ENSP340

Fall 2022

Learning Outcomes

This course will apply an interdisciplinary approach to the challenge of freshwater availability and sustainability, a topic of broad environmental and social significance as the world faces issues of sustainability in the 21st century. The course focuses on sustainable water management, water justice and equity.

After successfully completing this course you will be able to:

- Competently discuss and communicate evidence-based positions on water issues both orally and in writing.
- Understand the current scarcity of freshwater resources and the depth of this problem as it relates to ensuring sustainable and equitable water supplies for the present and future.
- Understand, discuss and critique the different theoretical frameworks unpinning water governance domestically and globally.
- Understand the competing uses of water, from both human and other species needs, and how policies have been developed to address these needs.
- Conduct in-depth interdisciplinary research on a real world local water problem and possible solutions.
- Analyze a real world water problem through the lenses of science, ethics, and policy and understand that these disciplines are inextricably linked in the analysis of environmental problems.
- **Collaborate** with classmates to resolve water resource issues and conflicts presented in class as case studies.
- **Contemplate and develop** answers to the following questions:
 - O What is water (i.e., commodity, human right)?
 - Who or what has the right to water (i.e., all people, all species, ecosystems)?
 - o Who should have a say in water management decisions?
 - o How should competing uses of water be balanced?
 - What are the most sustainable solutions to the growing demand for water?
 - O How can remaining water pollution problems be solved?
 - How do water issues connect with other global sustainability and resilience issues?

Dr. Caroline Boules

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Class Meets

Tues & Thurs 3:30-4:45 EGR 0135

Prerequisites NA

Office Hours

By appointment 0222 Symons Hall

Course Communication

I will send time-sensitive information to students mostly as ELMS announcements, so you need to log in and check ELMS at least once a day. The best way to contact me is to email me, send a message through ELMS, or drop by my office hours. Here is a link with helpful guidance on writing professional emails:

ter.ps/email.

Required Resources

Course website: elms.umd.edu

We will be reading several chapters from this book: Christian-Smith, Juliet and Peter H. Gleick, <u>A Twenty-First Century U.S. Water Policy</u>, New York: Oxford University Press, 2012 (ISBN 978-0-19-985944-3). You can purchase it if you'd like, as it's a great resource, however I am not requiring it because our library has it available as an eBook. So I will either make the excepts available or please use the library eBook.

All other materials will be available through ELMS, http://elms.umd.edu or on Web links provided on the list of reading assignments below. To access book excerpts, go to the Course Reserves tab in ELMS. Articles can be found at the Files tab. These materials will be designated with "ELMS" in the list of assignments below. Web links should be self-explanatory.

Suggested Resources:

Circle of Blue, www.circleofblue.org (free subscription service available).

Class preparation:

The course is organized in a seminar format. Generally, lectures will be supplemented by discussion and debate about the readings and issues presented. Because readings will be a topic of discussion during class, students should come prepared to discuss the assigned readings.

E-mail List/ELMS: An e-mail list will be set up for this class through ELMS. E-mail addresses are pulled from the University Directory listing. Please be sure that your preferred and current e-mail address is listed in the Directory. You can check and update this information by going to Testudo (www.testudo.umd.edu/apps/saddr/). I will be posting course documents and information on the ELMS system, so it is important that you use this system and that you are checking your e-mail for any announcements or assignments. This is also how I will communicate with the class regarding any class cancellations, changes in meeting times, or room changes.

Overview of the Course

This course will apply an interdisciplinary approach to the challenge of freshwater availability and sustainability, a topic of broad environmental and social significance as the world faces issues of sustainability in the 21st century.

It is becoming abundantly clear that the world is facing a crisis regarding the supply of freshwater available to meet the needs of humans and ecosystems. Conflicts over water have become more intense in the past several decades, with competing users vying for an adequate supply of water. Water is also critically linked to issues of energy consumption, climate change, and the degradation of freshwater ecosystems. This course will introduce students to this complex topic through the lenses of law and policy, ethics, and science while fostering collaboration, cooperation, and problem-solving within the classroom.

This course will be grounded in concepts of sustainability and resilience and will use a lens of water justice and equity. Students will begin the course with a study of hydrology and water use and availability to place the water issues in the course in context. Students will then consider how the legal system defines and allocates water rights both nationally and internationally. We will also consider the water "ownership" issue from an ethical perspective and explore other ethical and economic issues that arise in water management. We will then cover the many facets of water quality from source water protection to public health crises. We will conclude with an exploration of current issues and conflicts in water management. Themes of water justice, access and equity will be woven throughout the course.

Several in-class and out-of-class assignments will be assigned throughout the course, with the objective of providing students applied experience in resolving multi-disciplinary water resources related problems.

Course Structure

This course meets in-person twice a week during the scheduled time, and you are expected to attend these sessions. Class sessions will not be recorded. If you have a situation that will prevent you from attending class regularly (i.e. you have a schedule conflict, you do not have access to a personal computer, etc.), please email me immediately at the start of the semester so we can discuss your situation. The nature of this class will push you to take an active role in the learning process. You will do this by engaging and collaborating with other students and the instructor on a regular basis both in class sessions, as well as through discussion boards that may be done outside of live class times. See more below.

Tips for Success in this course

- 1. **Participate.** Discussions and group work are a critical part of the course. You can learn a great deal from discussing ideas and perspectives with your peers and professor. Participation can also help you articulate your thoughts and develop critical thinking skills.
- 2. **Manage your time.** Make time for your learning and participation in discussions each week. Give yourself plenty of time to complete assignments including extra time to handle any technology related problems.
- 3. **Login regularly.** Log in to ELMS-Canvas several times a week to view announcements, discussion posts and replies to your posts. You may need to log in multiple times a day when group submissions are due.
- 4. **Do not fall behind.** This class moves at a quick pace and each week builds on the previous. It will be hard to keep up with the course content if you fall behind in the pre-work or post-work.
- 5. **Use ELMS-Canvas notification settings.** Canvas ELMS-Canvas can ensure you receive timely notifications in your email or via text. Be sure to enable announcements to be sent instantly or daily.
- 6. **Ask for help if needed.** If you need help with ELMS-Canvas or other technology, IT Support. If you are struggling with a course concept, reach out to me, your TAs, and your classmates, for support.

Campus Policies

It is our shared responsibility to know and abide by the University of Maryland's policies that relate to all courses, which include topics like:

- Academic integrity
- Student and instructor conduct
- Accessibility and accommodations
- Attendance and excused absences
- Grades and appeals
- Copyright and intellectual property

Please visit www.ugst.umd.edu/courserelatedpolicies.html for the Office of Undergraduate Studies' full list of campus-wide policies and follow up with me if you have questions.

Course Evaluation

Please submit a course evaluation through CourseEvalUM in order to help faculty and administrators improve teaching and learning at Maryland. All information submitted to CourseEvalUM is confidential. Campus will notify you when CourseEvalUM is open for you to complete your evaluations for fall semester courses. Please go directly to the Course Eval UM website to complete your evaluations. By completing all of your evaluations each semester, you will have the privilege of accessing through Testudo, the evaluation reports for the thousands of courses for which 70% or more students submitted their evaluations.

Copyright Notice

Course materials are copyrighted and may not be reproduced for anything other than personal use without written permission.

Course-Specific Policies

Turnitin

For this course, some of your assignments will be collected via Turnitin on our course ELMS page. I have chosen to use this tool because it can help you improve your scholarly writing and help me verify the integrity of student work. For information about Turnitin, how it works, and the feedback reports you may have access to, visit Turnitin Originality Checker for Students.

Late Policy

All papers and assignments are due on the designated date. Unless you see me in advance of the due date and obtain an approved extension, 5 percent of the total possible points will be deducted from your score for every day the paper or assignment is late, including weekend days. (So, for example, on a 100-point scale, a student who would have earned a 94 on a timely paper will earn 89 if the same paper is turned in one date late, 84 if turned in 2 days late, etc.). Late discussion questions will receive 0 points.

Attendance and Absences

We will be meeting each Tuesday and Thursday during the scheduled class time, 12:30-1:45pm, unless announced beforehand that we will not have a live meeting. If you Please email me ahead of time if you will need to miss class. If you have a situation that will prevent you from attending class regularly (i.e. you have a schedule conflict, you do not have access to a personal computer, etc.), please email me immediately at the start of the semester so we can discuss your situation. An absence will only be considered "excused" under the circumstances described by the University's attendance policy, available at: https://president.umd.edu/sites/president.umd.edu/files/files/documents/policies/V-100G.pdf.

If you miss an in-class activity and your absence is excused, I will provide a make-up assignment.

Academic Accommodations

If you have a documented disability, please contact Disability Support Services 0126 Shoemaker Hall to apply to DSS for accommodation request forms which you can provide to me (and your other instructors) as proof of your eligibility for accommodations. The rules for eligibility and the types of accommodations a student may request can be reviewed on the DSS website at http://www.counseling.umd.edu/DSS. Please submit your paperwork to me as soon as possible and well before any due date or exam to ensure that any accommodation needs can be satisfied.

Names/Pronouns and Self Identifications

The University of Maryland recognizes the importance of a diverse student body, and we are committed to fostering equitable classroom environments. I invite you, if you wish, to tell us how you want to be referred to both in terms of your name and your pronouns (he/him, she/her, they/them, etc.). The pronouns someone indicates are not necessarily indicative of their gender identity. Visit trans.umd.edu to learn more.

Additionally, how you identify in terms of your gender, race, class, sexuality, religion, and dis/ability, among all aspects of your identity, is your choice whether to disclose (e.g., should it come up in classroom conversation about our experiences and perspectives) and should be self-identified, not presumed or imposed. I will do my best to address and refer to all students accordingly, and I ask you to do the same for all of your fellow Terps.

Respect in the Classroom

In order to learn, we must be open to the views of people different from ourselves. In this time we share together over the semester, please honor the uniqueness of your fellow classmates and appreciate the opportunity we have to learn from one another. Please respect each others' opinions and refrain from personal attacks or demeaning comments of any kind.

Instructor responsibilities:

- Start and end class on time.
- Treat all students with courtesy and respect.
- Be open to constructive input from students in the course.
- Ensure that opportunities to participate are enjoyed equally by all students in the course.
- Be flexible and understanding of student needs and challenges.

Student responsibilities:

- Come to class on time, and refrain from packing up belongings before class ends.
- Read all of the assigned readings for that class period ahead of time, and be prepared to discuss the topics of the day.
- Turn off all electronic devices that might create a disruption in class.
- Be quiet and give full respectful attention while either instructor or another student is speaking.
- When speaking, use courteous, respectful language and keep comments and questions relevant to the topic at hand.
- Be flexible and understanding.

Get Some Help!

You are expected to take personal responsibility for you own learning. This includes acknowledging when your performance does not match your goals and doing something about it. Everyone can benefit from some expert guidance on time management, note taking, and exam preparation, so I encourage you to consider visiting http://ter.ps/learn and schedule an appointment with an academic coach. Sharpen your communication skills (and improve your grade) by visiting http://ter.ps/writing and schedule an appointment with the campus Writing Center. Finally, if you just need someone to talk to, visit http://www.counseling.umd.edu.

Everything is free because you have already paid for it, and **everyone needs help**...all you have to do is ask for it.

Basic Needs Security

If you have difficulty affording groceries or accessing sufficient food to eat every day, or lack a safe and stable place to live and believe this may affect your performance in this course, please visit go.umd.edu/basic-needs for information about resources the campus offers you and let me know if I can help in any way.

Course Requirements, Grading and Expectations for Students

The instructor will post all course materials and critical course information on the ELMS/Canvas system http://elms.umd.edu, so it is important that you use this system. Please note that they will also communicate with the class through ELMS regarding any class cancellations, changes in meeting times, or room changes. Please be sure that your preferred and current e-mail address is listed in the Directory, and that email notifications are enabled for ELMS. You can check and update this information by going to Testudo (www.testudo.umd.edu/apps/saddr/).

You will have the opportunity to earn up to 1000 points based on the following:

Assignment/Assessment	Points	Due Date
Class Participation	50	Weekly
In-class Activities & Writing Reflections (8-10, one dropped)	120	Weekly
3 Reflections on the semester (50 pts each)	150	9/8, 10/25, 12/8
In-class assessments (5 or 6, one dropped)	230	Weekly
Water Source Paper	150	Th Oct 6
Analysis of Water Solution/Conflict- Paper/Debate/Presentation	250 (150+100)	Th Dec 1
Debate Analysis and Reflection	50	Th Dec 8
TOTAL	1000	

Grades

Grades will be awarded by converting the points earned into a percentage. 100-98% = A+, 97-92 = A, 91-90 = A-; 89-88 = B+, 87-82 = B, 81-80 = B-; 79-78 = C+, 77-72 = C, 71-70 = C-; 69-68 = D+, 67-62 = D, 61-60 = D-; $\leq 59 = F$. You may calculate your percentage grade at any time during the semester by dividing the number of points earned by the number of points possible at that point in the semester. Please see me if you have any questions.

Grades are not given, but earned. Your grade is determined by your performance on the learning assessments in the course and is assigned individually (not curved). If earning a particular grade is important to you, please speak with me at the beginning of the semester so that I can offer some helpful suggestions for achieving your goal.

All assessment scores will be posted on the course ELMS page. If you would like to review any of your grades (including the exams), or have questions about how something was scored, please email me to schedule a time for us to meet in my office. If you would like to **appeal any grade** that you have received in this course, you may file an appeal within one week of the return of the assignment. Please submit a typed explanation of the reason why you think your grade should be changed, and deliver it to the

instructors mailbox in the ENSP Office (Symons 0220).

Final letter grades are assigned based on the percentage of total assessment points earned. To be fair to everyone I have to establish clear standards and apply them consistently, so please understand that being close to a cutoff is not the same this as making the cut (89.99 \neq 90.00). It would be unethical to make exceptions for some and not others.

Assignment and Assessment Descriptions

<u>In-class activities</u>: There are in-class activities regularly during class sessions. Some of these will be for points and some will not be. These will be based on the readings and if you have been attending class and doing the reading, they should not be a challenge. There is a total of 120 points for in-class activities.

<u>In-class Reflections and Writing</u>: This semester I am trying something new with regards to reflections about course performance, which will involve three short writing reflections that will be completed during class time. Further information will be given in class.

<u>In-class assessments</u>: These short in-class writing assignments will assess understanding of class concepts, and have replaced the midterm exam. Further information will be given in class.

<u>Water Source Paper:</u> This assignment will ask you to identify and analyze the source of the water in your hometown. You will then be asked to analyze the source of water for another city and to compare the two sources in terms of water quality, quantity, service, and pricing.

Analysis of Water Solution/Conflict – Paper, Debate & Presentation: For this assignment, you will be assigned to a particular water conflict or proposed water solution that has been a source of recent controversy. There will be approximately 4 students assigned to each topic. You will write a short individual paper that provides background information on the solution/conflict and an evaluation from the lenses of science, ethics, and policy. Each group of 4 students will then be divided into 2 teams of 2 for purposes of conducting a debate on the topic. 2 students will take the position of each side of the debate.

<u>Debate Analysis and Reflection:</u> For this assignment, you will listen to the debates and will make an informed written opinion about your views on the outcome of the debates. This written assignment will also give you the opportunity to reflect on course content.

Further detail on each of the assignments, including rubrics for the larger assignments, will be made available throughout the semester on the ELMS/Canvas system. Due dates and times will be posted on ELMS as well as listed on the course schedule below. Please remember that final grades for this course are earned through individual assignments. Unless otherwise noted, all assignments should be submitted electronically via the ELMS/Canvas system.

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Course Schedule

Week	Date	Topic	Readings (to be read for this class)	Assignments & Activities
UNIT 1:	INTRODUCTIO	N TO WATER		
1	8/30	Introduction to the Course & Water Issues	Review syllabus; discuss innovative classroom practices	Explore: 17 Countries, Home to One- Quarter of the World's Population, Face Extremely High Water Stress
	9/1	Freshwater Availability and Use	Estimated Use of Water in the United States in 2015, Abstract and pgs. 7-17. UN World Water Development Report 2021, Prologue (pp. 11-12 Water demand & use, Water Availability, ELMS, Files)	 Explore in class: <u>USGS National</u> <u>Water Census</u> and <u>Water Budgets</u>, <u>USGS</u> <u>Water footprints</u>
2	9/6	Hydrology Guest Lecture: Dr. Greg Schnaar, Principle Environmental Scientist, Daniel B. Stephens & Associates	Cech, Principles of Water Resources, Chapter 3 (ELMS, Course Reserves) Harter, Basic Concepts of Groundwater Hydrology (ELMS, Files)	
UNIT 2:	ETHICAL APPR	OACHES TO WATER MANAG	GEMENT	
2	9/8	Water History & Politics; Ideas of Nature	Aldo Leopold, "The Land Ethic" "The Politics of Drinking Water." (December 30, 2014). The Atlantic Monthly	Reflection #1 Due (in-class)
3	9/13	Water as Property, Water as a Public Good, Water as a Human Right, Pt. 1	The Business of Water: Market Environmentalism in the Water Sector by Bakker Bryan Bruns and Ruth Meinzen-Dick (2005) "Frameworks for water rights: An overview of institutional options" (pp. 3-25), in Bryan Bruns et al (2005) Water Rights Reform.	WATER SOURCE PAPER ASSIGNMENT HANDED OUT

	9/15	Water as Property, Water as a Public Good, Water as a Human Right, Pt. 2	Optional further reading: <u>UN World Water Development Report 2021</u> , Ch. 7 Pgs. 98-106. Sultana, Farhana, and Alex Loftus. (2015). "The Human Right to Water: Critiques and Condition of Possibility." Wiley Interdisciplinary Reviews: Water 2, no. 2. Power, nature and neoliberalism: The political ecology of water in Chile by Budds	
4	9/20	Privatization & Commodification of Water	How "Water for All!" policy became hegemonic: The power of the World Bank and its transnational policy networks by Goldman When Commodification Annuls the Human Right to Water by Bond Optional further reading: The "Commons" Versus the "Commodity": Alterglobalization, Anti-privatization and the Human Right to Water in the Global South Murthy, Sharmila L. (2013). "The Human Right(s) to Water and Sanitation: History, Meaning and the Controversy Over Privatization." SSRN Scholarly Paper. Rochester, NY: Social Science Research Network. Water Privatization: A Threat to Human Rights? by Pavelich	In-class Group Activity: Water, Place, and Equity, Chapter 7, pp. 195-220 (21-34 of pdf) (ELMS, Course Reserves) – Cochabamba, Privatization

UNIT 3:	UNIT 3: WATER POLICY IN THE U.S. & GLOBALLY: ALLOCATION AND QUALITY					
4	9/22	Water Allocation in the U.S.: History and Law, Prior Appropriation and Riparian Rights	Prior Appropriation and Water Rights Reform in the Western United States by Kenney Water Policy, pp. 23-28 at top (skip table), 37-43 at top, 46-48			
5	9/27	Water Allocation in the U.S.: History and Law, Other Federal Doctrines	Water Policy, pp. 90-95 A BLAST FROM THE PAST: THE PUBLIC TRUST DOCTRINE AND ITS GROWING THREAT TO WATER RIGHTS			
	9/29	Water Quality – Clean Water Act; Waters of the U.S. rule	Water Policy, pp. 109-123 How a Burning River Helped Create the CWA The Clean Water Act Needs Positive Reform CRS Overview of Waters of the United States Rule (ELMS, Files) WOTUS is Restored – in half the Country Revising the Definition of "Waters of the United States"			
6	10/4	CO River Compact & What's happening in the US Southwest?	U.S. announces more water cuts as Colorado River hits dire lows Deadline Looms for Drought-Stricken States to Cut Water Use Sharing Colorado River Water: History, Public Policy and the Colorado River Compact			

	10/6	Water Quality – Safe Drinking Water Act	Water Policy, 123-135. The Flint, Michigan, Water Crisis: A Case Study in Regulatory Failure and Environmental Injustice, Environmental Justice (ELMS, Files) EPA, Questions and Answers about EPA's Hydraulic Fracturing Drinking Water Assessment Report	WATER SOURCE PAPER DUE
7	10/11	International Water Law 1 International Water Law 2: Transboundary Waters	Convention on the Law of Nonnavigational Uses of International Watercourses, just skim (ELMS, Files tab) Everything you need to know about the UN Watercourses Convention, WWF 2015, pgs. 1-23 (ELMS Files) Optional Further Reading: Reimagining International Water Law (ELMS, Files) Water Policy, pp. 263-272 Aaron T. Wolf (1999) "Conflict and cooperation along international waterways" Water Policy 1 (2), pp. 251-265. Chris Sneddon and Coleen Fox (2006) "Rethinking transboundary waters: A critical hydropolitics of the Mekong basin" Political Geography 25 (2): 181-202	Explore the convention using: http://www.unwatercoursesconvention.org/ http://www.unwatercoursesconvention.org/the-convention/ http://www.unwatercoursesconvention.org/resources/
8	10/18	Catch-up day		
UNIT 3:	WATER JUSTIC	E AND ETHICS		
8	10/20	Water Justice in the Global North	Deitz and Meehan (2019). <u>Plumbing Poverty:</u> <u>Mapping Hot Spots of Racial and Geographic Inequality in U.S. Household Water Insecurity</u>	

			"The Daily Struggle for Clean Water." (March 16, 2016) The Atlantic Monthly. "The American Neighborhoods Without Water, Sewers, or Building Codes." (March 3, 2016). The Atlantic Monthly. Optional further reading: Perreault, T.; Wright, S. and Perreault, M. (2012). Environmental injustice in the Onondaga lake waterscape, New York State, USA Water Alternatives 5(2): 485-506.	
9	10/25	Water Justice in the Global South	Mehta, L., et al. (2014). "Global environmental justice and the right to water: The case of periurban Cochabamba and Delhi." Geoforum 54 (2014) 158–166. Ranganathan, Malini, and Carolina Balazs. (2015). "Water Marginalization at the Urban Fringe.	Reflection #2 Due (in-class)
	10/27	Participatory Water Governance	Brown, Langridge, and Rudestam. (2016). Coming to the table: collaborative governance and groundwater decision-making in coastal California, Journal of Environmental Planning and Management. Morinville and Harris. (2013). "Participation's limits: tracing the contours of participatory water governance in Accra, Ghana." From Contemporary Water Governance in the Global South: Scarcity, marketization and participation. Ed. Harris, Goldin, and Sneddon: 216-231.	

			Maybe: Biswas, A. K. (2004). "Integrated water resources management: a reassessment". Water International 29(2): 248–256.	
10	11/1	Water and Climate Change	Water Policy, Ch. 10, pgs. 244-260. 3 Things Cities Can Learn from Cape Town's Impending "Day Zero" Water Shut-Off Excerpts from UN World Water Dev. Report 2020, pgs. 16-29.	
	11/3	Water for Ecosystems	Postel, Sandra, The Missing Piece, A Water Ethic Water Policy, 142-159 Schreiner (2013). Why Has the South African National Water Act Been so Difficult to Implement? (ELMS, Files).	
UNIT 5:	WATER: CURR	ENT ISSUES AND SOLUTION	S	
11	11/8	Current Issues in Water Infrastructure: Desalination	CRS Report, Desalination (ELMS, Files) Energy and environmental issues in desalination (ELMS, Files) Peak salt: is the desalination dream over for the Gulf states? Optional further reading: Can the Middle East solve its water problem?	
	11/10	Current Issues in Water Infrastructure: Dams	Water Policy, 159-164 Ken Conca (2006) "The ecology of human rights: Anti-dam activism and watershed democracy"	

			Cecilia Tortajada (2014) "Dams: an essential		
			component of development" Journal of Hydrologic		
			Engineering 20(1).		
12	11/15	"Soft Path" Solutions	Water Policy, Introduction, 206-217, 288-303		
			Postel, S. Adapting to a New Normal in the Post-Carbon Reader.		
	11/17	Guest Lecture: Leena Malayil. CONSERVE Program UMD Extension	Readings TBA		
13 11/22 Catch-up day					
	11/24	Thanksgiving Break No Class			
DEBATE	S AND CLASS V	VRAP-UP			
14	11/29	Debates	Readings TBA		
	12/1	Debates	Readings TBA	WATER CONFLICT/SOLUTION ASSIGNMENT DUE	
15	12/6	Debates	Readings TBA		
	12/8	Review and Wrap up		DEBATE ANALYSIS AND REFLECTION DUE	
				Reflection #3 Due (in-class)	

Note: This is a tentative schedule, and subject to change as necessary – monitor the course ELMS page for current deadlines. In the unlikely event of a prolonged university closing, or an extended absence from the university, adjustments to the course schedule, deadlines, and assignments will be made based on the duration of the closing and the specific dates missed.