College of Food, Agricultural, & Environmental Sciences
School of Environment & Natural Resources

SYLLABUS

ENR/5280
Stream Ecology
Autumn 2020 (full term)
4 credit hours
Hybrid

COURSE OVERVIEW

Instructor

Lead Instructor: Dr. Mažeika Sullivan
Email address: sullivan.191@osu.edu (preferred contact method)
Phone number: 614.688.8402
Office hours: Thurs 12:30-1:30 pm (via Zoom)

Instructor: Dr. Jason Bohenek
Email address: bohenek.3@osu.edu
Office hours: Mon 4:00-5:00 pm (via Zoom)

TA: Jeffry Hayes
Email address: hayes.846@osu.edu
Office hours: Tues and Thurs: 11:00 am -12:00 pm (via Zoom)

Prerequisites

ENR 3300, grad standing, or permission of instructor.

Course description
Structure, function, and biota of streams and rivers. Emphasis on ecosystem processes and community dynamics over space and time.

This course focuses on the integrative principles of stream, river, and watershed ecology as a means of understanding the natural history and ecology of running waters. Lectures will examine the composition and function of biota in streams and rivers; their interactions with their physical, chemical, and biotic environments; and human influences on these ecosystems. Specifically, we will address:

1. Physical, chemical, and biological organization of streams.
2. Current theory in stream, groundwater, and watershed ecology.
3. Landscape/watershed perspectives for studying flowing waters and for understanding the effects of anthropogenic activities on streams and rivers.
4. Laboratory and field skills for conducting stream research.
5. Emerging topics in stream ecology, water policy, and environmental justice.

**Course learning outcomes**

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

- **Knowledge/remembering:** Students should be able to recall and describe major types of stream and river types, key terminology used in stream science, and major theories in stream and groundwater ecology, such as the river continuum concept, nutrient spiraling, hyporheos, and flood-pulse concept.
- **Comprehension/understanding:** Students should understand the basic principles of stream geomorphology, hydrology, water chemistry and nutrient cycling, and biotic-abiotic interactions in stream and riparian ecosystems.
- **Comprehension/understanding:** Students should understand how important stream and river ecosystem process – including primary production, secondary production, decomposition, organic matter retention in streams, and aquatic-terrestrial exchanges of nutrients and energy – function and how they are linked to conservation and management.
- **Comprehension/understanding:** Students should understand trophic interactions, such as herbivory, predation, and food-web dynamics.
- **Analysis/analyzing:** Students should be familiar with basic methods, types of data, and analytical techniques that are common in evaluating and monitoring stream condition.
- **Evaluation/evaluating:** Students should be comfortable evaluating scientific studies and articles, management and conservation strategies, water policy, and stream ecosystem condition.
- **Synthesis/creating:** Students should be able to synthesize various lines of evidence (e.g., primary data, scientific studies), theory, and management strategies to understanding stream conservation challenges, emerging topics in stream and river science, and environmental-justice issues.

**HOW THIS HYBRID COURSE WORKS**

**Mode of delivery:** This course is hybrid course. There will be a combination of in-person, asynchronous (on your own time), and synchronous (during scheduled class time) activities. **When**
meeting synchronously, lectures will take place Tues and Thurs 9:35-10:55 am. All in-person labs will take place Tues 9:35-10:55 am and Tues 12:45-3:45 pm in Sept. All synchronous labs will take place Tues 12:45-3:45 pm. See lecture and laboratory schedules for details.

**Pace of online activities:** This course is divided into **weekly modules** that are released one week ahead of time. Students are expected to keep pace with weekly deadlines.

**Credit hours and work expectations:** This is a **4-credit-hour course**. According to Ohio State policy ([go.osu.edu/credithours](http://go.osu.edu/credithours)), students should expect around 7 hours per week of time spent on direct instruction including lectures, laboratories, and discussions, in addition to 6 hours of homework (reading and assignment preparation, for example) to receive a grade of (C) average.

**Attendance and participation requirements:** Because this is an hybrid course, your attendance is based both on your in-person as well as 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 for asynchronous activities. (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 me **as soon as possible**.

- **Live sessions:** **REQUIRED**
  All live, scheduled events for the course (i.e., synchronous and in-person) are required.

- **Office hours:** **OPTIONAL**
  Office hours are optional.

**COURSE MATERIALS AND TECHNOLOGIES**

**Textbook**

**Required**


**Articles**

**Required (available on the class Carmen website via the OSU Library):**


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)
• Recording a slide presentation with audio narration (go.osu.edu/video-assignment-guide)
• Recording, editing, and uploading video (go.osu.edu/video-assignment-guide)

Required equipment

• Computer: current Mac (MacOs) or PC (Windows 10) 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.

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
Descriptions of major course assignments

“Speed” Presentations and Handouts

Description: Each student will prepare a handout (1-2 pages) and prepare a short presentation on either a review or research paper that will be assigned to you at the beginning of the semester. The following guidelines provide a general template for review, write-up and presentation/discussion (12 min/paper) of assigned articles. Please record your presentation using Zoom and send me the link and the class handout by the day before the paper is assigned in class.

Class Handout:

I) Definitions: Write down words or terms that are new to you in the assigned paper. (Define these terms prior to arrival in class)

II) Summary: Write a short, objective summary of the paper. Do not evaluate the paper at this point, simply summarize in a few sentences its purpose, main findings and “take home” message.

III) Objectives: Explicitly state the objectives of the paper, as given by the author(s). What reasons are given to support the importance and/or relevance of the research objectives and/or findings?

IV) Methods: Are the methods used appropriate and adequate for the questions or hypotheses being addressed? Identify any methods that are not clearly presented or that you do not understand (applies to research papers only).
V) Results: Outline the main results presented in the paper. How do the results relate to the questions or hypotheses set forth in the objectives? Identify any unclear results.

VI) Discussion: (Here is where you should offer your personal evaluation of the paper.) How well does the discussion reflect the results? Are interpretations of the data presented in the results section justified, or to what extent are the interpretations and discussion speculative? Does the paper adequately represent both the strengths/weaknesses of the research findings?

VII) Overall: What do you consider as the main strengths of the paper? What are some weaknesses? What is interesting about the paper? What did you learn? What relevance does this paper have to issues or topics that have been discussed in class? What other areas of ecological research can you relate this paper to, either in terms of basic or applied science?

Presentation:

Do not read your handout to the class. Prepare a power-point presentation containing key figures, photos of research area, researchers, etc. Focus your presentation (12 min) on research highlights (methods, results, discussion) & implications for future studies and tie the material in to class lectures. Please record your presentation using Zoom.

Online quizzes

Description: Online quizzes will help you keep you keep up with assigned readings. You will have a 24-hour window for each quiz, and 20 min. to complete each quiz.

Laboratory Reports and Problem-sets

Description: Each field lab (all field labs will take place in September) will have a written laboratory report due several weeks later (see laboratory schedule for due dates). Responses to questions should be concise, yet thorough. Please be attentive to clear writing style, proper grammar, and punctuation. Problem-sets will challenge you to think critically about challenges in studying, managing, and protecting streams and rivers. Where appropriate, please cite your work.

Academic integrity and collaboration:

- **Quizzes and exams**: You must complete the exams yourself, without any external help or communication.
- **Written assignments**: Your written assignments should be your own original work. In formal assignments, you should follow a standard ecological journal style (e.g., Ecology, Freshwater Biology) to cite the ideas and words of your research sources. You are encouraged to ask a trusted person to proofread your assignments before you turn them in but no one else should revise or rewrite your work.
- **Reusing past work**: In general, you are prohibited in university courses from turning in work from a past class to your current class, even if you modify it. If you want to build on past research or revisit a topic you've explored in previous courses, please discuss the situation with me.
- **Falsifying research or results**: All research you will conduct in this course is intended to be a learning experience; you should never feel tempted to make your results or your library research look more successful than it was.

- **Collaboration and informal peer-review**: The course includes many opportunities for formal collaboration with your classmates. While study groups and peer-review of major written projects is encouraged, remember that comparing answers on a quiz or assignment is not permitted. If you are unsure about a particular situation, please ask ahead of time.

- **Group projects**: This course includes group projects, which can be stressful for students when it comes to dividing work, taking credit, and receiving grades and feedback. I have attempted to make the guidelines for group work as clear as possible for each activity and assignment, but please let me know if you have any questions.

### Late assignments

Unless you have a documented emergency, late submissions will not be accepted. Please refer to Carmen for due dates.

### 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

### 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** at any time if you have a technical problem.)

- **Grading and feedback**: For large assignments (e.g., lab reports), you can generally expect feedback within **7 days**.
- **Email**: We will reply to emails within **24 hours on days when class is in session at the university**.
- **Discussion board**: We will check and reply to messages in the discussion boards every **24 hours on school days**.
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.

- **Respect**: We will maintain a supportive learning community where everyone feels safe and where people can disagree amicably. Civility is appreciated; remember that sarcasm does not always come across online.

- **Writing style**: Laboratory reports and problem-sets should be written in a professional manner. Whereas there is no need to participate in class discussions as if you were writing a research paper, you should remember to write using good grammar, spelling, and punctuation. A more conversational tone is fine for non-academic topics.

- **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, where you can save your work, and then copying into the Carmen discussion.

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 I recommend that you review the Code of Student Conduct and, specifically, the sections dealing with academic misconduct.
If I suspect that a student has committed academic misconduct in this course, I am 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.

Safe and 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), which includes wearing a face mask in any indoor space and maintaining a safe physical distance at all times. Non-compliance will result in a warning first, and disciplinary actions will be taken for repeated offenses.

Disability Accommodations

The university strives to make all learning experiences as accessible as possible. In light of 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 accommodations, I 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; slds.osu.edu; 098 Baker Hall, 113 W. 12th Avenue.

Counseling and 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.

Creating an environment free from harassment, discrimination, and sexual misconduct

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 on the basis of 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.

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

Schedule of Lectures

Please note that the following schedule is subject to adjustments and check Carmen for updates.

<table>
<thead>
<tr>
<th>Week</th>
<th>Date</th>
<th>Topic</th>
<th>Required Readings</th>
<th>Synchronous/Asynchronous</th>
</tr>
</thead>
<tbody>
<tr>
<td>1</td>
<td>Aug 25</td>
<td>Introduction; Stream Ecosystems - Overview I</td>
<td>A&amp;C Chapter 1</td>
<td>Synchronous</td>
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<tr>
<td></td>
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<tr>
<td></td>
<td>Aug 27</td>
<td>Stream Ecosystems - Overview II; Presentation example</td>
<td>A&amp;C Chapter 14</td>
<td>Synchronous</td>
</tr>
<tr>
<td>2</td>
<td>Sept 01</td>
<td>No lecture – Laboratory #2</td>
<td></td>
<td></td>
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<tr>
<td>Date</td>
<td>Topic</td>
<td>Reading Material</td>
<td>Type</td>
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<tr>
<td>Sept 03</td>
<td>Fluvial Geomorphology</td>
<td>A&amp;C Chapter 3, Rosgen 1994</td>
<td>Asynchronous</td>
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<tr>
<td>Sept 08</td>
<td><strong>No lecture – Laboratory #3a</strong></td>
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<tr>
<td>Sept 15</td>
<td><strong>No lecture – Laboratory #4</strong></td>
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<tr>
<td>Sept 17</td>
<td>Stream Chemistry</td>
<td>A&amp;C Chapter 4, Corsi et al. 2010, Kaushal et al. 2013</td>
<td>Asynchronous</td>
<td></td>
</tr>
<tr>
<td>Sept 22</td>
<td><strong>No lecture – Laboratory #3b</strong></td>
<td></td>
<td></td>
<td></td>
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<tr>
<td>Sept 29</td>
<td>Organic Matter II</td>
<td>A&amp;C Chapter 7, Flores et al. 2013, Rosemond et al. 2015</td>
<td>Synchronous</td>
<td></td>
</tr>
<tr>
<td>Oct 01</td>
<td><strong>Exam 1</strong></td>
<td></td>
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<tr>
<td>Oct 08</td>
<td>Surface-Hyporheic-Groundwater Interactions (Dr. Sullivan)</td>
<td>A&amp;C Chapter 5, Ward et al. 2002</td>
<td>Asynchronous</td>
<td></td>
</tr>
<tr>
<td>Oct 13</td>
<td>Aquatic Primary Producers</td>
<td>A&amp;C Chapter 6, Silva et al. 2010</td>
<td>Asynchronous</td>
<td></td>
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<tr>
<td>Date</td>
<td>Topic</td>
<td>Reading Material</td>
<td>Synchronous/Asynchronous</td>
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<tr>
<td>Oct 20</td>
<td>Fish</td>
<td>Karr 1981, Fausch et al. 2002</td>
<td>Asynchronous</td>
<td></td>
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<tr>
<td>Oct 22</td>
<td>Other Aquatic Consumers</td>
<td>Steinmetz et al. 2003, Ashton 2010, Luechtenberger et al. 2013</td>
<td>Synchronous</td>
<td></td>
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<tr>
<td>Oct 27</td>
<td>Stream Metabolism</td>
<td>A&amp;C Chapter 12, Bernhardt et al. 2017</td>
<td>Asynchronous</td>
<td></td>
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<tr>
<td>Oct 29</td>
<td>Exam II</td>
<td></td>
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<tr>
<td>Nov 03</td>
<td>Herbivory</td>
<td>A&amp;C Chapter 9, Anderson and Cooper 2000</td>
<td>Asynchronous</td>
<td></td>
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<tr>
<td>Nov 05</td>
<td>Predation</td>
<td>A&amp;C Chapter 12, Gende et al. 2004</td>
<td>Asynchronous</td>
<td></td>
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<tr>
<td>Nov 10</td>
<td>Trophic Ecology I</td>
<td>A&amp;C Chapter 8, Baxter et al. 2005</td>
<td>Asynchronous</td>
<td></td>
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<tr>
<td>Nov 17</td>
<td>Ecosystem Contamination</td>
<td>Driscoll et al. 2007, Sullivan &amp; Rodewald 2012</td>
<td>Synchronous</td>
<td></td>
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<tr>
<td>Nov 24</td>
<td>Water Policy</td>
<td>Ebersole et al. 2020, Sullivan et al. 2020</td>
<td>Synchronous</td>
<td></td>
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<tr>
<td>Nov 26</td>
<td>Thanksgiving Day – no class</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Dec 01</td>
<td>Emerging Frontiers</td>
<td>Richmond et al. 2018</td>
<td>Synchronous</td>
<td></td>
</tr>
</tbody>
</table>
### Schedule of Laboratories

Please note that the following schedule is subject to adjustments and check Carmen for updates.

<table>
<thead>
<tr>
<th>Week</th>
<th>Date</th>
<th>#</th>
<th>Topic</th>
<th>Activity – Online/In person</th>
<th>Groups</th>
<th>Due date (by 11:59 pm)</th>
</tr>
</thead>
<tbody>
<tr>
<td>1</td>
<td>Aug 25</td>
<td>Lab #1</td>
<td>Landscapes, basins &amp; fluvial geomorphology; Rosgen Module</td>
<td>Online - Asynchronous</td>
<td>Asynchronous, Assistance available 12:45-3:45 pm: #1-9</td>
<td>Sept 3</td>
</tr>
<tr>
<td>2</td>
<td>Sept 01</td>
<td>Lab #2</td>
<td>Habitat &amp; Geomorphic Assessments, Stream Chemistry</td>
<td>Outdoor lab @ Waterman Farm In person</td>
<td>9:35-10:55 am: #1-4, 12:45-3:45 pm: #5-9</td>
<td>See below</td>
</tr>
<tr>
<td>3</td>
<td>Sept 08</td>
<td>Lab #3a</td>
<td>Aquatic Macroinvertebrates (field)</td>
<td>Outdoor lab @ Highbanks MetroPark In person</td>
<td>9:35-10:55 am: #1-4, 12:45-3:45 pm: #5-9</td>
<td>See below</td>
</tr>
<tr>
<td>4</td>
<td>Sept 15</td>
<td>Lab #4</td>
<td>Fish</td>
<td>Outdoor lab @ ORWRP In person</td>
<td>9:35-10:55 am: #1-4, 12:45-3:45 pm: #5-9</td>
<td>See below</td>
</tr>
<tr>
<td>5</td>
<td>Sept 22</td>
<td>Lab #3b</td>
<td>Aquatic Macroinvertebrates (lab)</td>
<td>Indoor/tent lab @ ORWRP In person</td>
<td>9:35-10:55 am: #1-4, 12:45-3:45 pm: #5-9</td>
<td>See below</td>
</tr>
<tr>
<td>6</td>
<td>Sept 29</td>
<td>Lab #2</td>
<td>Data Analysis &amp; Lab Report</td>
<td>Online - Synchronous</td>
<td>12:45-3:45 pm: #1-9</td>
<td>Oct 8</td>
</tr>
<tr>
<td></td>
<td>Date</td>
<td>Lab</td>
<td>Session Description</td>
<td>Meeting Type</td>
<td>Time</td>
<td>Date</td>
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<td>7</td>
<td>Oct 06</td>
<td>Lab #3a &amp; 3b</td>
<td>Data Analysis &amp; Lab Report</td>
<td>Online - Synchronous</td>
<td>12:45-3:45 pm: #1-9</td>
<td>Oct 15</td>
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<td>Oct 13</td>
<td>Lab #4</td>
<td>Data Analysis &amp; Lab Report</td>
<td>Online - Synchronous</td>
<td>12:45-3:45 pm: #1-9</td>
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<td>Oct 20</td>
<td>Lab #5</td>
<td>TBD</td>
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<td>12:45-3:45 pm: Grad Students Only</td>
<td>Oct 29</td>
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<td>10</td>
<td>Oct 27</td>
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<td>11</td>
<td>Nov 3</td>
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<td>12</td>
<td>Nov 17</td>
<td>Problem-set / Discussion #1</td>
<td>Contamination</td>
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<td>Nov 30</td>
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<td>Nov 24</td>
<td>Problem-set / Discussion #2</td>
<td>Restoration</td>
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<td>12:45-3:45 pm: #1-9</td>
<td>Dec 3</td>
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<td>15</td>
<td>Dec 01</td>
<td>Problem-set / Discussion #3</td>
<td>Frontiers in Stream Ecology</td>
<td>Online - Synchronous</td>
<td>12:45-3:45 pm: #1-9</td>
<td>Dec 3 (in class)</td>
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