

## NRES/GEOG 400/600 International Issues for Water Development

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Fall Semester 2010 (3 credits)  
NRES 400; NRES 600; GEOG 400; GEOG 600  
International Issues for Water Development

**Course Meeting Time:** Monday & Wednesday 2:30-3:45p.m., FA 301  
Student World Water Forum: November 18-19, 2010

**Course Instructors:** Laurel Saito, KRC 109  
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**Course Goal:** Every living thing on earth needs water to survive in one way or another. Thus, it is a global resource. In this course, you will gain an appreciation of how local water issues are pertinent in a global sense, and how social/cultural, economic, political, environmental, and technological circumstances affect the implementation of water projects both domestically and abroad.

**Course Description:** In this course you will evaluate the integration of science, technology, culture, policy, ecology, and economics in international water issues for large- and small-scale project implementation. You will study how water use and management has been influenced by cultural dynamics, economic systems, political organization, technological change, and scientific understanding.

This is a general capstone course in which you will be critically analyzing water project development and grappling with differences in water planning, policy, and project development in a variety of social and technological environments. You are expected to come to each class period prepared by reading the assigned materials. All students will prepare a 10 to 15 page conference paper. In addition students will either make a 10-minute paper presentation or present a poster at the Student World Water Forum (SWWF). The SWWF will simulate a professional international conference. In addition to writing the conference paper, you will be responsible for completing one assignment and writing two essays (4 to 5 pages each) based upon the readings, class lectures, and discussions.

**Course Objectives:** Successful students will accomplish the following in this course:

1. Analyze reading assignments regarding water development
2. Compare water issues in different cultural, social, economic, technological, and environmental contexts
3. Synthesize complex water issues in regards to policy, culture, technology, and interdisciplinary aspects
4. Gain an understanding of essential elements for the successful implementation of large- and small-scale water resources projects
5. Address the balance of environmental versus human needs for water
6. Prepare a conference paper and present a professional presentation in a simulated conference environment
7. Graduate students will do a critical review of a peer-reviewed article on an issue in international water resources
8. Graduate students will organize a simulated international conference as part of a conference organizing committee

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### **Exams and Grading:** Undergraduates

|                                |             |
|--------------------------------|-------------|
| Attendance                     | 100 points  |
| Participation                  | 100         |
| Essays (2)                     | 250         |
| Assignment (1)                 | 100         |
| Research paper                 | 250         |
| Presentation of research paper | 200         |
| TOTAL POSSIBLE                 | 1000 points |

### Graduate students

|                                |             |
|--------------------------------|-------------|
| Attendance                     | 100 points  |
| Participation                  | 100         |
| Essays (2)                     | 250         |
| Assignment (1)                 | 100         |
| Research paper                 | 250         |
| Presentation of research paper | 200         |
| Article review                 | 100         |
| Organization of SWWF           | 300         |
| TOTAL POSSIBLE                 | 1400 points |

Note: All assignments are due at the beginning of class. They will be assessed a 5% late penalty once class has started. We use a +/- grading scale.

### **Attendance:**

As a capstone and graduate-level course that focuses on the synthesis of complex water issues in regards to policy, culture, technology, and interdisciplinary aspects, attendance is a key element to your success in this class. There are no exams associated with this class; rather, the class will involve discussions and synthesis of readings, audio-visual materials, and group exercises in class. Thus, it is essential that students attend class to participate in these syntheses. You are expected to be in the classroom each day for the entire class period. Absence, late attendance and leaving the classroom during the class period will be noted accordingly.

### **Participation:**

The reading assignments are critical to the learning in this class, as well as providing background material for productive discussions. Discussion and debate of the complex issues we cover in this class enhances your learning as well as that of your classmates. Participation includes providing comments on the issues in class based on the readings and discussion; contributing actively to group exercises in class; and the quality of questions posed about the assigned readings.

### **Essays:**

Two essays will be assigned during the semester that involve syntheses of class readings and material. Detailed instructions will be provided when the essays are assigned.

### **Assignments:**

One assignment will be given at the beginning of the semester to ensure that key points made in early lectures and readings are understood. Detailed instructions will be provided when the assignment is handed out.

### **Research paper:**

A major portion of the course grade consists of the preparation of a 10 to 15 page research paper on an international water-related topic, which will also be the topic for your presentation (see below). Detailed instructions will be provided later in the course.

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**Presentation of research paper:** You will prepare a presentation on the research topic selected for your research paper, and give that presentation at the Student World Water Forum (SWWF) on November 18 or 19. Detailed instructions will be provided.

**Graduate students only:** Graduate students will be required to do a critical review of a peer-reviewed article on international water issues. We will provide guidelines for the preparation of this review. In addition, graduate students are required to organize the SWWF as a conference organizing committee. Graduate students are also required to examine available literature, and relate the literature to all essays and the research paper.

**Required Textbooks:** See attached reading list. A good resource for water-related terms can be found in the US Geological Survey's online water science glossary of terms. This can be accessed at: <http://ga.water.usgs.gov/edu/dictionary.html> or through the course web page.

**Web page:** <http://www.cabnr.unr.edu/saito/classes/nres400/nres400.htm>

If you have a disability and will be requiring assistance, please contact one of us or the Disability Resource Center (Thompson Building Suite 101) as soon as possible to arrange for appropriate accommodations.

In consideration of your fellow students and the instructors, you must turn off cell phones, IPODs and laptop computers during class time, unless you have prior permission from the instructors.

### **Academic Success Services:**

Your student fees cover usage of the Tutoring Center (784-6801 or [www.unr.edu/tutoring/](http://www.unr.edu/tutoring/)), and University Writing Center (784-6030 or [www.unr.edu/writing\\_center](http://www.unr.edu/writing_center)). These centers support your classroom learning and we recommend using these services.

### **A Note on Plagiarism:**

Plagiarism (copying all or part of someone else's work and passing it off as your own) is a serious form of academic misconduct and will not be tolerated in this class. The following definitions and possible courses of action are taken from the Academic Standards section of the university catalog:

Academic dishonesty is defined as: cheating, plagiarism or otherwise obtaining grades under false pretenses. Plagiarism is defined as submitting the language, ideas, thoughts or work of another as one's own; or assisting in the act of plagiarism by allowing one's work to be used in this fashion....

Disciplinary procedures for incidents of academic dishonesty may involve both academic action and administrative action for behavior against the campus regulations of student conduct....Academic action may include: (1) canceling the student's enrollment in the class without a grade; (2) filing a final grade of "F"; (3) awarding a failing mark on the test or paper in question; (4) requiring the student to retake the test or resubmit the paper.

"The work of another" does not just mean whole papers or articles copied from another source. It includes any information, ideas, sentences, or phrases that came from somewhere other than your own head (i.e. books, articles, internet sites, videos, documents, lecture notes or handouts from other courses, and any other sources used in your paper). These must be properly acknowledged by providing references either in the text or in a footnote, along with a bibliography giving the complete publication information for all sources used in your paper. Even if you paraphrase someone else's ideas and do not quote them directly, you still must acknowledge your source. Citations should also be given for little-known facts and statistics.

Ignorance is not an excuse for plagiarism. If you are not sure whether you need to provide a source for a piece of information or how to cite a source, ask the instructors.

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### Fall Semester 2010 Course Schedule

Note: see [Dr. Saito](#) or [Dr. Berry](#) for login and password to retrieve linked documents

| Date  | Topics                              | Readings  | Notes  |
|-------|-------------------------------------|---|--|
| 8/23  | Introduction                        |   |  |
| 8/25  | Hydrology review                    | - <a href="#">Clayton (2008)</a><br>- <a href="#">USBR (2005)</a>                           | <i>Distribute Assignment 1</i>                         |
| 8/30  | Hydrology review (cont.)            |   |  |
| 9/1   | Floods & floodplain management      | - <a href="#">Ward (2006), ch 6</a>   | <i>Distribute paper/presentation guidelines</i>        |
| 9/6   | Labor Day Holiday – no class        |   |  |
| 9/8   | Water for wetlands & riparian areas | - <a href="#">Lawler (2005)</a><br>- <a href="#">Hensel (2006)</a>                          | <i>Distribute grad student article assignment</i>      |
| 9/13  | Maintaining lakes and inland seas   | - <a href="#">Micklin (2007)</a><br>- <a href="#">Stone (2008a)</a>                         | <i>Assignment #1 due</i><br><i>Distribute Essay #1</i> |
| 9/15  | Creeping environmental problems     | - <a href="#">Glantz (1998)</a>   | <i>Research paper topics due</i>                       |
| 9/20  | Water infrastructure                | - <a href="#">Stone (2008b)</a>   |  |
| 9/22  | Water rights & water use            | - <a href="#">Pradhan &amp; Pradhan (2000)</a><br>- <a href="#">Tewari (2006)</a>           |  |
| 9/27  | Water for agriculture               | - Clarke & King (2004), <a href="#">part 2</a><br>- <a href="#">Smil (2008)</a>             |  |
| 9/29  | Managing irrigation                 | - <a href="#">Cai et al. (2003)</a>   |  |
| 10/4  | Urban water use                     | - <a href="#">Lahera Ramón (2008)</a>   | <i>Draft abstract due</i>                              |
| 10/6  | Water & health                      | - <a href="#">CDC (2008)</a><br>- <a href="#">Stokstad (2002)</a>                           |  |
| 10/11 | Desalination                        | - <a href="#">Dreizin et al. (2008)</a>   | <i>Essay #1 due</i>                                    |
| 10/13 | Transboundary river management      | - <a href="#">Wolf et al. (2003)</a>  |  |
| 10/18 | Pricing water                       | - <a href="#">Cosgrove &amp; Rijsberman (2000a), ch 5</a><br>- <a href="#">Bauer (2010)</a> | <i>Final abstract due</i><br><i>Paper outline due</i>  |
| 10/20 | Water privatization                 | - <a href="#">OECD (2003), ch 5</a><br>- <a href="#">Trawick (2003)</a>                     |  |
| 10/25 | Accessing water                     | - <a href="#">Catley-Carlson (2003)</a>   |  |
| 10/27 | Water & gender                      | - <a href="#">Hawkins &amp; Seager (2010)</a>   |  |
| 11/1  | Redressing water inequities         | - <a href="#">Funke et al. (2007)</a>   | <i>Research paper due</i>                              |
| 11/3  | Water & religious identity          | - <a href="#">Fisher et al. (2008)</a><br>- <a href="#">WR Impact special issue (2009)</a>  |  |
| 11/8  | Water & war                         | - <a href="#">Etienne &amp; Nembrini (1995)</a>   |  |

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|          |   | - <a href="#">Gleditsch et al. (2006)</a>   |  |
| 11/10    | Water & peace   | - <a href="#">MacQueen (2001)</a>   |  |
| 11/15    | No class – individual practice presentation   | -----   | <i>Practice presentation</i>                                 |
| 11//17   | No class – individual practice presentations  | -----   | <i>Practice presentation</i>                                 |
| 11/18-19 | Student World Water Forum   |   |  |
| 11/19    | Keynote speaker – Dr. Trevor Birkenholtz, Rutgers University (4 pm; Wells Fargo Auditorium in the Knowledge Center) |   |  |
| 11/22    | Local level management  | - <a href="#">Brooks (2002), Parts 1 and 2</a>                                      |  |
| 11/24    | Water footprints  | - <a href="#">Hoekstra &amp; Chapagain (2007)</a>                                   |  |
| 11/29    | Integrated water resource management  | - <a href="#">Fischhendler (2008)</a><br>- <a href="#">Global Water Par. (2006)</a> |  |
| 12/1     | Adaptive water management   | - <a href="#">Pahl-Wostl (2007)</a>   |  |
| 12/6     | Visioning water   | - <a href="#">Cosgrove &amp; Rijsberman (2000b), ch 4</a>                           | <i>Distribute Essay #2</i><br><i>Grad article review due</i> |

Note: Final essay is due on Monday December 13 at 4:15 pm

**Readings:**

- Baker S. 2009. Water, the giver of life: a Wiccan perspective. *Water Resources Impact* 11(6):11-12. ([baker09.pdf](#))
- Bauer C. 2010. Market approaches to water allocation: lessons from Latin America. *Jrnl of Contemp. Water Res & Ed* 144: 44-49. ([bauer10.pdf](#))
- Brooks DB. 2002. *Water: Local-Level Management*. Ottawa: International Development Research Centre. (see [http://www.idrc.ca/en/ev-9440-201-1-DO\\_TOPIC.html](http://www.idrc.ca/en/ev-9440-201-1-DO_TOPIC.html))
- Cai X, McKinney DC, Rosegrant MW. 2003. Sustainability analysis for irrigation water management in the Aral Sea region. *Agricultural Systems* 76 1043–1066. ([cai`03.pdf](#))
- Catley-Carlson M. 2003. Working for water. Pp. 65-75 in McDonald B, Jehl D, editors. *Whose water is it? The unquenchable thirst of a water-hungry world*. Washington DC: National Geographic. ([catley03.pdf](#))
- (CDC) Centers for Disease Control. 2008. Safe water for the community, edition 1. ([CDC 2008.pdf](#))
- Chamberlain G. 2009. The waters of Tao. *Water Resources Impact* 11(6):13-14. ([chamberlain09.pdf](#))
- Clarke R, King J. 2004. Part 2: Uses and abuses. Pp. 29-45 in *The Water Atlas*. New York: The New Press. ([clarke04\\_ch2.pdf](#))
- Clayton M. 2008. Is water becoming the new oil? *Christian Science Monitor*, 30 May 2008. ([clayton 2008.pdf](#))
- Cosgrove WJ, Rijsberman FR. 2000a. Chapter 5: Investing for the water future. Pp. 58-65 in *World Water Vision: Making Water Everybody's Business*. London (UK): Earthscan. (see <http://www.worldwatercouncil.org/fileadmin/www/Library/WWVision/Chapter5.pdf>)
- Cosgrove WJ, Rijsberman FR. 2000b. Chapter 4: Our vision of water and life in 2025. Pp. 48-57 in *World Water Vision: Making Water Everybody's Business*. London (UK): Earthscan. (see <http://www.worldwatercouncil.org/fileadmin/www/Library/WWVision/Chapter4.pdf>)
- de Châtel F. 2009. Drops of faith: water in Islam. *Water Resources Impact* 11(6):5-6. ([dechatel09.pdf](#))
- Dreizin Y, Tenne A, Hoffman, D. 2008. Integrating large scale seawater desalination plants within Israel's water supply system. *Desalination* 220:132-148. ([dreizin08.pdf](#))
- Etienne Y, Nembrini PG. 1995. Establishing water and sanitation programmes in conflict situations: the case of Iraq during the Gulf War. *Soz Präventivmed* 40:18-26. ([etienne.pdf](#))
- Fischhendler I. 2008. Institutional conditions for IWRM: the Israeli case. *Ground Water* 46(1):91-102. ([fischhendler08.pdf](#))
- Fisher JB, Nawaz R, Fauzi R, Nawaz F, Sadek E, Latif ZA, Blackett M. 2008. Balancing water, religion and tourism on Redang Island, Malaysia. *Environmental Research Letters* 024005. ([fisher08.pdf](#))
- Fitch EJ. 2009. Introduction: water and spirituality. *Water Resources Impact* 11(6):3-4. ([fitch09.pdf](#))
- Fritsch AJ. 2009. Water and eco-spirituality. *Water Resources Impact* 11(6):9-10. ([fritsch09.pdf](#))
- Funke N, Nortje K, Findlater K, Burns M, Turton A, Weaver A, Hattingh H. 2007. Redressing inequality: South Africa's new water policy. *Environment* 49(3):11-23. ([funke07.pdf](#))

Glantz MH. 1998. Chapter 4: Creeping environmental problems in the Aral Sea basin. Pp. 25-52 in Kobori I, Glantz MH, editors. *Central Eurasian Water Crisis: Caspian, Aral, and Dead Seas*. Tokyo: United Nations University Press. ([glantz.pdf](#))

Gleditsch NP, Furlong K, Hegre H, Lacina B, Owen T. 2006. Conflicts over shared rivers: resource scarcity or fuzzy boundaries? *Political Geography* 25:361-382. ([gleditsch06.pdf](#))

Global Water Partnership. 2006. Implementing integrated water resources management (IWRM). Thematic Document, Framework Theme 2, Fourth World Water Forum. Global Water Partnership. Stockholm, Sweden. ([wwf06\\_iwrm.pdf](#)).

Hawkins R, Seager J. 2010. Gender and water in Mongolia. *The Professional Geographer* 62:16-31. ([hawkins10.pdf](#))

Hensel PR, Mitchell SM, Sowers II TE. 2006. Conflict management in riparian disputes. *Political Geography* 25:383-411. ([hensel06.pdf](#))

Hoekstra AY, Chapagain AK. 2007. Water footprints of nations: water use by people as a function of their consumption pattern. *Water Resources Management* 21:35-48. ([hoekstra07.pdf](#))

Lahera Ramón V. 2008. Water and urban sustainability in the metropolitan area of the Valley of Mexico. Pp. 56-75 in Harper TL, Yeh AG, Costa H, editors. *Dialogues in Urban and Regional Planning*. New York: Routledge. ([lahera08.pdf](#))

Lawler A. 2005. Revising Iraq's wetlands. *Science* 307:1186-1189. ([lawler05.pdf](#))

MacQueen G. 2001. Health and peace: Time for a new discipline *The Lancet*: 357:1460-1461. ([macqueen01.pdf](#))

Micklin, P. 2007. *The Aral Sea Disaster*. *Annu. Rev. Earth Planet. Sci.* 35:47-72. ([micklin07.pdf](#))

(OECD) Organisation for Economic Co-operation and Development. 2003. Chapter 5: Working in partnership with the private sector. Pp. 83-91 in OECD. *Improving Water Management: Recent OECD Experience*. London: IWA Publishing. ([oecd5.pdf](#))

Pahl-Wostl C. 2007. Transitions towards adaptive management of water facing climate and global change. *Water Resources Management* 21:49-62. ([pahl07.pdf](#))

Patterson D. 2009. Living waters: a Jewish reflection. *Water Resources Impact* 11(6):7-8. ([patterson09.pdf](#))

Pradhan R, Pradhan U. 2000. Negotiating access and rights: Disputes over rights to an irrigation water source in Nepal. Pp. 200-221 in Bruns BR, Meinzen-Dick RS, editors, *Negotiating Water Rights* London: ITDG Publishing. ([pradhan.pdf](#))

Stokstad E. 2002. Bangladesh – Agricultural pumping linked to arsenic. *Science* 292: 1535-1537. ([stokstad.pdf](#))

Smil V. 2008. Water news: bad, good, and virtual. *American Scientist* 96:399-407. ([smil08\\_color.pdf](#))

Stone R. 2008a. A new great lake – or dead sea? *Science* 320:1002-1005. ([stone 2008.pdf](#))

Stone R. 2008b. Three Gorges dam: into the unknown. *Science* 321:628-632. ([stone08.pdf](#))

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Tewari DD. 2006. An evolutionary history of water rights in South Africa. Pp. 155-182 in Tvedt T, Oestigaard T, editors. *A History of Water: The World of Water*. London: IB Tauris. ([tewari06.pdf](#))

Trawick P. 2003. Against the privatization of water: An indigenous model for improving existing laws and successfully governing the commons. *World Development* 31(6): 977-996. ([trawick.pdf](#))

(USBR) U.S. Bureau of Reclamation. 2005. *Hydroelectric Power*. USBR Power Resources Office. (see <http://www.usbr.gov/power/edu/pamphlet.pdf>)

Ward DR. 2006. Chapter 6: Raging rivers: living in floodplains. Pp. 153-172 in *Water Wars: Drought, Flood, Folly and the Politics of Thirst*. New York: Putnam. ([ward02\\_ch6.pdf](#))

Wolf AT, Stahl K, Macomber MF. 2003. Conflict and cooperation within international river basins: the importance of institutional capacity. *Water Resources Update* 125:31-40. ([wolf.pdf](#))