

# **COURSE SYLLABUS**

Spring 2023

## **ENR 5451 WATER POLICY AND GOVERNANCE**

Schedule: Mo We 12:45 – 2:05 PM; Ag Admin Bldg Room 246

### **Instructor:**

Dr. Sayeed Mehmood

**Office:** 469C Kottman Hall

**Email:** Mehmood.9

**Office Hours:** Please contact me by email and we will set up an in-person, phone, or zoom meeting.

### **Textbook:**

None

**NOTE:** My lecture will be based on a variety of materials. If I am using slides, I will upload them to Carmen. However, slides are obviously not going to have much detail. You are responsible for completing the assigned readings and do additional research.

## **COURSE DESCRIPTION**

Water is a necessary resource but also under many circumstances, a scarce one. It is this scarcity that produces the conditions for the emergence of conflict among potential users, hence requiring the design of institutions –or rules- that seek to accomplish an efficient and equitable utilization of water. This class examines such institutions a variety of levels –state, federal, and international- and analyzes how they affect water access and use in different areas (agriculture, energy, etc.). Students in the class will also engage in a careful examination of the sources of conflict and cooperation among water stakeholders on a regional and global scale. The main goal of the course is to foster the students' capacity to assess how water-related conflicts can be prevented through the design and implementation of relevant policies.

## **STUDENT LEARNING OBJECTIVES**

This course is designed to encourage and reward student participation and critical thinking. By the end of the semester, students are not only expected to understand the complex nature of forest and public land-related issues, but also to be tolerant and respectful of opinions that may not agree with their own.

Specific learning objectives of this course are as follows:

1. Understand the issues related to water quality, policies governing water resources, and administration of such policies.
2. Learn about the potential and limitations of both free markets and governments in dealing with water management problems.
3. Learn how to analyze policies and develop policy recommendations.
4. Develop critical thinking, writing, and presentation skills.

## **COURSE REQUIREMENTS**

### ***Quizzes***

There will be a total of 2 quizzes, worth 25 points each, over the course of the semester. We will use Carmen for administering the quizzes. These will be timed, with no retakes. Typically, the quizzes must be completed by 11:59 PM on designated Mondays and will cover materials discussed over approximately four weeks.

### ***Exams***

There will be one mid-term exam, worth 100 points. I will announce the specific date well in advance, but it will be around mid-March. The exam will be administered as a take home exam.

### ***Policy Brief***

Students are required to write a policy brief. These briefs will be presented to the rest of the class toward the end of the semester (see class schedule). More information about the assignments will be available online. Students will need to inform the instructor about the topic/s to be covered in their assignments no later than March 22<sup>nd</sup>. This writing assignment will be worth 100 points, with an additional 25 points for presentation.

### ***Class Participation***

**Participation is graded** in this class! Each student's contribution is helpful to increase our understanding of the topics we'll cover. **Only rule is, be courteous to others and tolerant with ideas that you don't agree with.** I will sometimes guide the in-class discussions but not always. I will both encourage students to participate, and I also reserve the right to randomly call on students for their opinions and ideas on the readings/ongoing conversations (i.e. the Socratic method). So be ready to be called on! The more you participate in class, the less likely it is that I will call on you out of the blue.

### ***For Graduate Students Only***

The graduate students enrolled in this class will have an additional requirement to be eligible for graduate credits. You will be required to prepare a poster analyzing a relevant water policy issue. It is up to you whether you decide to do your poster on the same topic as your policy brief.

### ***Assignment Due Dates:***

All final assignments, including policy briefs and posters, are due on the final day of

regularly scheduled class for spring semester (April 24<sup>th</sup>)

### ***Attendance***

It should be clear from the grading breakdown that it will be extremely difficult for you to do well in this course if you habitually miss classes. Also, this is a small enough class that an absence will be easily noticed. **There will not be any make-up exams, except for documented medical reasons. No opportunities for extra credit will be given in this course.**

### ***Your Responsibility as a Student***

Students are expected to complete all reading assignments prior to class and come prepared to participate in discussions. I highly encourage you to participate in class discussions, but please be respectful of others' opinions. Any disparaging or derogatory statements based on someone's race, religion, ethnicity, national origin, gender, sexual orientation, or any other natural/biological/genetic/visual source(s) of difference, whether protected by law or not, will not be tolerated.

## **UNIVERSITY POLICIES**

### ***Academic Misconduct***

It is the responsibility of the Committee on Academic Misconduct to investigate or establish procedures for the investigation of all reported cases of student academic misconduct. The term "academic misconduct" includes all forms of student academic misconduct wherever committed; illustrated by, but not limited to, cases of plagiarism and dishonest practices in connection with examinations. Instructors shall report all instances of alleged academic misconduct to the committee (Faculty Rule 3335-5-487). For additional information, see the Code of Student Conduct <http://studentlife.osu.edu/csc/>.

### ***Accommodation of Disabilities***

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, I 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](mailto:slds@osu.edu); 614-292-3307; [slds.osu.edu](http://slds.osu.edu); 098 Baker Hall, 113 W. 12th Avenue.

### ***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's Counseling and Consultation Service (CCS) by visiting [ccs.osu.edu](http://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 Suicide Prevention Hotline at 1--800--273-TALK or at [suicidepreventionlifeline.org](http://suicidepreventionlifeline.org).

### ***Title IX and Sexual Misconduct***

Title IX makes it clear that violence and harassment based on sex and gender are Civil Rights offenses subject to the same kinds of accountability and the same kinds of support applied to offenses against other protected categories (e.g., race). If you or someone you know has been sexually harassed or assaulted, you may find the appropriate resources at <http://titleix.osu.edu> or by contacting the Ohio State Title IX Coordinator, Kellie Brennan, at [titleix@osu.edu](mailto:titleix@osu.edu)

### ***Diversity***

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.

## **GRADING**

The grading breakdown is as follows:

### ***Undergraduate Students***

2 quizzes, 25 points each	50 points
1 exam, 100 points	100 points
Policy brief	100 points
Policy brief presentation	25 points
Class participation	25 points
<b>TOTAL</b>	<b>300 points</b>

### ***Graduate Students***

2 quizzes, 25 points each	50 points
1 exam, 100 points	100 points
Policy brief	100 points
Policy brief presentation	25 points
Class participation	25 points
Poster	100 points
<b>TOTAL</b>	<b>400 points</b>

Based on your earned points, your grade will be assigned based on the following scale:

A:	93 % or more of maximum points
A-:	90 to 92.9 % of maximum points
B+:	87 to 89.9 % of maximum points
B:	83 to 86.9 % of maximum points
B-:	80 to 82.9 % of maximum points
C+:	77 to 79.9 % of maximum points
C:	73 to 76.9 % of maximum points
C-:	70 to 72.9 % of maximum points
D+:	67 to 69.9 % of maximum points
D:	63 to 66.9 % of maximum points
D-:	60 to 62.9 % of maximum points
E:	less than 60 % of maximum points

## CLASS SCHEDULE

### **January 9<sup>th</sup>** **Introduction**

No required reading. We will go over the syllabus, introduce ourselves, and discuss expectations for the semester.

### **January 11<sup>th</sup>** **Water use at a planetary scale (I)**

#### **Required readings:**

Hoekstra, A.Y. and Mekonnen, M.M. (2012). The water footprint of humanity. *Proceedings of the National Academy of Sciences*, 109(9): 3232– 3237.

### **January 16<sup>th</sup>** **MLK day (No class)**

### **January 18<sup>th</sup>** **Water use at a planetary scale (II)**

#### **Required readings:**

Castilla-Rho, J. C., Rojas, R., Andersen, M. S., Holley, C., & Mariethoz, G. (2017). Social tipping points in global groundwater management. *Nature Human Behaviour*, 1(9), 640.

Dalin, C., Wada, Y., Kastner, T., & Puma, M. J. (2017). Groundwater depletion embedded in international food trade. *Nature*, 543(7647), 700.

### **January 23<sup>rd</sup>** **Water and Trans-boundary Conflicts**

#### **Required reading:**

Zeitoun, M., & Warner, J. (2006). Hydro-hegemony—a framework for analysis of trans-boundary water conflicts. *Water policy*, 8(5), 435-460.

**January 25<sup>th</sup>**

**Water and Trans-boundary Conflicts (II)**

**Required reading:**

De Stefano, L., Petersen-Perlman, J. D., Sproles, E. A., Eynard, J., & Wolf, A. T. (2017). Assessment of transboundary river basins for potential hydro-political tensions. *Global Environmental Change*, 45, 35-46.

**January 30<sup>th</sup>**

**Water Doctrines**

**Required reading:**

Tisdell, J. G. (2003). Equity and social justice in water doctrines. *Social justice research*, 16(4), 401-416.

**Suggested reading:**

Smith, J.; Gleick, P.; Cooley, H.; Allen, L.; Vanderwarker, A.; Berry, K. 2012. *A Twenty-First Century U.S. Water Policy*. New York: Oxford University Press. Chapters 1 and 2 (available on Carmen)

Smith, J. C., & Ellsworth, S. M. (2016). Public Trust vs. Prior Appropriation A Western Water Showdown. *Natural Resources & Environment*, 31(1), 18.

Smith Jr, M. D. (2016). A Blast from the Past: The Public Trust Doctrine and Its Growing Threat to Water Rights. *Envtl. L.*, 46, 461.

**February 1<sup>st</sup>**

**The Economics of Water**

**Required reading:**

Garrick, D. E., Hanemann, M., & Hepburn, C. (2020). Rethinking the economics of water: an assessment. *Oxford Review of Economic Policy*, 36(1), 1-23.

**Suggested reading:**

Olmstead, S. M. (2010). The economics of managing scarce water resources. *Review of Environmental Economics and Policy*, 4(2), 179-198.

## **February 6<sup>th</sup>**

### **Disputes in a context of scarcity**

#### **Required reading:**

O'Neill, B., Poupeau, F., Coeurdray, M., & Cortinas, J. (2016). Laws of the river: Conflict and cooperation on the Colorado River. In *Poupeau et al (eds.) Water Bankruptcy in the Land of Plenty*. Boca Raton, FL: CRC Press.

Walton, Brett. 12/11/2020. [Colorado River Indian Tribes Take Another Step Toward Marketing Valuable Water in Arizona](#). Circle of Blue.

#### **Suggested readings:**

Fleck, J. (2016). *Water is for fighting over: And other myths about water in the west*. Island Press.

Sullivan, A., White, D. D., & Hanemann, M. (2019). Designing collaborative governance: Insights from the drought contingency planning process for the lower Colorado River basin. *Environmental Science & Policy*, 91, 39-49.

## **February 8<sup>th</sup>**

### **Policy Brief Discussion**

## **February 13<sup>th</sup>**

### **Disputes in a context of abundance**

#### **Required reading:**

Annin, P. (2018). *The Great Lakes Water Wars*. Island Press. (chapters 14-16)

## **February 15<sup>th</sup>**

### **Clean Water Act (I)**

#### **Required reading:**

Fowler, L., & Birdsall, C. (2020). Does the Primacy System Work? State versus Federal Implementation of the Clean Water Act. *Publius: The Journal of Federalism*.

#### **Suggested reading:**

Keiser, D. A., & Shapiro, J. S. (2019). Consequences of the Clean Water Act and the demand for water quality. *The Quarterly Journal of Economics*, 134(1), 349-396.



**February 20<sup>th</sup>**  
**Clean Water Act (II)**

**Required reading:**

Sullivan, S. M. P., Rains, M. C., Rodewald, A. D., Buzbee, W. W., & Rosemond, A. D. (2020). Distorting science, putting water at risk. *Science*, 369(6505), 766-768.

Walton, Brett. 10/22/2020. [What Has the Trump Administration Meant for Water?](#) Circle of Blue.

Patterson, Steve. 12/16/2020. [Florida taking wetlands permitting role from federal government; only 3<sup>rd</sup> state to do so](#). Florida Times-Union.

**February 22<sup>nd</sup>**  
**Safe Drinking Water Act (I)**

**Required readings:**

Tiemann, M. (2017). Safe Drinking Water Act (SDWA): A Summary of the Act and Its Major Requirements. Available at <http://www.fas.org/sgp/crs/misc/RL31243.pdf>

Allaire, M., Wu, H., & Lall, U. (2018). National trends in drinking water quality violations. *Proceedings of the National Academy of Sciences*, 201719805. Available on Carmen.

We'll visit the Contaminate Candidate List at <http://water.epa.gov/scitech/drinkingwater/dws/ccl/>

**Suggested reading:**

Mullin, M. (2020). The effects of drinking water service fragmentation on drought-related water security. *Science*, 368(6488), 274-277.

**February 27<sup>th</sup>**  
**Safe Drinking Water Act (II)**

**Required readings:**

McDonald, Y. J., & Jones, N. E. (2018). Drinking Water Violations and Environmental Justice in the United States, 2011–2015. *American journal of public Health* 108(10), 1401-1407

Switzer, D., & Teodoro, M. P. (2017). The Color of Drinking Water: Class, Race, Ethnicity, and Safe Drinking Water Act Compliance. *Journal-American Water Works Association*, 109(9), 40-45.

**March 1<sup>st</sup>**  
**Water Security**

**Required reading:**

Staddon, C., & Scott, C. A. (2018). Putting water security to work: addressing global challenges. *Water International* 43(8): 1017-1025.

**March 6<sup>th</sup>**  
**Water Justice**

**Required reading:**

Neal, M. J., Lukasiewicz, A., & Syme, G. J. (2014). Why justice matters in water governance: some ideas for a 'water justice framework'. *Water Policy*, 16(S2), 1-18.

**March 8<sup>th</sup>**  
**Water Affordability**

**Required reading:**

Teodoro, M. P. (2018). Measuring Household Affordability for Water and Sewer Utilities. *Journal-American Water Works Association*, 110(1), 13-24.

Walton, Brett. 12/22/2020. [Congress Adds \\$638 Million in Water-Bill Debt Relief to Coronavirus Package](#). Circle of Blue.

**Suggested readings:**

Teodoro, M. P. (2019). Water & Sewer Service Affordability in Ohio Assessment & Opportunities for State Policy. Report to the Alliance for the Great Lakes & Ohio Environmental Council.

**March 13<sup>th</sup>**  
**Spring Break (no class)**

**March 15<sup>th</sup>**  
**Spring Break (no class)**

**March 20<sup>th</sup>**  
**No class**

**March 22<sup>nd</sup>**

**Case Study-The Flint Water Crisis (I)**

**Required reading:**

Lane, Madeleine, James Polidori, and Sara Hughes. 2020. [Could the Flint water crisis happen somewhere else?](#) Read chapters 1, 2, 3 and 4.

Movie: [Poisoned Water](#).

**March 27<sup>th</sup>**

**Case Study-The Flint Water Crisis (II)**

**Required reading:**

Lane, Madeleine, James Polidori, and Sara Hughes. 2020. [Could the Flint water crisis happen somewhere else?](#) Read chapters 5 and 6.

Brett Walton. 12/23/2020. [EPA Revises Rules for Lead in Drinking Water](#). Circle of Blue.

**Suggested reading:**

Butler, L. J., Scammell, M. K., & Benson, E. B. (2016). The Flint, Michigan, water crisis: a case study in regulatory failure and environmental injustice. *Environmental Justice*, 9(4), 93-97.

Clark, Anna. (2018). *The Poisoned City: Flint's Water and the American Urban Tragedy*

Hanna-Hatisha, Monna. (2018). *What the eyes don't see*. New York, NY: One world.

Hanna-Attisha, M., LaChance, J., Sadler, R. C., & Champney Schnepf, A. (2016). Elevated blood lead levels in children associated with the Flint drinking water crisis: a spatial analysis of risk and public health response. *American journal of public health*, 106(2), 283-290.

Pieper, K. J., Tang, M., & Edwards, M. A. (2017). Flint water crisis caused by interrupted corrosion control: Investigating “ground zero” home. *Environmental Science & Technology*, 51(4), 2007-2014.

**March 29<sup>th</sup>**

**“Pick up” exam**

**Note:** You will access the file on Carmen, and we won't be meeting in the classroom. During class time, however, the instructor will be in the office hours Zoom meeting room to answer any questions. Good luck!

**April 3<sup>rd</sup>**

**Exam due by 11:59 PM (no class meeting)**

**April 5<sup>th</sup>**

**Final PowerPoint Presentations**

**April 10<sup>th</sup>**

**Final PowerPoint Presentations**

**April 12<sup>th</sup>**

**Final PowerPoint Presentations**

**April 17<sup>th</sup>**

**Final PowerPoint Presentations**

**April 19<sup>th</sup>**

**Final PowerPoint Presentations**

**April 24<sup>th</sup>**

**Submit final Policy Briefs/Posters by 11:59 pm on Carmen**