

Water Resources and the Environment
GEOG C135/ESPM C133, 3.0 units
Spring 2016
Professor Laurel Larsen, laurel@berkeley.edu
MW 12:30-2:00

Office Hours: Monday 9-11 am, 595 McCone Hall

Description:

This course provides a comprehensive introduction to water resource distribution, dynamics, and usage, and to contemporary water resource issues and challenges. By the end of the course, students will have a physically based understanding of water movement in the terrestrial environment and how it impacts ecosystems, landscapes, and human society. Goals of the course are to provide students with the tools for thinking about and forming informed opinions of the most pressing water resource issues facing global society, to provide a foundation for further studies in quantitative hydrology, and to provide students with experience writing about, presenting, and researching water resource issues.

Prerequisites:

None.

Reading:

You will get the most out of this course if you do the required readings. Although the reading comes from a variety of sources, many of which are available electronically on bCourses, there is one required textbook. The textbook is:

Anisfeld, S. Water Resources (2nd Ed.), Island Press, 2010
ISBN: 9781597264952

A copy will be placed on reserve in the Earth Science Library in the basement of McCone Hall. The book will be available through the bookstore but is relatively inexpensive on Amazon (\$26.81) and is also available as an e-book via Google Books for \$15.12.

In addition, some of the readings come from the following ebook, available through the University. To access the readings, you must be on the campus network or connected to it through VPN.

Mount, J. 1995, California Rivers and Streams, University of California Press. Available at <http://publishing.cdlib.org/ucpressebooks/view?docId=ft967nb5xn&brand=ucpress>

Requirements, Deadline Summary, and Grading Policy

There are no exams in this class. Your grade instead will come from a final project and several assignments. Two of the assignments are mini-projects; one involves reporting on a current news topic; the remainder involve a small amount of outside reading and research, a short written deliverable, and participation in class discussion. Distribution of point totals for each assignment and deadlines are summarized below. Assignment details are (or will be) available on bCourses.

Final project: 40 pts; see description for final and intermediate deadlines
Water footprint assignment: 15 pts, Feb 10
Water quality database assignment: 9 pts, April 13
Current events assignment: 3 pts; each student will be assigned a deadline
Water wars research and discussion: 4 pts, Feb 1
Discussion on Chinatown and California water resource development: 4 pts, Feb 8
Drought reading and discussion: 4 pts, Feb 17
Water scarcity research and discussion: 4 pts, March 2
Water innovation online engagement and discussion: 5 pts, March 7
Dam research and discussion: 4 pts, March 16
Hydrofracking research and discussion: 4 pts, April 4
SF Bay video assignment and discussion: 4 pts, April 18
Total: 100 pts

All deliverables will be penalized by one full point each day they are late. Pay attention to deadlines! No extra credit opportunities will be given. (However, for students who have been active in commenting on the class' discussion boards beyond the minimum that was assigned, I will be more inclined to round scores up!)

The standard scale for grades is as follows: A+: 97-100%, A: 93-96%, A-: 90-92%, B+: 87-89%, B: 83-86%, B-: 80-82%, C+: 77-79%, C: 73-76%, C-:70-72%, D+: 67-69%, D: 63-66%, D-:60-62%, F: <60%. For students taking the class pass/fail, a “pass” will be given for scores 70% and higher.

Academic Integrity

Students are expected to uphold the campus honor code at all times. You are a member of an academic community at one of the world's leading research universities. Universities like Berkeley create knowledge that has a lasting impact in the world of ideas and on the lives of others; such knowledge can come from an undergraduate paper as well as the lab of an internationally known professor. One of the most important values of an academic community is the balance between the free flow of ideas and the respect for the intellectual property of others. Researchers don't use one another's research without permission; scholars and students always use proper citations in papers; professors may not circulate or publish student papers without the writer's permission, and students may not circulate or post materials (handouts, exams, syllabi—any class materials) from their classes without the written permission of the instructor.

Any paper submitted by you and that bears your name is presumed to be your own original work that has not previously been submitted for credit in another course unless you obtain prior written approval to do so from your instructor. In all of your assignments, including your homework or drafts of papers, you may use words or ideas written by other individuals in publications, web sites, or other sources, but only with proper attribution. If you are not clear about the expectations for completing an assignment, be sure to seek clarification from your instructor or GSI beforehand. Finally, you should keep in mind that as a member of the campus community, you are expected to demonstrate integrity in all of your academic endeavors and will be evaluated on your own merits. The consequences of cheating and academic dishonesty—

including a formal discipline file, possible loss of future internship, scholarship, or employment opportunities, and denial of admission to graduate school—are simply not worth it.

A zero-tolerance policy for cheating or plagiarism in any form will be strictly enforced. Any student caught cheating or plagiarizing will receive a score of zero for that assignment and be reported to Student Affairs.

Scheduling conflicts:

Please notify me by the second week of the term about any known or potential extracurricular conflicts (such as religious observances, graduate or medical school interviews, or team activities). I will try my best to help you with making accommodations.

Tentative schedule of lecture and readings

This schedule is subject to change. The most current version will be on bCourses!

Date	Topic	Assignment due	Reading
20-Jan	Allocation of water resources in the US		Cech, chapter 8
25-Jan	Water allocations continued; water resource development in California		Mount, chapter 10
27-Jan	Water inventory, water conservation, and introduction to water footprint		Anisfeld Chapter 3, 9.7, 12.3; optional: Cooley et al. 2010
1-Feb	<i>Water wars (bring internet-accessible device)</i>	Water wars	Anisfeld chapter 13
3-Feb	Evapotranspiration and precipitation		Anisfeld chapter 2.1; http://www.terrain.org/articles/27/lamberton.htm
8-Feb	Infiltration, percolation and overland flow; discussion of Chinatown and CA water resource development	Chinatown and California water resource development; final project topics list	Anisfeld chapter 2.1
10-Feb	Water footprint discussion and presentations	Water footprint assignment	
17-Feb	Droughts	Drought	Shelton 10.1-10.5, 10.7, 10.1; Anisfeld chapter 5.4
22-Feb	Water and climate change 1		Anisfeld chapter 6.1; IPCC AR5WG2 Chapter 3(executive summary and 3.5)
24-Feb	Water and climate change 2		Mount chapter 17
29-Feb	Water in agrisystems	Final project prospectus	Anisfeld chapter 10

2-Mar	Scarcity and emerging water supply options	Water scarcity	Anisfeld chapter 5.1, 7.6-7.8
7-Mar	Water innovation	Water innovation	
9-Mar	Rivers, watersheds, and river management		Anisfeld, chapters 2.2, 8.2; Mount Chapter 15 ("Flood control through channelization of rivers" and "Impacts of channelization")
14-Mar	Floods		Anisfeld, chapter 4
16-Mar	Dams and dam removal	Dams	Anisfeld, chapters 7.1, 7.2; Mount Chapter 16
21-Mar	Spring break		
23-Mar	Spring break		
28-Mar	Groundwater flow	Final project reference list and summary	Cech, p. 114-128, 132-134
30-Mar	Groundwater extraction and saltwater intrusion		Anisfeld chapter 5.3; Edwards and Evans fact sheet; http://www.circleofblue.org/waternews/2015/world/here-comes-the-sea-the-struggle-to-keep-the-ocean-out-of-californias-coastal-aquifers/
4-Apr	Hydraulic fracturing	Hydrofracking	Vidic et al. 2013; Kargbo et al. 2010
6-Apr	Water quality 1		Anisfeld, chapters 8.4, 8.7
11-Apr	Water quality 2		Anisfeld, chapters 8.4, 8.7
13-Apr	Urban water	Water database assignment	Anisfeld, chapters 8.6, 6.2
18-Apr	<i>Delta tunnels and the restoration of the Sacramento-San Joaquin delta (bring internet-accessible device)</i>	SF Bay	Lund et al 2008; http://www.watereducation.org/aquapedia/sacramento-san-joaquin-delta-canal-tunnels-proposals
20-Apr	Large scale restoration 2: The Everglades and Mississippi River delta		Sklar et al 2005; Day et al 2007
25-Apr	Guest presentation or project prep		
27-Apr	Guest presentation or project prep		
2-May	Presentations	Draft final project	
4-May	Presentations		
5-May		Final project peer reviews	
11-May		Final project	

