

EART 30: Water in the Environment Spring 2019

Instructor: Margaret Zimmer
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Office hours: Tuesdays 12:00pm-1:00pm and Wednesdays 10:00am-11:00am
or by appointment (please email to set up appointments)

Course hours: Tuesdays and Thursdays at 9:50am-11:35am

Course location: Thimann Lecture Hall 001

Final Exam (closed-book): Monday, June 10 12:00-3:00pm

Course text: All course readings are available on Canvas, including an open-access “e-textbook” [Introduction to Hydrology](#) by Steven Margulis. Please check Canvas for any updates, which will also be announced in class.

Course description: This course provides an introduction to the key hydrologic processes that shape not only the natural world, but also our daily lives. This course will explore how different hydrologic processes influence the physical and ecological structure of our environments as well as the communities, cultures, and people within these environments. The course framework will be structured around the global water cycle. We will scientifically examine major components of the water cycle and explore case studies from a global array of environments to understand how different cultures and communities interact with each hydrologic component.

Course goals:

- Develop a scientifically-based understanding of the water cycle and how different environments evolve from, and interact with, water cycle components.
- Develop critical perspectives necessary to understand cross-cultural interactions with important hydrologic processes.
- Address themes of privilege, class, culture, race, and inequality in the context of global water resource issues.

Grades/Evaluations will be based on:

- 30% Assignments
- 15% Quizzes
- 20% Midterm (closed book, in-class)
- 25% Final examination (closed book, cumulative, in-class)
- 10% Class participation and improvement over the quarter

In assessment of your achievement in this course, the learning outcomes expected for a student to pass this course are:

- Students are expected to obtain an understanding of the water cycle, including the drivers, characteristics, and magnitudes of the key fluxes and stores (e.g. precipitation, snowmelt, evapotranspiration, infiltration, percolation, groundwater, discharge, streamflow).
- Students are expected to obtain an understanding of the importance of water as a resource, both from a natural and human perspective.
- Students are expected to obtain an understanding of how different components of the water cycle influence communities, cultures, and ways of life.
- Students are expected to obtain an understanding of how humans have impacted the water cycle, through climate change, land use change, water quality pollution, urban development, etc.

Course/classroom rules:

- Use of **cellphones** is not allowed, except when expressly permitted by the instructor.
- **Plagiarism** and other forms of **academic misconduct** will not be tolerated. Please review the UCSC academic misconduct policy https://www.ue.ucsc.edu/academic_misconduct. Academic misconduct will be reported.

Disability and course support:

If you are a student with a disability who requires accommodations to achieve equal access in this course, please submit your [Accommodation Authorization Letter](#) from the Disability Resource Center (DRC) to Professor Zimmer privately during office hours or by appointment, as soon as possible in the academic quarter. For more information, visit the DRC website at <http://drc.ucsc.edu/index.html>.

Canvas: All class materials, assignment submission, quizzes, and course communication will be available through Canvas.

Course schedule *Check Canvas and in-class announcements for updates*

Week	Topic	Reading
1: 04/01	Global water cycle	1. Pages 7-31 in <u>Introduction to Hydrology</u> by Margulis 2. Kummu et al., 2011
2: 04/08	Atmosphere and precipitation	1. Pages 129-168 in Margulis 2. Ch. 3 in <u>Rain: A natural and cultural history</u> by Cynthia Barnett 3. NY Times, "China Works to Stave Off Wheat Crisis" Assignment #1 DUE THURSDAY
3: 04/15	Groundwater	1. Pages 280-287 (optional 288-293) in Margulis 2. News Release: Land subsidence Sacramento Valley 3. Sacramento Valley Subsidence Fact Sheet
4: 04/22	Vegetation	1. Pages 250-274 in Margulis 2. National Geographic article, "How Amazon forest loss may affect water - and climate - far away" 3. Science Advances Editorial, "Amazon Tipping Point"
5: 04/29	Surface water	1. Pages 315-330 & 361-363 in Margulis Assignment #2 DUE TUESDAY
6: 05/06	Water infrastructure	MIDTERM TUESDAY 1. Nat. Geo. article, "Aqueducts: Quenching Rome's thirst"
7: 05/13	Water quality and sanitation	1. World Health Organization Fact Sheet 2. Reuters article, "The cost of clean water: \$150 billion a year, says World Bank"
8: 05/20	Water and climate change	1. Yale 360 article, "Rising Waters: Can a massive barrier save Venice from drowning?" 2. Union of Concerned Scientists article, "Underwater: Rising seas, chronic floods, and the implications for US Coastal real estate"
9: 05/27	Water rights	1. Emanuel R.E., 2019.
10: 06/03	Water governance	1. Water Education Foundation "The 2014 Sustainable Groundwater Management Act: A handbook to understanding and implementing the law" Assignment #3 DUE TUESDAY
FINAL EXAM	Thimann Lecture Hall 001 Monday, June 10 12:00-3:00pm	