



SYLLABUS

ENR 4345

Methods in Aquatic Ecology
Fall 2023

COURSE OVERVIEW

Instructors

Instructor: Dr. Zach Steffensmeier

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Office Hours: By Appointment

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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.

This is a **hybrid course** that will utilize multiple platforms supported by The Ohio State University. The lab sessions will be in-person. The lectures and data analysis activities will be delivered using CarmenCanvas, OSU's learning management system. CarmenCanvas (<https://carmen.osu.edu/>) will also be used to complete quizzes, exams, and other assignments. The lecture portion of the class will be asynchronous, self-paced, yet all course requirements must be completed during the semester of offering AND all assignments, quizzes, and exams must be completed by the due date shown on the syllabus to receive the opportunity for credit.

Course learning outcomes

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

- 1) Use and 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 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.

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
- Zoom text, audio, and video chat
- **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>.
- JMP Versions 14-16. JMP is a software used for data analysis and is available for free through OSU's OCIO Self Service page. It is available for both PC and Mac. <https://osuitsm.service-now.com/selfservice/>

Carmen Access

You will need to use [BuckeyePass](#) multi-factor authentication to access your courses in Carmen. To ensure that you can always connect to Carmen, it is recommended that you take the following steps:

- Register multiple devices in case something happens to your primary device. Visit the [BuckeyePass - Adding a Device](#) help article for step-by-step instructions.
- Request passcodes to keep as a backup authentication option. When you see the Duo login screen on your computer, click "Enter a Passcode" and then click the "Text me new codes" button that appears. This will text you ten passcodes good for 365 days that can each be used once.
- Download the [Duo Mobile application](#) to all your registered devices for the ability to generate one-time codes if you lose cell, data, or Wi-Fi service.

If none of these options meet the needs of your situation, you can contact the IT Service Desk at 614-688-4357 (HELP) and the IT support staff will work out a solution with you

GRADING AND FACULTY RESPONSE

How your grade is calculated

Your course grade will be evaluated on data analysis homework, short quizzes pre- or post-lab activities, attendance and participation, and a final exam.

Quizzes taken on CarmenCanvas

There will be online quizzes given before most of the laboratory periods. These will be short, timed quizzes (multiple choice, true/false questions or short answer). Pre-lab quizzes will assess your understanding of the lecture and reading material required to successfully complete the lab. Post-lab quizzes will assess your understanding of the material presented during the labs. Pre-lab quizzes will be taken online and due before the start of Monday's lab period. Quizzes are open-note, book and computer, but since this is a timed quiz, it is recommended that you do NOT use them. Additionally, each student must complete the quiz on her or his own. You are NOT permitted to receive assistance from anyone else during the quiz. You are NOT permitted to take the quizzes as part of a group. Finally, the purpose of the pre-lab quiz is to provide a foundation of knowledge that you'll then build on during the lab. ***If you do not attend the lab period associated with the quiz or do not have a documented excuse for missing the lab, you will receive half credit for the quiz. The same will apply for post-lab quizzes.***

Data Analysis Homework

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. Problem sets will be comprised of, but not limited to, summarizing, analyzing, and graphing data collected during labs, reporting the results of statistical analyses and answering short synthesis questions. We will offer online, optional, open-lab sessions that you're welcome to attend to get help with the homework. Most often the data you will be working with will have been collected during the lab period. This will help facilitate your understanding of the dataset and how it connects to the methods you used during the lab. ***If you do not attend the lab associated with the data analysis activity and do not have a documented excuse for missing the lab, you will still be able to complete assignment, but you will receive half credit for the assignment.*** Data analysis assignments will be available starting on Wednesday afternoon and will be due by the following Tuesday evening.

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 include questions like those on the quizzes and will also include data analysis and interpretation activities like those performed as part of the data analysis activities. The final will be given on CarmenCanvas. It will be open for approximately 24 hours, and you can take the exam anytime during these 24 hours. You will be given ~60-100 minutes to complete the exam. If you fail to complete the exam on Carmen before it closes, you will earn a grade of 0%. Each student must complete the exam on her or his own. You are NOT permitted to receive assistance from anyone else during the exam. You are NOT permitted to take the exams as part of a group. However, you are permitted to use notes, slides, textbooks, journal articles, books, and the Internet during the exam. But given the exam is timed, we do not recommend this.

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.

Participation & Attendance

Participation and attendance will be graded based on your attendance and participation during the in-person labs, as well as the proportion of online activities (e.g. graded surveys) you participate in. For example, you'll notice some of the activities are "graded surveys" based on whether you complete the assignment.

ASSIGNMENT CATEGORY	POINTS
Pre-Lab Quizzes (10 total, 25 points each)	250
Data Analysis Homework (5 @ 100 pts each, 2 @ 50 pts each)	600
Attendance & Participation (Labs @ 5pts each, Lecture @ 5 pts each)	110
Final Exam (200 points)	200
Total	1160

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 without a valid 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 on 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 accommodation will be provided. 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

FACULTY FEEDBACK AND RESPONSE TIME

I am providing the following list to give you an idea of our intended availability throughout the course. (Remember that you can call **614-688-HELP** at any time if you have a technical problem.)

GRADING AND FEEDBACK

For large weekly assignments, you can expect feedback within **7-10 days**.

EMAIL

We will reply to emails within **24 hours on school days**. All email communications should be made using your OSU address (i.e. name.#@buckeyemail.osu.edu). Please start the title of your email with "ENR 4345". This will help us to prioritize your email.

DISCUSSION BOARD

We will check and reply to messages on the discussion boards every **24 hours on school days**.

ATTENDANCE & PARTICIPATION

Consistent, weekly participation and engagement with the material will help you to succeed in the class. The laboratory meetings will be composed primarily of field and lab activities related to the physical, chemical and biological sampling of aquatic ecosystems. 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.

The lecture portion of the class will be entirely online and asynchronous. Your attendance and participation will be based on your online activity. The following is a summary of everyone's expected participation:

- **Logging in: AT LEAST ONCE PER WEEK.** Be sure you log in to the course in CarmenCanvas each week. (During most weeks you will log in many times.)
- **Office hours (OPTIONAL):** If you would like to discuss an assignment or other course-related question with the instructor or TA, please contact them at the beginning of the week via email to schedule an appointment. Office hours will be held via Zoom.
- **Quizzes: ON CARMENCANVAS.** There will be multiple quizzes during the course. Quizzes are structured to test your comprehension and understanding of the lab material that you will be learning that week. They will also provide a lower-stakes environment to apply course material that will be like that on the final exam (i.e., quizzes are worth fewer points than exams).
- **Open Lab for Data Analysis work: ON ZOOM (OPTIONAL).** We will offer optional, open lab sessions via Zoom for help with the data analysis homework. You're welcome to join the session with a specific question, but you're also welcome to use those times to simply work on the homework and ask questions as they arise.
- **Final Exam: ON CARMENCANVAS.** The final will only be open for a 24-hour period, so please plan accordingly. It is structured to test your comprehension and ability to apply course material.

Discussion and communication guidelines

The following are expectations for how we should communicate as a class. Please remember to be respectful, professional and thoughtful.

- **Writing style:** While there is no need to participate in class discussions as if you were writing a formal paper, you should remember to write using good grammar, spelling, and punctuation. Informality (including an occasional emoticon) is fine for non-academic topics.
- **Tone and civility:** Let's maintain a supportive learning community where everyone feels safe and where people can disagree amicably. Remember that sarcasm doesn't always come across online.
- **Citing your sources:** When we have academic discussions, please cite your sources to back up what you say. (For the textbook or other course materials, list at least the title and page numbers. For online sources, include a link.)
- **Backing up your work:** Consider composing your academic posts in a word processor (e.g., Microsoft Word), where you can save your work, and then copying into the Carmen discussion.

E-mail Etiquette

Below I have included guidelines from Bloomsbury's guide on email etiquette that you should follow when drafting your e-mail. I will not respond to e-mails that I consider inappropriate.

DO

- Include a descriptive statement in the subject line.
- Use proper salutations when beginning an e-mail.
- Be concise in the body of the e-mail, use complete sentences and proper grammar.
- Use an appropriate closure at the end of each e-mail followed by your first and last name.
- If replying to an e-mail, reference the original e-mail and its content.
- Be selective of your choice of words. Emotions are difficult to convey in text and without the benefit of facial expressions your sentiment can be lost in the words you choose to write.

DON'T

- Use all capital letters; this conveys a tone of ANGER.
- Use e-mail as a format to criticize other individuals.
- Ask for your grade via e-mail. Grades will not be discussed by e-mail. If you need to discuss a graded item, make an appointment to do so in my office.
- E-mail to inquire when grades will be posted. We will work toward submitting grades promptly, however, recognize that grading assignments and exams requires considerable time to ensure uniformity and fairness.

- Send an e-mail out of frustration or anger. Learn to save the e-mail as a draft and review later when emotions are not directing the content.

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

The Ohio State University is committed to building and maintaining a community to reflect diversity and to improve opportunities for all. All Buckeyes have the right to be free from harassment, discrimination, and sexual misconduct. Ohio State does not discriminate based on age, ancestry, color, disability, ethnicity, gender, gender identity or expression, genetic information, HIV/AIDS status, military status, national origin, pregnancy (childbirth, false pregnancy, termination of pregnancy, or recovery therefrom), race, religion, sex, sexual orientation, or protected veteran status, or any other bases under the law, in its activities, academic programs, admission, and employment. Members of the university community also have the right to be free from all forms of sexual misconduct: sexual harassment, sexual assault, relationship violence, stalking, and sexual exploitation.

To report harassment, discrimination, sexual misconduct, or retaliation and/or seek confidential and non-confidential resources and supportive measures, contact the Office of Institutional Equity:

1. Online reporting form at equity.osu.edu,
2. Call 614-247-5838 or TTY 614-688-8605,
3. Or Email equity@osu.edu

The university is committed to stopping sexual misconduct, preventing its recurrence, eliminating any hostile environment, and remedying its discriminatory effects. All university employees have reporting responsibilities to the Office of Institutional Equity to ensure the university can take appropriate action:

- All university employees, except those exempted by legal privilege of confidentiality or expressly identified as a confidential reporter, have an obligation to report incidents of sexual assault immediately.

- The following employees have an obligation to report all other forms of sexual misconduct as soon as practicable but at most within five workdays of becoming aware of such information: 1. Any human resource professional (HRP); 2. Anyone who supervises faculty, staff, students, or volunteers; 3. Chair/director; and 4. Faculty member.

This course adheres to The Principles of Community adopted by the College of Food, Agricultural, and Environmental Sciences. These principles are located on the Carmen site for this course; and can also be found at <https://go.osu.edu/principlesofcommunity>. For additional information on Diversity, Equity, and Inclusion in CFAES, contact the CFAES Office for Diversity, Equity, and Inclusion (<https://equityandinclusion.cfaes.ohio-state.edu/>). If you have been a victim of or a witness to a bias incident, you can report it online and anonymously (if you choose) at <https://studentlife.osu.edu/bias/report-a-bias-incident.aspx>.

Counseling & Consultation Services/Mental Health

As a student you may experience a range of issues that can cause barriers to learning, such as strained relationships, increased anxiety, alcohol/drug problems, feeling down, difficulty concentrating and/or lack of motivation. These mental health concerns or stressful events may lead to diminished academic performance or reduce a student's ability to participate in daily activities. The Ohio State University offers services to assist you with addressing these and other concerns you may be experiencing. If you or someone you know are suffering from any of the aforementioned conditions, you can learn more about the broad range of confidential mental health services available on campus via the Office of Student Life Counseling and Consultation Services (CCS) by visiting ccs.osu.edu or calling (614) 292-5766. CCS is located on the 4th Floor of the Younkin Success Center and 10th Floor of Lincoln Tower. You can reach an on-call counselor when CCS is closed at (614) 292-5766- and 24-hour emergency help is also available through the 24/7 National Prevention Hotline at 1-(800)-273-TALK or at suicidepreventionlifeline.org.

David Wirt, wirt.9@osu.edu, is the CFAES embedded mental health counselor. He is available for new consultations and to establish routine care. To schedule with David, please call 614-292-5766. Students should mention their affiliation with CFAES when setting up a phone screening.

Safe & Healthy Buckeyes

Health and safety requirements: All students, faculty and staff are required to comply with and stay up to date on all university safety and health guidance (<https://safeandhealthy.osu.edu>). Masks are optional in most indoor spaces on OSU's campuses, including classrooms and offices. Read more on the [Personal Safety Practices](#) page. See: <https://safeandhealthy.osu.edu/> for additional guidelines and resources; as well as for any updates from the university regarding changes in policy and procedure.

ACCESSIBILITY ACCOMMODATION FOR STUDENTS WITH DISABILITIES

Requesting accommodations

The university strives to make all learning experiences as accessible as possible. Considering the current pandemic, students seeking to request COVID-related accommodations may do so through the university's request process, managed by Student Life Disability Services. If you anticipate or experience academic barriers based on your disability (including mental health, chronic, or temporary medical conditions), please let me know immediately so that we can privately discuss options. To establish reasonable accommodation, I request that you register with Student Life Disability Services. After registration, make arrangements with me as soon as possible to discuss your accommodation so that they may be implemented in a timely fashion. SLDS contact information: slds@osu.edu; 614-292-3307; slds.osu.edu; 098 Baker Hall, 113 W. 12th Avenue.

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

RELIGIOUS ACCOMMODATIONS

It is Ohio State's policy to reasonably accommodate the sincerely held religious beliefs and practices of all students. The policy permits a student to be absent for up to three days each academic semester for reasons of faith or religious or spiritual belief.

Students planning to use religious beliefs or practices accommodations for course requirements must inform the instructor in writing no later than 14 days after the course begins. The instructor is then responsible for scheduling an alternative time and date for the course requirement, which may be before or after the original time and date of the course requirement. These alternative accommodations will remain confidential. It is the student's responsibility to ensure that all course assignments are completed.

****COURSE SCHEDULE (SUBJECT TO CHANGE)**

Week	Date	Monday Lab Activity	Asynchronous Carmen Activity	Assignment
1	21-Aug	No Lab This Week	Lecture: Study Design	Pre-Lab Quiz: Fish Abundance
2	28-Aug	Lab 1: Fish Abundance		
3	4-Sep	No Lab, Labor Day	Lecture: Fish Diversity	Data Activity: Fish Abundance Pre-Lab Quiz: Fish Diversity
4	11-Sep	Lab 2: Fish Diversity	Lecture: Macroinvertebrate Diversity	Pre-Lab Quiz: Macroinvertebrate Diversity
5	18-Sep	Lab 3: Macroinvertebrate Diversity	Lecture: Velocity, Discharge	Data Activity: Fish Diversity Pre-Lab Quiz: Veloc/Discharge
6	25-Sep	Lab 4: Velocity, Discharge, & QHEI	Lecture: Stream Metabolism	Data Activity: Macroinverts Pre-Lab Quiz: Metabolism
7	2-Oct	Lab 5: Stream Metabolism & DO	Lecture: Algal Biomass	Data Activity: Discharge, QHEI Pre-Lab Quiz: Algal Biomass
8	9-Oct	Lab 6: Algal Biomass	Fall Break	Fall Break
9	16-Oct	Lab 6: Algal Biomass	Lecture: TBD	Data Activity: Metabolism Pre-Lab Quiz: TBD
10	23-Oct	Lab 7: TBD	Lecture: Fish Age & Growth	Data Activity: Algae. Pre-Lab Quiz: Age & Growth
11	30-Oct	Lab 8: Fish Age & Growth	Lecture: Phosphorous	Data Activity: TBD Pre-Lab Quiz: Phosphorous
12	6-Nov	Lab 9: Phosphorous	Lecture: Nitrogen	Data Activity: Age & Growth Pre-Lab Quiz: Nitrogen.
13	13-Nov	Lab 10: Nitrogen	Lecture: Aquarium Basics & Trophic Ecology	Pre-Lab Quiz: Aquarium Basics & Trophic Ecology
14	20-Nov	Lab 11: Aquarium Basics	Thanksgiving Break	
15	27-Nov	Lab 12: Trophic Ecology Lab Experiment		
16	4-Dec	Final Exam Review		