Syllabus

SCI 335: Water in the Environment I, Spring 2021

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Virtual Office Hours: Tue/Thur 9:00-10:30

Course Description

Water in the Environment 1 focuses on the unique properties of water in all its roles, including a study of the water cycle, water resources, treatment of municipal water, and wastewater treatment. Special attention will be placed on water as a resource, including natural and introduced constituents and the movement of natural waters.

The Science Cornerstones Project

The Water in the Environment course was created with the support of a National Science Foundation grant received by the Center for Science Education. The grant resulted in the development of 8 integrated science courses taught by a faculty with diverse interests and backgrounds. These courses, called Science Cornerstone Courses, represent an interdepartmental effort to design, deliver, and assess courses that reflect an interdisciplinary curriculum that incorporates innovative strategies for teaching and learning.

The Cornerstones Project Goals

- Understand and apply selected fundamental principles from one or more areas of scientific inquiry
- Directly experience the methods and processes of scientific inquiry, including experimental design, the recording, quantification, and interpretation of observations, and the effective communication of results
- Access and utilize scientific information and concepts in support of their life roles as individuals, citizens, learners, consumers, producers, and family members
- Comprehend the power and the limitations of science as a way of understanding the world, including ways of dealing with uncertainty,
- Recognize the interactions between science and other human endeavors.

Course Objectives

Students will:

- Be aware of water quality issues and concerns in the Portland Metropolitan Region.
- Understand scientific terminology and concepts related to hydrology, aquatic macroinvertebrates, water pollution, bioassessment and scientific research.
- Demonstrate an increased awareness of their role in improving the condition of our natural water resources.
- Use maps and aerial images as a source of information about water quality and as a tool for environmental research.
- Learn to identify common stream macroinvertebrates.
- Conduct a bioassessment project on a regional stream.

Course Information

Assumptions that Guide this Course: The learning that takes place in this class is largely accomplished through student-led inquiry and research. In this class you will work collaboratively on projects and exercises that stress the application of concepts to inquiry-based projects. While the inquiry-based approach of the course is a more engaging way to learn, it also places more responsibility on the student to guide one's own learning and intellectual development. Therefore, the learning you achieve in this class is largely a product of your participation in *all* aspects of the course.

Virtual office hours and opportunities for help: I recognize that inquiry-based courses are challenging in the online setting and emails are not the best way to problem solve complex inquiry-based projects. If you are having problems or don't understand something, a quick phone call or zoom meeting with the course instructor can be very helpful, ease your frustration, improve your grade and save you time in the long run. The instructor will have regularly scheduled office ours or you can arrange another time to virtually meet. I highly recommend that you reach out to me if you are struggling.

Incompletes: Departmental policy dictates that incompletes can be given only for verified medical reasons. A doctor's note and consolation with the ESM Department Chair is required to receive an incomplete.

Late Assignments: To be fair to all students in class, late assignments will be penalized 15% unless a valid medical excuse and other valid documentation is provided. If you have an extended illness or other emergency, let the instructor know and we will discuss other deadline arrangements.

Course Components and Structure

Course content: This class is asynchronous, which means that there is not set meeting time. The content for the course consists of lectures videos, instructional videos for skill development, textbook and scientific readings and skills.

Quizzes and Exams: There are seven quizzes and two exams in this class. The quizzes are intended as practice for the exams. The quizzes can be taken as many times as necessary to achieve full credit. The quizzes are to be taken before the corresponding exam is due. The midterm and final exams will cover all readings, videos, lectures and skills. The midterm and final exams cannot be taken late and cannot be made up. See the quiz and exam study guide for more information.

Final project: The final project for this course is a bioassessment study of a regional stream consists of a written report, data analysis and map creation. The final project will be conducted as group and consist of a proposal and three drafts: the peer review draft, a first draft and the final draft.

Peer Review: In the peer review activity, you will evaluate the final project of another group. To facilitate the peer review activity, the peer review draft must be complete and

submitted on time to receive full credit. Peer reviews will be conducted individually. **Late peer reviews will not be accepted because it delays the completion of the final project.**

Groups and Group Work: The final project for this class is conducted in groups. Groups are randomly assigned at the beginning of the term and you must work in that group for the final project. Several group discussions will be scheduled for you to meet your group members and discuss the final project.

Discussions: An important part of this course are the discussion forums. Throughout the term, there will be discussion forums related to course topics. In order to receive full credit for discussion participation, you will need to participate in all group forums.

Online Text: *Clean Water:* The Citizen's Complete Guide to Water Quality and Water Pollution Control. Kenneth M. Vigil (2003). Portland, OR: Cascade Publishing Company.

Course Grading

Grading Scale:
A: "superior", high level integration and conceptual development with factual accuracy
B: "above average", accurate with significant integration and conceptual development;
C: "basic quality", mostly accurate and simply factual, modest conceptual development;

Percent scores and grade break points for letter grades:

A 94 - 100	B+ 87 - 89	C+ 77 – 79	D+ 67 - 69
A- 90 - 93	B 83 - 86	C 73 – 76	D 63 - 66
	B- 80 - 82	C- 70 – 72	D- 60 - 62

Academic Dishonesty Zero-Tolerance Policy: Plagiarism or Academic Dishonesty of any form will not be tolerated and will result in a referral to academic affairs and failing grades for the assignment and course participation. For more information, please see Portland State University's Bulletin.

Course Grade Breakdown:
Discussion (5%)
Quizzes and Exams (50% total):

- Quizzes (10%)
- Midterm Exam (15%)
- Final Exam (25%)

Final Project and Report (50% total)

- Proposal (5%)
- Peer Review Draft and activity (10%)
- First and final draft of report (30%)

Other Course Information

Access and Inclusion for Students with Disabilities

PSU values diversity and inclusion; we are committed to fostering mutual respect and full participation for all students. My goal is to create a learning environment that is equitable, useable, inclusive, and welcoming. If any aspects of instruction or course design result in barriers to your inclusion or learning, please notify me. The Disability Resource Center (DRC) provides reasonable accommodations for students who encounter barriers in the learning environment.
If you have, or think you may have, a disability that may affect your work in this class and feel you need accommodations, contact the Disability Resource Center to schedule an appointment and initiate a conversation about reasonable accommodations. The DRC is located in 116 Smith Memorial Student Union, 503-725-4150, drc@pdx.edu, https://www.pdx.edu/drc.

- If you already have accommodations, please contact me to make sure that I have received a faculty notification letter and discuss your accommodations.
- Students who need accommodations for tests and quizzes are expected to schedule their tests to overlap with the time the class is taking the test.
- Please be aware that the accessible tables or chairs in the room should remain available for students who find that standard classroom seating is not useable.
- For information about emergency preparedness, please go to the Fire and Life Safety webpage (https://www.pdx.edu/environmental-health-safety/fire-and-life-safety) for information.

Title IX Reporting
As an instructor, one of my responsibilities is to help create a safe learning environment for my students and for the campus as a whole. We expect a culture of professionalism and mutual respect in our department and class. You may report any incident of discrimination or discriminatory harassment, including sexual harassment, to either the Office of Equity and Compliance or the Office of the Dean of Student Life.

Please be aware that as a faculty member, I have the responsibility to report any instances of sexual harassment, sexual violence and/or other forms of prohibited discrimination. If you would rather share information about sexual harassment or sexual violence to a confidential employee who does not have this reporting responsibility, including an Interpersonal Violence Advocate at the Women's Resource Center or the Queer Resource Center. You may contact a confidential advocate by calling 503-725-5672. This Sexual Misconduct Website provides a complete of those confidential employees and off campus resources.

For more information about Title IX please complete the required student module Creating a Safe Campus in your D2L.

SCI 335 Water in the Environment schedule (subject to change)
Spring 2021

Week	Course Lectures and Quiz	Readings, Skills and Video
Week 1 March 29	**Course Introduction** **Quiz 1** (Syllabus Quiz)	
Week 2 April 5	**Unit 1:** Water in the environment **Discussion:** Due April 10 **Quiz 2**	**Unit 1 Reading –** Vigil: Introduction, Chapters 1 and 7, and pp 70-77. **Poisoned Waters Video:** Section 1-2, 0-23 minutes
Week 3 April 12	**Unit 2:** Watersheds, delineation and stream order **Quiz 3**	**Unit 2 Reading –** Vigil: pp 106-111. **Skill 1:** Watershed Delineation, Stream Order
Week 4 April 19	**Unit 3:** Stream Water chemistry **Unit 4:** Non-Point Sources of pollution **Quiz 4**	**Unit 3 Reading –** Vigil: pp 25-26, Chs 3, 4 and 6. **Skill 2:** Google Earth and land use mapping. **Poisoned Waters Video:** Sections 5-10, 42-1:24 hour
Week 5 April 26	**Unit 5:** Stream macroinvertebrates and insects **Unit 6:** Bioassessment and Citizen Science **Quiz 5**	**Unit 5 Reading –** Vigil: pp 81-101, Ch 5. Edwards 2016, Rosenberg and Resh 1993 **Skill 3:** Calculating Index of Biotic Integrity.
Week 6 May 3	**Unit 7**: Conducting a Bioassessment **Midterm Exam** **Final Project Proposal**	**Skill 4:** Analyzing natural science data **Skill 5**: boxplots and p-values **Skill 6:** Using Excel to calculate the Oregon IBI
Week 7 May 10	**Unit 8:** Scientific writing **Unit 9:** Improving and restoring streams **Quiz 6**	**Poisoned Waters:** Sections 11-12, 1:24-end.
Week 8 May 17	**Peer Review Draft of Final Project** **Peer Review Activity**	
Week 9 May 24	**Final Project**	
Week 10 May 31	**Final Project**	
Finals June 7	**Final Exam**	