consultation Services (614-292-5766) for assistance, support and advocacy. This service is free and confidential.

ACCESSIBILITY ACCOMMODATIONS FOR STUDENTS WITH DISABILITIES

Requesting accommodations

If you would like to request academic accommodations based on the impact of a disability qualified under the Americans with Disabilities Act and Section 504 of the Rehabilitation Act of 1973, contact your instructor privately as soon as possible to discuss your specific needs. Discussions are confidential.

In addition to contacting the instructor, please contact the Student Life Disability Services at 614-292-3307 or ods@osu.edu to register for services and/or to coordinate any accommodations you might need in your courses at The Ohio State University.

Go to http://ods.osu.edu for more information.

**COURSE SCHEDULE ON THE NEXT PAGE (SUBJECT TO CHANGE)

Week & Dates	Monday (9-1pm) Heffner Wetland Building	Thursday (1:50 - 3:40pm) 114 Kottman Hall	Quizzes & Assignments
1: Aug 20 - Aug 23	No Class	Course introduction & Pre-Assessment	
2: Aug 26 - Aug 30	Lab Safety & Study Design	Study Design & Basic Statistics	Quiz #1 Online (due by 8/29)
3: Sept 2 - 6	Labor Day, No Lab	Data Sheet Design and Data Management	Quiz #2 Online (due by 9/5)
4: Sept 9 - 13	Lab #1: Estimating fish & crayfish population abundance	Lab #1 Data Analysis	Quiz #3 Online (due by 9/12)
5: Sept 16 -20	Lab #2: Estimating fish diversity	Lab #2 Data Analysis	Data Analysis Activity Sheet from Lab #1 (due 9/16) Quiz #4 Online (due by 9/19)
6: Sept 23 - Sept 27	Lab #3: Quantifying macroinvertebrate diversity (Part 1)	Guest Lecture (Eugene Braig): Estimating fish age & growth.	Data Analysis Activity Sheet from Lab #2 (due 9/23) Quiz #5 Online (due by 9/26)
7: Sept 30 - Oct 4	Lab #4: Estimating fish age and growth (Ohio DNR)	Lab #4 Data Analysis	Quiz #6 Online (due by10/3)
8: Oct 7-11	Lab #5: Quantifying algal biomass	Fall Break, No Class	Data Analysis Activity Sheet from Lab #4 (due 10/7). Quiz #7 Online (due by10/10)
9: Oct 14 - 18	Lab #5 continued : Quantifying algal biomass	Lab #5 Data Analysis	
10: Oct 21 - 25	Lab #3 continued : Quantifying macroinvertebrate diversity	Lab #3 Data Analysis	Data Analysis Activity Sheet from Lab #5 (due 10/21)
11: Oct 28 - Nov 1	Lab #6: Estimating stream habitat, velocity and discharge	Lab #6 Data Analysis	Data Analysis Activity Sheet from Lab #3 (due 10/28). Quiz #8 Online (due by10/31)
12: Nov 4 - 8	Lab #7: Marking and tagging fish and invertebrates	QUIZ: Marking & tagging	Data Analysis Activity Sheet from Lab #6 (due 11/4) Quiz #9 Online (due 11/7)
13: Nov 11 - 15	No Lab, Veteran's Day	To Be Determined	
14: Nov 18 - 22	Lab #8: Quantifying phosophorous & nitrogen (Group A)	Thanksgiving, No Class	
15: Nov 25 - 29	Lab #8: Quantifying phosophorous & nitrogen (Group B)	Lab #8 Data Analysis	
16: Dec 2 - 6	Final Exam Review	No Class	
Finals: Dec 6-12	*Final Exam: Monday, December 9, 2019 from 10:00am - 11:45am in 114 Kottman Hall*		