ESM 463/563: Water Quality Policy and Management

Winter Term 2025

Environmental Science and Management

	Description
Instructors	Dr. Daniel Sobota
Office	SRTC 139B
Availability	By arrangement
Email	dsobota@pdx.edu
CRN	44176
Credits	4
Location	Vernier Science Center, Room B1-12
Meeting Schedule	Tuesdays and Thursdays 12:00 PM - 1:50 PM

Course Description

This course provides an overview of water quality policy and management in Oregon, the Pacific Northwest, and the United States. We will discuss events leading to current water quality policy, environmental regulations, and watershed management. The class will also highlight specific examples of successes and challenges in water quality management and explore emerging topics on water quality policy and management at local and national scales.

Course Outcomes/Learning Objectives

At the conclusion of this course, students will be able to:

- Describe water quality policy and management in the United States, with a focus on Oregon.
- Distinguish between beneficial uses, water quality standards, and sources of water pollution.
- Understand the process for evaluating and managing water quality in surface waters.
- Characterize the differences between nonpoint and point sources of pollution.
- Recognize the differences between regulatory and voluntary approaches to manage and restore water quality.

Course Prerequisites

For ESM 463 students: ESM 335 Introduction to Environmental Management

Date	Topic
1-7	Class overview and introduction to water quality policy and management
1-9	History of water quality policy and management in the United States and Oregon
1-14	Water quality standards (WQSs)
1-16	WQSs for non-toxic pollutants
1-21	WQSs for toxic pollutants
1-23	*Individual meetings to discuss research project topics (SRTC 228)*
1-28	The Integrated Report process
1-30	Total Maximum Daily Loads (TMDLs)
2-4	The TMDL development process: data, models, and other tools
2-6	Water quality management plans
2-11	Nonpoint source pollution
2-13	State and federal plans for nonpoint source pollution
2-18	Permitting: point source inputs and reservoirs
2-20	Drinking water source protection and groundwater quality
2-25	*Individual meetings to review draft research project reports (VSC 303)*
2-27	*Individual meetings to review draft research project reports (SRTC 228)*
3-4	Nutrient pollution and harmful algal blooms
3-6	Emerging threats to water quality
3-11	Water quality success stories
3-13	*Research presentations by the graduate students (evaluations by undergraduates).*
3-18	*Research final research projects due (no class; submit via Canvas)*

Course Structure

This course will consist of 16 lecture periods, three class periods devoted to individually discussing research project topics and review of draft submissions, and one class period in which graduate students will give short presentations on their research projects (and undergraduates will submit evaluations of the presentations). Lecture periods will generally be divided as follows:

- ~10 minutes devoted to current events related to water quality
- ~One to one and half hour(s) will consist of lecture material
- Five minute break
- ~15-20 minutes of small group discussions and questions of lecture material
- ~10-15 minutes of lecture material wrap-up

Flexibility Statement

I reserve the right to modify course content and/or substitute assignments and learning activities in response to institutional, weather, or class situations.

Course Attendance and Make-up Policies

Please contact me about absences and make-up work.

Required Materials

All readings, references, and links will be posted in Canvas.

Assignments

For ESM 463 students:

Assignments: Four homework assignments (20 points each) = 80 points

- Five assigned; the lowest grade will be dropped

Meeting to discuss research paper topic = 5 points

Research Paper Draft = 25 points

- Use revisions for research paper final

Meeting to discuss research paper draft = 5 points

Research Paper Final = 75 points

Evaluation of graduate student presentations = 10 points

Total = 200 points

For ESM 563 students:

Assignments: Four homework assignments (20 points each) = 80 points

- Five assigned; the lowest grade will be dropped

Three article critiques = (20 points each) = 60 points

Meeting to discuss research paper topic = 5 points

Research Paper Draft = 25 points

- Resubmit final following initial grade

Meeting to discuss research paper draft = 5 points

Research Paper = 75 points

Research Paper Presentation = 20 points

Total = 270 points

Late submissions will need to be approved by me prior to the original due date.

You may earn up to additional 16 points by participating in the class discussion portion of class (1 point per lecture).

Tentative Assignment Schedule: ESM 463 Students

Assignment	When Assigned	Date Due	Points
Homework #1	January 9	January 16	20
Meeting to discuss research paper topic	January 9	January 23	5
Draft Research Paper	January 7	February 18	25
Homework #2	January 16	January 23	20
Homework #3	January 30	February 6	20
Homework #4	February 20	February 27	20
Homework #5*	February 27	March 6	20
Meeting to discuss research project draft	February 13	February 25 or 27	5
Evaluation of graduate student research presentations	March 6	March 13	10
Final Research Paper	February 25 or 27	March 18	75
		Total	200

*Lowest grade dropped

Tentative Assignment Schedule: ESM 563 Students

Assignment	When Assigned	Date Due	Points
Homework #1	January 9	January 16	20
Meeting to discuss research paper topic	January 9	January 23	5
Draft Research Paper	January 7	February 18	25
Homework #2	January 16	January 23	20
Article Critique #1	January 16	January 30	20
Homework #3	January 30	February 6	20
Article Critique #2	January 30	February 13	20
Homework #4	February 20	February 27	20
Article Critique #3	February 20	March 6	20
Homework #5*	February 27	March 6	20
Meeting to discuss research project draft	February 13	February 25 or 27	5
Research Paper presentation	February 25	March 13	20
Final Research Paper	February 25	March 18	75
		Total	270

*Lowest grade dropped

Academics

PSU Grading System

This course is offered only with an A-F grading option. Please refer to the 2024/2025 PSU Bulletin for more details about the grading system employed in this class:

https://www.pdx.edu/registration/grading-system

Grading Criteria

95-100% = A
90-94% = A-
85-89% = B+
80-84% = B
75-79% = B-
70-74% = C+
65-69% = C
60-64% = C-
50-59% = D
< 50% = F

Drop/Withdraw Deadlines

Please refer to the PSU Academic calendar:

https://pdx.smartcatalogiq.com/en/2023-2024/bulletin/academic-calendar/

Academic Integrity

Academic integrity is a vital part of the educational experience at PSU. The Student Code of Conduct is the university's policy on academic dishonesty. A confirmed violation of that code in this course may result in failure of the course.

Incomplete Grades Policy

Students do not have a right to receive or demand an Incomplete grade. The option of assigning an Incomplete grade is at the discretion of the instructor when these criteria are met:

● Required satisfactory course completion/participation
● Reasonable justification for the request
● Not sought as a substitute for a poor grade
● Presence of a written agreement (such as the Incomplete Contract)
● A plan in place to resolve Incomplete status

The Office of the Registrar's website has the full Incomplete Grades policy.

Technology

Recording Technology Notice

I may use technology for virtual meetings and recordings in this course. Our use of such technology is governed by FERPA, the [Acceptable Use Policy](#) and PSU's [Student Code of Conduct](#). A record of all meetings and recordings is kept and stored by PSU, in accordance with the Acceptable Use Policy and FERPA. I will not share recordings of your class activities outside of course participants, which include your fellow students, TAs/GAs/Mentors, and any guest faculty or community-based learning partners that we may engage with. **You may not share recordings outside this course. Doing so may result in disciplinary action.**

Turnitin

Students agree that by taking this course all required papers may be subject to submission for textual similarity review to Turnitin.com for the detection of plagiarism. All submitted papers will be included as source documents in the Turnitin.com reference database solely for the purpose of detecting plagiarism of such papers. Use of Turnitin.com page service is subject to the Usage Policy and Privacy Pledge posted on the Turnitin.com site.

PSU Policies and Resources

Generative Artificial Intelligence (AI)

Throughout this course, we may employ Generative AI tools like ChatGPT. Clear guidelines will be provided regarding when, where, and how these tools may be utilized along with instructions for proper attribution. Any usage outside of these specified permissions constitutes a violation of PSU's Academic Integrity Guidelines.

Student Services

Disability Access Statement

PSU values diversity and inclusion. Our goal is to create a learning environment that is accessible, equitable, inclusive, and welcoming. We are committed to fostering mutual respect and full participation for all students. If any aspects of instruction or course design result in barriers to your inclusion or learning, please notify us. Additionally, the Disability Resource Center (DRC) provides reasonable accommodations for students who encounter barriers in the learning environment. The DRC works with students who have physical, learning, cognitive, mental health, sensory, chronic illness, and other disabilities.

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 at 116 Smith Memorial Student Union, 1825 SW Broadway; 503-725-4150; drc@pdx.edu.

Basic Needs at Portland State

It can be challenging to do your best in class if you have trouble meeting basic needs like safe shelter, sleep, and nutrition. Resource centers across campus are here to provide assistance, referrals, and support. Please contact anyone on this list for assistance:
- **Basic Needs Hub:** basicneedshub@pdx.edu
- **Portland State Food Pantry:** psufp.com or pantry@pdx.edu
- **C.A.R.E. Program:** askdos@pdx.edu, (503) 725-4422
- **Student Health & Counseling:** askshac@pdx.edu, (503) 725-2800

Understanding Sexual Misconduct

PSU desires to create a safe campus. As part of that mission, PSU requires all students to take the [Understanding Sexual Misconduct and Resources learning module](#). If you or someone you know has been harassed or assaulted, you can find the appropriate resources on PSU's [Sexual Misconduct Response website](#).

Title IX Reporting

Students frequently come to us for assistance in matters not related to the course material. Please be aware that PSU's policies require instructors to report any instance of sexual harassment, sexual and relationship violence and/or other forms of prohibited discrimination to

university officials, who will keep the information private. If you would rather share information about these matters with a PSU staff member who does not have these reporting responsibilities and can keep the information confidential, please use these campus resources:

- Confidential Advocates: 503-894-7982 or schedule online (for matters regarding sexual harassment and sexual and relationship violence)
- Center for Student Health and Counseling: 1880 SW 6th Avenue #200; 503-725-2800

Discrimination and Bias Incidents

The Office of Equity and Compliance (OEC) addresses complaints of discrimination, discriminatory Harassment, and sexual harassment against employees (faculty and staff). If you or someone you know believes they have been discriminated against, you may file a complaint. Someone from the OEC will contact you to discuss how to best address your complaint.

The Bias Review Team (BRT) gathers information on bias incidents that happen on and around campus, and gives resources and support to individuals who experience them. You can report a bias incident you experienced or learned about. A member of the BRT will contact you if you indicate you would like to be contacted.

Religious Accommodations

If you would like to obtain religious accommodations, such as flexibility in attending evening courses or extension on assignments, please contact your instructors. If you need additional assistance, please contact the Office of the Dean of Student Life (DOSL) by emailing askdos@pdx.edu.

Cultural Resource Centers

Cultural Resource Centers (CRCs) create a student-centered inclusive environment that enriches the university experience. They honor diversity, explore social justice issues, celebrate cultural traditions, and foster student identities, success, and leadership. They provide opportunities for student leadership, employment, and volunteering; student resources such as computer labs, event, lounge, and study spaces; and extensive programming. All are welcome!

- Multicultural Student Center
- La Casa Latina Student Center
- Native American Student and Community Center
- Pan African Commons
- Pacific Islander, Asian, and Asian American Student Center
- Middle East, North Africa, South Asia Initiative

COVID-19 Response

The University has established rules and policies to make the return to the classroom as safe as possible. To learn about Portland State's activities to reduce the spread of COVID-19, visit PSU's COVID-19 Response page.

If you need advice on testing and/or quarantine, visit The Center for Student Health and Counseling (SHAC)'s COVID-19 FAQ page or call 503-725-2800.

Please notify me, should you need to miss a class period for any of these reasons so that we can discuss strategies to support your learning during this time. If I become ill or need to quarantine during the term, either I or the department chair will notify you via PSU email about my absence and how course instruction will continue.

Failure to Comply with Any of these Rules

As the instructor of this course, the University has given me the authority to require your compliance with these policies. If you do not comply with these requirements, I may ask you to leave the classroom, or I may need to cancel the class session entirely.

In addition, failure to comply with these requirements may result in a referral to the Office of the Dean of Student Life to consider charges under PSU's Code of Conduct. A student found to have violated a university rule (or rules) through the due process of student conduct might face disciplinary and educational sanctions (or consequences). For a complete list of sanctions, see Section 14 of the Student Code of Conduct & Responsibility.

Guidance May Change

Please note that the University rules, policies, and guidance may change at any time at the direction of the CDC, State, or County requirements. Please review the University's main COVID-19 Response webpage and look for emails from the University on these topics.