

Fresh Water Policy

Lectures MWF 12:30 - 1:40 p.m. Rm 071, Social Sciences 2

Professor Brent M. Haddad; 493 Natural Sciences 2; bhaddad@ucsc.edu
Office hours: Wednesdays 1:40 – 3:15, and by appointment

Teaching Assistant: Joanna Ory, jory@ucsc.com;

COURSE OVERVIEW: Part One of this course provides an interdisciplinary introduction to basic concepts, terms, and tools of water-policy analysis. Part One draws from law, finance, epidemiology, hydrology, geology, ecology, engineering, and other disciplines. In Part Two, students apply their new knowledge and skill base to case studies and guest lectures.

SECTION/DISCUSSION: One opportunity for discussion/clarification is your **ENVS 165 Student Discussion Website (WebCT)**. A second opportunity involve sections to be held as follows:

Tuesdays 11:00 to 11:50 in ISB 221
Thursdays 1:00 to 1:50 in ISB 431

EVALUATIONS/GRADING: Students will be evaluated and/or graded on the basis of:

- Three (3) **problem sets** due *in class* on days to be announced (20% of total grade);
- One (1) **midterm examination** on Monday, November 5th (25%);
- One (1) **water-issue dossier** due *in class* on Friday, December 7th (25%);
- A **final essay** due *in class* on Friday, December 7th (20%);
- Attendance and participation in **Sections** (10%); and
- Participation in the **ENVS 165 Group Discussion Website (WebCT)** (5% bonus points).

The water-issue dossier is a 5-7 page interdisciplinary report on a water issue of the student's choosing. Water-issue dossiers are due *in class* on **Friday, December 7**; otherwise they will be considered late.

The final essay will invite students to reflect on the major themes of the course and link them to the course's case studies, terms, and concepts.

"In class" means handed to Professor Haddad before he leaves the classroom at the end of the lecture. Late water-issue dossiers, essays, and problem sets receive a score of zero.

READING ASSIGNMENTS: The three (3) required texts include:

Layperson's Guide to Groundwater, Water Education Foundation, 2003
Layperson's Guide to Drinking Water, Water Education Foundation, 2002
Layperson's Guide to Water Rights Law, Water Education Foundation, 2005

All other required readings are available online. Guest lecture readings will be announced later in the quarter.

COURSE OUTLINE: The course will be presented in two parts, outlined as follows.

Part One: Interdisciplinary Tools and Concepts

- F Sep 28 **Course Introduction and Overview; Counting Water; Patterns of Water Use**
- “Freshwater: lifeblood of the planet,” People & the Planet web page, posted Jan. 12, 2001. <http://www.peopleandplanet.net/doc.php?id=671§ion=14>. Please familiarize yourself with the many interesting maps.
- Haddad, B. 2000. *Rivers of Gold*. Washington, D. C.: Island Press. “Introduction”, pp. xv – xxii; Appendix 3.
- M Oct 1; &
W Oct 3 **Surface Water and Groundwater**
- Brickson, Betty, and Jeanne Duncan . 2003. *Layperson's Guide to Groundwater*. Sacramento: Water Education Foundation.
- Getches, David H. 1997. *Water Law in a Nutshell*. 3rd ed. St. Paul, Minn.: West Publishing Co., pp. 237-246, on basic hydrology of groundwater.
- F Oct 5 **Aquatic Ecology**
- Poff, N. LeRoy, J. David Allan, Mark B. Bain, James R. Karr, Karen L. Prestegard, Brian D. Richter, Richard E. Sparks, and Julie C. Stromberg. 1997. “The Natural Flow Regime,” *Bioscience* Vol. 47, No. 11, pp. 769-84.
- M Oct 8 **Dams and Hydropower**
- World Commission on Dams. 2000. *Dams and Development: The Report of the World Commission on Dams*. London: Earthscan, Executive Summary; Ch. 1: Water, Development, and Large Dams, pp. 8-25 (or 45-62/356); and Box 10.1 (p. 317 or 345/356). Recommended: Ch. 3: Ecosystems and Large Dams; Ch. 4: People and Large Dams: Social Performance, p. 97 (or 131/356). Available at: <http://www.dams.org/report/contents.htm>.
- W Oct 10 ***No class today due to extra session on October 29***
- F Oct 12 **Water Reliability and Infrastructure**
- Harberg, Robert, J. 1997. *Planning And Managing Reliable Urban Water Systems*, American Water Works Association, Denver, Ch. 3: Reliability Analysis.
- M Oct 15 **Water Quality**
- Klionsky, Lisa C. 2002. *Layperson's Guide to Drinking Water*. Sacramento: Water Education Foundation.
- Harte, John, Cheryl Holdren, Richard Schneider, and Christine Shirley. 1991. *Toxics A to Z: A Guide to Everyday Pollution Hazards*, Berkeley, Ca.: University of California Press, Ch. 6: Toxics in Water, pp. 55-60, on chemical pollutants in drinking water.
- Gleick, P. 1998. *The World's Water: 1998-1999*. Washington, D.C.: Island Press, pp. 47-50, on microbial pollutants in drinking water.

- W Oct 17 **Water Treatment I: Engineering**
Dzurik, Andrew A. 2003. "Water Quality," *Water Resources Planning*. Lanham, MD: Rowman & Littlefield Publishers, Ch. 9: Water Quality.
- F Oct 19 **Water Treatment II: Policy**
Asano, Takashi, and Audrey Levine. 1998. "Wastewater Reclamation, Recycling, and Reuse: An Introduction," in T. Asano, ed., *Wastewater Reclamation and Reuse*. Lancaster, Penn.: Technomic Publishing Company, Inc., pp. 1-56. (OK to skim pp. 23-47.) *On Reserve*.
- M Oct 22 **Water Law I: State and National Law**
Getches, David H. 1997. *Water Law in a Nutshell*. 3rd ed. St. Paul, Minn.: West Publishing Co., Ch. 1: Overview and Introduction to Water Law, pp. 1-14.
McCarthy, Elizabeth. 2005. *Layperson's Guide to Water Rights Law*, Sacramento: Water Education Foundation.
- W Oct 24 **Water Law II: State and National Law (continued) and International Law**
Caponera, Dante A. 1980. *The Law of International Water Resources*, Legislative Study #23. Rome: Food and Agricultural Organization of the United Nations, pp. 3-22.
- F Oct 26 **Water Finance I: Raising Capital for Water Projects**
Asano, Takashi, and R. Mills. 1998. "Planning and Analysis of Water Reuse Projects," in T. Asano, ed., *Wastewater Reclamation and Reuse*. Lancaster, Penn.: Technomic Publishing Company, Inc., pp. 83-111. *On Reserve*.
- M Oct 29 **Water Finance II: Assigning Costs to Ratepayers and/or Shareholders**
Mix, Andrew A. 1998. "Water Rates: Cost of Service vs. Reality," *Proceedings, Water Resources and the Urban Environment – 98*. American Society of Civil Engineers, Chicago, IL., pp. 621-626. *On Reserve*.
- M Oct 29
6:30 p.m. **Special Session** dedicated to the Asano/Mills and Mix readings
(Location TBA)
- W Oct 31 **Assessing Water Projects Using Benefit-Cost Analysis**
Griffin, Ronald C. 2006. "Cost-Benefit Analysis," *Water Resource Economics*. Cambridge, MA: MIT Press, Ch. 6: Cost-Benefit Analysis.

Part Two: Case Studies and Guest Lectures

- F Nov 2 **The Policy and Practice of Water Sanitation**
Guest Lecturer: Theresa R. Slifko, Ph.D., Los Angeles County Sanitation Districts
- M Nov 5 **Midterm Examination**
- W Nov 7 **Public Oversight of Private Water Utilities**
Guest Lecturer: Diana Brooks, Division of Ratepayer Advocates, California Public Utilities Commission

Dzurik, Andrew A. 2003. *Water Resources Planning*. Lanham, MD: Rowman & Littlefield Publishers, Chapter 7: Economic Analysis, pp. 135-138 on cost allocation.

- F Nov 9 **Living History: City of Los Angeles and the Owens Valley**
Reisner, Marc. 1986. *Cadillac Desert*. New York: Viking, pp. 61-73, 93-101, on the capturing of Owens Valley water by Los Angeles.
- M Nov 12 **Holiday – no class**
- W Nov 14 **The Tuolumne River: Sharing a Vital Water Resource**
Guest Lecturer: Roger Masuda, Esq., Partner, Griffith and Masuda, and General Counsel to the Turlock Irrigation District
- F Nov 16 **The Relationship Between Water and Energy**
California Energy Commission, 2005. “California’s Water – Energy Relationship: Final Staff Report” (04-IEPR-01E). Chs. 1 and 6. Available at:
<http://www.energy.ca.gov/2005publications/CEC-700-2005-011/CEC-700-2005-011-SF.PDF>.
- M Nov 19 **Prospects for Water Quality Improvement in Developing Nation Cities**
Guest Lecturer: Brian Petersen, Doctoral Candidate, UCSC Environmental Studies
- W Nov 21 **Carmel River Protection: Evaluating the Coastal Water Project**
Dzurik, Andrew A. 2003. *Water Resources Planning*. Lanham, MD: Rowman & Littlefield Publishers, Ch. 6. The Planning Process
- F Nov 23 **Thanksgiving Holiday – no class**
- M Nov 26 **How California and Its Water Agencies are Planning for Climate Change**
Download and read the “Climate Change Fact Sheet,” “Lester Snow Presentation on Climate Change,” and especially “Climate Change and California Water Management Challenges,” presented by Kamyar Guivetchi. Available at the State of California, Department of Water Resources webpage at: <http://www.climatechange.water.ca.gov/articles.cfm>.
- W Nov 28 **The Future of Water Reuse and Desalination in the U.S.**
Guest Lecturer: G. Wade Miller, Executive Director, WaterReuse Foundation, Alexandria, Virginia
- F Nov 30 **Water-borne Diseases: Malaria and Dengue Risks**
World Health Organization. 2006. Malaria vector control and personal protection: report of a WHO study group. WHO technical report series; no. 936, pp. 29-39. Available at:
<http://www.who.int/malaria/vectorcontrol.html>
- M Dec 3 **Russian River Management: Balancing Multiple Interests**
Guest Lecturer: Jean Debroux, Ph.D., Kennedy Jenks Consulting
- W Dec 5 **Re-plumbing a Nation: China’s Search for Urban Water Supply**
McDonnell, Stephen. 2007. “China to Implement Controversial Water Plan,” Australian Broadcasting Corp. (March 4). Available at:
<http://www.abc.net.au/lateline/content/2007/s1889027.htm>.
Oster, Shai. 2006. “China Water Plan Sows Discord,” *Wall Street Journal* (October 20). Available at: http://online.wsj.com/public/article/SB116128200282997964-YG0ibN5KtXIAOoXjJmPVSaG3MG8_20061026.html?mod=regionallinks.
Varda, Nicholas. 2007. “Investing in Water: The World’s Most Precious Resource.” Available at:
<http://seekingalpha.com/article/31264-investing-in-water-the-world-s-most-precious-resource>.

F Dec 7

Course Summary

*Water-Issue Dossiers and Final Essays due today **in class**.*