GEOG 440/540 - Syllabus
Water Resources Management in the United States

Instructor: Michael E. Campana, Wilkinson Hall 246, aquadoc@oregonstate.edu or Michael.Campana@oregonstate.edu
Office Hours: TR: 9:30 – 11 am; WF: 9 – 10 am; or by appointment, Wilkinson 246. Note: if posted hours are inconvenient, we can meet at a mutually convenient day/time. Just email or call to set up an appointment. Note: I will not have office hours the first week. Phone: 541-602-4085 (cell)  541 -737-2413 (office)

Catalog course description. WATER RESOURCES MANAGEMENT IN THE UNITED STATES (3). An investigation of the various approaches to water resources geography within the U.S. Explores the disciplines that address water resources management, their tools, and their limitations. Topics include engineering, law, economics, risk assessment, game theory, conflict resolution, and the fine arts. Offered separately as GEOG 440 and GEOG 540. PREREQS: 9 credits of upper-division geography and any course dealing with the hydrologic cycle.

“No policy without a calamity” – Dutch saying

OSU WWW: http://www.geo.oregonstate.edu/people/faculty/campanam.htm
WaterWired blog: http://www.waterwired.org
WaterWired Twitter: http://twitter.com/waterwired
Course WWW site: http://aquadoc.typepad.com/campana_courses_osu/ or http://is.gd/z8DJIB
Mailbox: Room 104 CEOAS Admin. Bldg (across 26th St. from WLKN, next to parking lot)

Textbooks (required): Chasing Water, Brian Richter
Key Concepts in Water Resources Management, Jonathan Lautze
Blue Revolution: Unmaking America’s Water Crisis, Cynthia Barnett
Other Readings: AWRA IWRM Case Studies (PDF)
AWRA Flood and Drought Management Report (PDF)
IMPACT Issue on IWRM – May 2011 (PDF)

Course Coverage. Students will attend class three days a week for 50 minutes each day. We will explore water resources management - both surface water and groundwater, quantity and quality - in the entire USA. We’ll discuss a variety of topics: good and bad examples of water management; governance; conflict & cooperation; need (?) for a water ethic; and the perplexing issue of water policy (or lack thereof) and its relationship to management and governance. Among other things, we will examine the roles of government (federal, state, tribal, and local) and nongovernmental entities in WRM. We will look at the various laws, cultures, and policies that influence WRM and how the future will dictate changes in the way we manage water.
While doing the above we’ll also investigate IWRM (Integrated Water Resources Management), a process that is being promoted worldwide by the Global Water Partnership [www.gwpforum.org](http://www.gwpforum.org) and other organizations (e.g., World Bank, USAID). Is IWRM something new or just the SOS with a new name? More importantly, does it work? I have convened and chaired one IWRM conference [http://www.awra.org/meetings/Summer2011PP/](http://www.awra.org/meetings/Summer2011PP/) in 2011 and was the co-convener and technical chair of another one in June 2014 [http://www.awra.org/meetings/Reno2014/](http://www.awra.org/meetings/Reno2014/) but am still circumspect about IWRM, especially as it applies to groundwater.

Case studies may include: Florida’s water management districts (aka WMDs); Delaware River Basin Commission; Mississippi v. Memphis; Albuquerque; California Bay-Delta; and other regions. How about local governance? Can we learn from others? The Euros? Canada? Singapore? Campanastan? We may also try playing some ‘water games’ with [Aqua Republica](http://aquarepublica.com/), if I can get it to work. Fun!

**Course Materials Online.** For announcements, handouts, revised course information and syllabi, homework assignments, Power Point lectures, links, go to the course website at [http://aquadoc.typepad.com/campana_courses_osu/](http://aquadoc.typepad.com/campana_courses_osu/) or [http://is.gd/z8DJIB](http://is.gd/z8DJIB) Important notices regarding assignments, quizzes, exams, etc., will be announced via e-mail so it is essential that you check your e-mail regularly. All email will go to your ONID email. If you use another email address, make sure your ONID email gets forwarded to it.

**Deadlines.** Assigned work must be submitted on the due date. Late work will be given a grade of zero.

**Etiquette.** My commitment to you is to return assignments promptly, and be on time, organized, ready for class. I ask the same of you, and out of courtesy to your colleagues that you not eat, talk, read, or walk around during class. There will be no cell phone use (including text messaging) during class. Use of other electronic devices (online or not) is allowable as long as it does not prove disruptive to your classmates.

**Participation is an important aspect of this class.** Class participation points are not ‘automatic’; attendance is important but engagement in the class is more so. You are expected to read class material before it is covered in class and become actively engaged in class discussions. *If it becomes apparent to me that most of the class is not reading the material, I reserve the right to institute unannounced quizzes that will count towards your final grade.*

**Office Hours.** I endeavor to keep my office hours as shown above. If for some reason I cannot keep them I will let you know. You are *always* welcome to make an appointment to see me outside posted hours, or, if my door’s open, drop in to see if I am available.

**Course Objectives**

1) Provide an overview of water management, especially as it is practiced in the US
2) Identify and explore the various facets of water management
3) Illustrate specific water management approaches through case histories
4) Expose students to the use and interpretation of a simple water resources model
5) Equip students with the tools to become water resource ‘crap detectors’

Learner Outcomes
1) Acquire specialized language and concepts relevant to water resources management
2) Develop appreciation for complexities and disciplines related to water resources decision-making and policy-making
3) Demonstrate ability to obtain, analyze, synthesize, and critique information relevant to water resources from a range of external sources
4) Communicate verbally, and through writing, key concepts, including advanced concepts, relevant to water resources management
5) Develop ethical and moral guidelines for personal approach to water resource use and allocation issues

In addition to the above, graduate students will:
6) Acquire exposure to current academic and applied literature representing current thinking in international water resources, and;
7) Synthesize in both oral and written formats existing thinking with one’s own academic and professional direction to help further both the field and one’s own intellect

Learner Expectations
1. Be respectful of other students, especially our guest lecturers, by attending class on time and staying the entire period.
2. Read assignments before they are discussed in class.
3. Participate in learning activities and complete tasks on time.
4. Come prepared to take the final exam (there are no make-up exams).
5. Cell/smart phone use, text messaging, Facebooking, Tweeting, blogging, doing homework for other courses, reading newspapers or other material unrelated to this course’s content, headphones, etc. are prohibited during class. Leave the classroom if you want to do these.
6. Follow University, departmental, and course policies described above, including proper use and citation of peer-reviewed research.

Grading
Grading Elements:
**Quizzes:** 4 @ 45 = 180 points
**Assignments:** 4 @ 50 = 200 points
**Take-Home Final Exam:** 100 points
**Class Participation:** 20 points
**Total = 500 points**

**Quizzes:** In-class, closed-book test (c. 20-30 minutes) designed to assess your command of the readings and class material. They will not be cumulative in terms of coverage; each quiz will cover only the material since the previous quiz.
**Assignments:** Self-explanatory. Problems, essay questions, etc.
**Final Exam:** Take-home exam.
Participation is an important aspect of this class. Class participation points are not ‘automatic’; attendance is important but engagement in the class is more so. You are expected to read class material before it is covered in class and become actively engaged in class discussions. If it becomes apparent to me that most of the class is not reading the material, I reserve the right to institute unannounced quizzes that will count towards your final grade.

The percentages used for determining the final grades at the end of the term are: A = 100—94, A- = 93—90; B+ = 89—87, B = 86—84, B- = 83—80; C+ = 79—77, C = 76—74; C- = 73—70; D+ = 67—69; D = 64—67; D- = 60—63; F = < 60. Note: For P/N or S/U students, 70% is required for P or S.

Students requiring special accommodations. Accommodations for students with disabilities are determined and approved by Disability Access Services (DAS). If you, as a student, believe you are eligible for accommodations but have not obtained approval please contact DAS immediately at 541-737-4098 or at http://ds.oregonstate.edu. DAS notifies students and faculty members of approved academic accommodations and coordinates implementation of those accommodations. While not required, students and faculty members are encouraged to discuss details of the implementation of individual accommodations.

University and College Policies

Civility. The College of Earth, Ocean, and Atmospheric Sciences follows the university rules on civility and honesty. Behaviors disruptive to the learning environment will not be tolerated and will be referred to the Office of Student Conduct for disciplinary action. “The goal of Oregon State University is to provide students with the knowledge, skill, and wisdom they need to contribute to society. Our rules are formulated to guarantee each student’s freedom to learn and to protect the fundamental rights of others. People must treat each other with dignity and respect in order for scholarship to thrive. Behaviors that are disruptive to teaching and learning will not be tolerated, and will be referred to the Student Conduct Program for disciplinary action. Behaviors that create a hostile, offensive, or intimidating environment based on gender, race, ethnicity, color, religion, age, disability, marital status or sexual orientation will be referred to the Affirmative Action office.”

Goal. Oregon State University seeks to provide students with the knowledge, skill, and wisdom they need to contribute to society. University rules seek to assure each student’s freedom to learn and to protect the fundamental rights of others. People must treat each other with dignity and respect in order for scholarship to thrive. Behaviors that are disruptive to teaching and learning will not be tolerated, and will be referred to the Student Conduct Program for disciplinary action. For more information please see http://oregonstate.edu/studentconduct/offenses-0.

Cheating. Cheating or plagiarism by students is subject to the disciplinary process outlined in the Student Conduct Regulations. Students are expected to be honest and ethical in their academic work. Academic dishonesty is defined as an intentional act of deception in one of the following areas:
Cheating – use or attempted use of unauthorized materials, information or study aids;
Fabrication – falsification or invention of any information;
Assisting – helping another commit an act of academic dishonesty;
Tampering – altering or interfering with evaluation instruments and documents;
Plagiarism – representing the words or ideas of another person as one’s own.

"...essentially, all models are wrong, but some are useful..." – George E.P. Box

CLASS SCHEDULE
(NOTE: WEEKLY READINGS WILL BE DONE PRIOR TO THE FIRST CLASS MEETING OF THAT WEEK)
BR = BLUE REVOLUTION; CS = CASE STUDIES IN IWRM; FD = FLOOD & DROUGHT; MP11 = MAY 2011 ISSUE OF IMPACT; CW = CHASING WATER; KC: KEY CONCEPTS IN WRM

WEEK 1
BR: CH 1 & 2: CW: Ch 1 & 2;
T 3/31 Course and student/faculty introductions; structure of course; expectations; texts
R 4/2 Review of hydrology; water of the US; introduction to IWRM

WEEK 2
KC: Ch 1 & 2 BR: Ch 3;
T 4/7 Water management, water scarcity & water budgets
R 4/9 Above – continued. Quiz 1

WEEK 3
BR: CHAPTER 4: KC: Ch 3; CW: Ch 3
T 4/14 Water governance
R 4/16 Sustainability and water resources; resiliency; case study

WEEK 4
BR: CHAPTER 4; CW: Ch 4
T 4/21 IWRM Case Studies: Lessons learned
R 4/23 Conflict management; Mississippi v. Memphis. Quiz 2

WEEK 5
BR: CHAPTER 5; KC: Ch 4; CW: 5
T 4/28 Western Water: The CD25 Project
R 4/30 Transnational water management: Canada-US-Mexico

WEEK 6
BR: CH 6 & 7; KC: Ch 5; CW: 6
T 5/5 Delaware River Basin Commission
R 5/7 Florida Water Management Districts. Quiz 3

WEEK 7
BR: Ch 8; KC: Ch 6; CW: 7
T 5/12 Water management in New Mexico: Albuquerque case study
R 5/14 Palouse Basin, Washington-Idaho: citizen involvement

WEEK 8
BR: CH 9; KC: Ch 7
T 5/19 California! Quiz 4
R 5/21 Guest Lecture: Dr. Robert Lackey: Future of West Coast Salmon: Water Management in the Real World

WEEK 9
BR: CH 10 & 11; KC: Ch 8
T 5/26 Nature of Groundwater; Comparison of GW Rights in the US
R 5/28 GW Management in the US: Law of the biggest pump

WEEK 10
BR: CH 10 (REVIEW) & 12 CW: CH 7 (REVIEW) & 8
I reserve the right to make changes in the schedule. You will be notified of any changes.

"The road to help is paved with good intentions." – Tracy Baker