

SYLLABUS

ENR 3280

Water Quality Management

Spring 2024 (full term)

2 credit hours

Online, Tuesday/Thursday 11:30am – 12:25pm

COURSE OVERVIEW

In this course we will explore the physical, chemical, and biological aspects of water quality. We will study how natural watershed processes drive the functioning of lakes and rivers and how anthropogenic processes alter water quality. We will then explore critical water quality issues in North America and the world, their impacts on human health, and ways they are managed.

Topics we will cover include:

- Physical/chemical properties of water and the hydrologic cycle
- Physical structure of watersheds, lakes, and rivers
- Nutrient cycling
- Metals and dissolved solids
- Acids and bases
- Water quality impacts on algae, insects, and fish
- Invasive species
- Case studies (including: harmful algal blooms, mining, plastics)
- Environmental justice issues around water quality

Instructor

	Instructor	Teaching Assistant
	Steve Lyon	Josephine Duffy
Email Address	lyon.248@osu.edu	duffy.412@osu.edu
Office Hours	Thurs 11:30-12:25pm	None

Prerequisites

This course has no prerequisites but it assumes you have had some exposure to high school-level chemistry and algebra. We will reinforce those skills at the start of the semester. Not open to students with credit for ENR 355.

Course description

Causes, consequences, and solutions of pollution in lakes, rivers, wetlands, and groundwater; analysis of the physical, chemical, and biological indicators of water quality.

Course learning outcomes

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

- 1) Describe the physical, chemical, and biological aspects of water quality for an aquatic ecosystem.
- 2) Identify the inter-relationships between the physical, chemical and biological aspects of water quality.
- 3) Develop the ability to interpret and critique various methods of reporting and representing water quality data.
- 4) Create figures of key water quality data and analyze the health of an aquatic system.
- 5) Integrate the role of anthropogenic stressors and management decisions in water quality impacts

HOW THIS ONLINE COURSE WORKS

Mode of delivery: This course is 100% online. You will find a sequence of materials and activities to do asynchronously for each week on Carmen. You will also meet synchronously in a Zoom session once a week. These sessions will occur during the regularly scheduled class times and your assigned day will be determined the first week of class.

Pace of online activities: This course is divided into **weekly modules** that are released one week ahead of time. You may schedule your efforts freely throughout the week within the weekly due dates.

Credit hours and work expectations: This is a **2-credit-hour course**. According to Ohio State policy (go.osu.edu/credithours), students should expect around 2 hours per week of time spent on direct instruction (instructor content and Carmen activities, for example) in addition to

4 hours of homework (reading and assignment preparation, for example) to receive a grade of (C) average. In general, we anticipate each week students will spend 1 hour in synchronous Zoom sessions, 2-3 hours doing the asynchronous activities and 2-3 hours on the homework and projects.

Attendance and participation requirements: Because this is an online course, your attendance is based on your online activity and participation. The following is a summary of students' expected participation:

- **Participating in online activities for attendance: AT LEAST ONCE PER WEEK**
You are expected to log in to the course in Carmen every week. (During most weeks you will probably log in many times.) If you have a situation that might cause you to miss an entire week of class, discuss it with us *as soon as possible*.
- **Live sessions: ONCE PER WEEK**
Each student will be assigned a weekly synchronous Zoom session during the scheduled class time. Attendance is expected each week and please contact us if you must miss.

COURSE MATERIALS AND TECHNOLOGIES

Textbooks

Recommended/optional (no required text)

- Boyd, Claude E. 2015. *Water Quality: An introduction*, 2nd edition. Springer Science and Business Media, LLC (**eBook through OSU Library**)
- Allan, David J. and Castillo, Maria M. 2007. *Stream Ecology: Structure and Function of Running Waters*. Springer. (**eBook through OSU Library**)
- Dan Egan. (2017) *The Death and Life of the Great Lakes*. W.W. Norton & company.

Course technology

Technology support

For help with your password, university email, Carmen, or any other technology issues, questions, or requests, contact the Ohio State IT Service Desk. Standard support hours are available at ocio.osu.edu/help/hours, and support for urgent issues is available 24/7.

- **Self-Service and Chat support:** ocio.osu.edu/help
- **Phone:** 614-688-4357(HELP)

- **Email:** servicedesk@osu.edu
- **TDD:** 614-688-8743

Technology skills needed for this course

- Basic computer and web-browsing skills
- Navigating Carmen (go.osu.edu/canvasstudent)
- CarmenZoom virtual meetings (go.osu.edu/zoom-meetings)

Required equipment

- Computer or Tablet: (any OS) with high-speed internet connection
- Webcam: built-in or external webcam, fully installed and tested
- Microphone: built-in laptop or tablet mic or external microphone
- Other: a mobile device (smartphone or tablet) to use for BuckeyePass authentication

Required software

- Microsoft Office 365: All Ohio State students are now eligible for free Microsoft Office 365. Full instructions for downloading and installation can be found at go.osu.edu/office365help. You will need to use Microsoft Excel in this class so be sure to have it downloaded by the end of week 2.

Carmen access

You will need to use BuckeyePass (buckeyepass.osu.edu) multi-factor authentication to access your courses in Carmen. To ensure that you are able to connect to Carmen at all times, 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 (go.osu.edu/add-device).
- 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 (go.osu.edu/install-duo) to all of your registered devices for the ability to generate one-time codes in the event that you lose cell, data, or Wi-Fi service

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

GRADING AND FACULTY RESPONSE

How your grade is calculated

Assessment	Points per Assignment	# / semester	Total Possible Points	Approximate percent of total	Late Work Accepted? (see policy for details)
Homework	20	10	200	33%	Yes
Asynchronous Quizzes	10	15	150	25%	No
Synchronous Activities	5	10	50	9%	No
Semester Project	200	1	200	33%	No

Descriptions of major course assignments

We use multiple forms of assessment in this class. This is to provide many ways to aide your understanding of the material and to allow for different strengths in learning styles.

Descriptions of each assessment are below:

Homework

Description: There will be 10 homework assignments given throughout the semester. Each assignment will be worth 20 points. Homework should be submitted to Carmen and must be uploaded as a .pdf file. There will be a page on Carmen with detailed guidelines on how to format your homework. Homework will always be due by 11:59 pm on Friday.

Academic integrity and collaboration: You are encouraged to work with other classmates on homework assignments. However, you should do the write-ups entirely on your own, in your own words, to ensure you fully understand the solution.

Asynchronous Quizzes

Description: Online quizzes will be posted on Carmen each week. These are designed to help you review that week's material and identify if there is anything you do not understand that you need to re-enforce with more study or during office hours. Quizzes will occur 15 times during the semester and they are worth 10 points. You will have 2 attempts for each quiz and the highest score will be kept. Quizzes will always be due by 11:59 pm on Friday.

Academic integrity and collaboration: You may use your books and notes for these but please take them independently.

Synchronous Activities

Description: Activities done during your weekly synchronous Zoom meetings will be worth 5 points and will occur 10 times during the semester. In most cases these will be participation-style points, where you can earn full credit as long as you fully participate.

Academic integrity and collaboration: These will be done during the Zoom meeting

Semester Project

Description: There will be a project you work on throughout the semester to assess water quality of a river. This project will be broken into multiple parts with assignments due three times throughout the semester. The project will be done in groups of 4-5 students. It is worth 200 points in total. There will be opportunity for both group assessment (everyone gets the same grade) and individual assessment (everyone gets a different grade) over the course of the semester project. Details of the project and group assignments will be provided in Week 2 on Carmen and during synchronous Zoom sessions.

Academic integrity and collaboration: All members of a group are expected to contribute equally to the project assignments. All work for the project must comply with OSU academic integrity policies. At the end of the project group members will be asked to submit an assessment of their own contributions to the project as well as the contributions of their group members. Groups with concerns should bring issues to the attention of the instructors as soon as possible.

Late assignments

Life happens. College is a stressful time and the world is a chaotic place. While we encourage students to endeavor to stay on top of the pace of the class, we understand that impediments may occur. If something is happening in your life that will impact your full participation in the course, please utilize campus resources and give us a heads up so we can work together to find a way to best help you succeed. You do not need to give us details on what is happening

and we do not require documentation. There is flexibility with all the course policies; however, general policy for work is as follows:

Semester Project, Synchronous Activities, Asynchronous Quizzes: No make-ups or late work will be allowed on these assignments.

Homework: 2 times per semester each student can submit any homework up to 48 hours late with no penalty. There is no need to ask before using these.

Grading scale

Your grade will be calculated based on the total number of points you earn throughout the semester. Each student starts with zero points and earns points with each assignment. There are 600 points offered in total across all assignments. Note: There will be no extra credit offered. Final grades will be calculated as follows:

Grade	Point Range		Grade	Point Range
A	≥ 556		C+	460-476
A-	538-555		C	436-459
B+	519-537		C-	418-435
B	495-518		D+	399-417
B-	477-494		D	357-398
			E	≤ 356

Instructor feedback and response time

I am providing the following list to give you an idea of my intended availability throughout the course. (Remember that you can call **614-688-4357(HELP)** at any time if you have a technical problem.)

- **Grading and feedback:** For large assignments, you can generally expect feedback within **7 to 14 days**.

- **Email:** Your instructors will endeavor to reply to **email within 48 hours of receipt** within standard working hours (M-F, 9-5). You can email directly to our OSU email. Please include “ENR3280” in the subject line of your email to help draw our attention to your email.
- **Office Hours:** These serve as a place for you bring questions about the course.

OTHER COURSE POLICIES

Discussion and communication guidelines

The following are my expectations for how we should communicate as a class. Above all, please remember to be respectful and thoughtful.

Zoom Expectations

- Come to the session having completed pre-work and ready to have open, civil, and supportive discussions in video and chat spaces.
- Be present during the entire class session.
- We ask that you update your Zoom profile with your preferred name, preferred pronouns, and add a class-appropriate picture of yourself.
- For some activities, we may ask you to share your faces on camera so that we can see each other and connect. You are always welcome to not turn on your camera for any reason.
- Please feel free to use a non-distracting [virtual background](#). Many students and instructors prefer not to share their remote spaces for a variety of reasons.
- Mute your microphone when others are talking to minimize background noise in the meeting.

If you have any concerns about participating in class over Zoom in this way, please let us know. Our goal is to create a safe environment where we can benefit from seeing each other and connecting, but we want to prioritize your safety and well-being.

Recording: Zoom sessions may be recorded for the benefit of students who may need to miss class and so you can refer back to them. These links will only be shared within the class and we will always announce before beginning the recording.

Academic integrity policy

See **Descriptions of major course assignments**, above, for my specific guidelines about collaboration and academic integrity in the context of this online class.

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* (studentconduct.osu.edu), 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 we 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 me.

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

- Committee on Academic Misconduct web page (go.osu.edu/coam)
- Ten Suggestions for Preserving Academic Integrity (go.osu.edu/ten-suggestions)
- Eight Cardinal Rules of Academic Integrity (go.osu.edu/cardinal-rules)

Copyright for instructional materials

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

All students and employees at Ohio State have the right to work and learn in an environment free from harassment and discrimination based on sex or gender, and the university can arrange interim measures, provide support resources, and explain investigation options, including referral to confidential resources.

If you or someone you know has been harassed or discriminated against based on your sex or gender, including sexual harassment, sexual assault, relationship violence, stalking, or sexual exploitation, you may find information about your rights and options at titleix.osu.edu or by contacting the Ohio State Title IX Coordinator at titleix@osu.edu. Title IX is part of the Office of Institutional Equity (OIE) at Ohio State, which responds to all bias-motivated incidents of harassment and discrimination, such as race, religion, national origin and disability. For more information on OIE, visit equity.osu.edu or email equity@osu.edu.

Commitment to a diverse and inclusive learning environment

The Ohio State University affirms the importance and value of diversity in the student body. Our programs and curricula reflect our multicultural society and global economy and seek to provide opportunities for students to learn more about persons who are different from them. We are committed to maintaining a community that recognizes and values the inherent worth and dignity of every person; fosters sensitivity, understanding, and mutual respect among each member of our community; and encourages each individual to strive to reach his or her own potential. Discrimination against any individual based upon protected status, which is defined as age, color, disability, gender identity or expression, national origin, race, religion, sex, sexual orientation, or veteran status, is prohibited.

Your 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. No matter where you are engaged in distance learning, The Ohio State University's Student Life Counseling and Consultation Service (CCS) is here to support you. If you find yourself feeling isolated, anxious or overwhelmed, on-demand resources are available at go.osu.edu/ccsondemand. 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. The Ohio State Wellness app is also a great resource available at go.osu.edu/wellnessapp.

ACCESSIBILITY ACCOMMODATIONS FOR STUDENTS WITH DISABILITIES

Requesting accommodations

The university strives to make all learning experiences as accessible as possible. 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 accommodations, we may request that you register with Student Life Disability Services. After registration, make arrangements with me as soon as possible to discuss your accommodations so that they may be implemented in a timely fashion. **SLDS contact information:** slds@osu.edu; 614-292-3307; 098 Baker Hall, 113 W. 12th Avenue.

Accessibility of course technology

This online course requires use of CarmenCanvas (Ohio State's learning management system) and other online communication and multimedia tools. If you need additional services to use these technologies, please request accommodations with your instructor.

- Canvas accessibility (go.osu.edu/canvas-accessibility)
- Streaming audio and video
- CarmenZoom accessibility (go.osu.edu/zoom-accessibility)
- Collaborative course tools

COURSE SCHEDULE

Refer to the Carmen course for up-to-date assignment due dates.

Week	Topics
1	Class Introduction
2	Global Water Cycle
3	River and Lake Structure
4	Catchment Mass Balance
5	Streamflow and Hydrographs
6	Sediment and Erosion
7	Metals
8	Total Dissolved Solids
9	Nutrients
10	Carbon
11	Fish and Algae
12	Insects and Macroinvertebrates
13	Climate Change
14	No Class!
15	Wastewater Treatment
16	Current Issues in Water Quality

Assignment Due Dates

The following is an example of due dates during any general 1 week of the semester. This structure will repeat across all weeks of the course and be posted on Carmen.

	Tuesday	Thursday	Friday
Homework from previous week			Due by 11:59 pm for everyone
Asynchronous Quiz for this week			Due by 11:59 pm for everyone
Synchronous Activities for this week	Completed during zoom meeting	Office hours during zoom meeting	

The Project will have multiple due dates throughout the semester (approximately every 5 weeks) and can be found on Carmen. All work will be completed by the end of the semester. Note there will be no final exam.