

**Course Syllabus**

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**Schedule:** M, W 12:55-2:15, M LI 2008

**Course Description:** Interdisciplinary case study analysis of historical and emerging water issues and water engineering projects in the western United States. Case studies cover a range of topics such as water conservation, water supply, water-energy nexus, water and ecology, and water and society as related to specific water problems or water engineering projects in the western United States. Within the context of these case studies students learn the fundamental and advanced concepts related to water resources planning and management, water law, water resources engineering, water management modeling, and engineering and environmental ethics.

**Course Goal and Learning Objectives:** The American West can be understood best by seeing *aridity* as its defining physical feature; this is because one can most fruitfully describe the culture of the west -- its past, its present, and its future -- as an hydraulic society. The genesis of this society was a utopian vision of the transformation of the west into a new Eden, a transformation made possible through technology. Presently the inhabitants of the West are being forced to re-examine -- re-consummate -- their relationship, both to the water and to the technology used to control it. Through an examination of the cultural context in which the west was originally settled and how it has changed to bring us where we are today, we will try to understand where this new relationship might be headed. In this spirit, the goal of this course is to develop the next generation of professionals responsible for planning, designing, managing, and operating water resources systems and facilitating the interaction of those systems with society in the west. After completing this course, students will be able to:

1. Explain water projects to non-technical people
2. Navigate water rights administration process
3. Describe multidisciplinary elements of water projects
4. Analyze water management decisions using modeling tools
5. Assess implications of technical and non-technical water project solutions and decisions in a societal context
6. Effectively communicate with others to develop, judge, and recommend multi-objective solutions to water resources challenges

## HYDROTOPIA

Spring Semester 2011  
CVEEN 6480  
PHIL 5191/6191

University of Utah  
Dept. of Civil & Env. Eng.  
Dept. of Philosophy

### Grading:

25% Attendance, Participation, and Completion of In-Class Assignments

25% Position Papers (3)

50% Project (35% Final Deliverable, 15% Final Presentation)

### Course Schedule:

Class	Date	Topic	Reading Due	Assignment Due
1	1/10	Course Overview	---	Student Data Sheet
2	1/12	Water in the West – History & Challenges	1	---
---	1/17	MLK, Jr. Day – Holiday	---	---
3	1/19	Water Development & Conflict (Guest: Mike Styler, Director, Utah Department of Natural Resources)	2	---
4	1/24	Hydrotopia Visioning	3	---
5	1/26	Water Law: Prior Appropriation Overview	4	---
6	1/31	Water Law: Utah Water Rights & Case Studies (Guest: Kent Jones, State Engineer)	5	---
7	2/2	Position Paper 1 Discussion	6	Position Paper 1
8	2/7	Water Management Overview	7	---
9	2/9	Water Management: Planning (Guests: Todd Adams, Asst. Director, Utah Div. of Water Resources and Todd Stonely, River Basin Planning Chief, Utah Division of Water Resources)	8	---
10	2/14	Water Management: System & Infrastructure	9	---
11	2/16	Water Management: Modeling Basics	10	---
---	2/21	President's Day – Holiday	---	---
12	2/23	Water Management Charette (U. Water Neutrality; Guest: Rod Mills, VP Nolte Associates)	11	Project Scoping Report
13	2/28	Water Management: Administration (Guest: Richard Bay, CEO/General Manager, Jordan Valley Water Conservancy District)	12	---
14	3/2	Water Management: Water-Energy Nexus	13	----
15	3/7	Supply Side Solutions: Technological Solutions	14	---
16	3/9	Supply Side Solutions: Source Development (Guest: Paul Van Dam, Executive Director, Citizens for Dixie's Future)	15	Position Paper 2
17	3/14	Supply Side Challenges: Aging Water Infrastructure & Economic Realities	16	---
18	3/16	Supply Side Challenges: Ecosystems & Environment Impacts (Guest: Bob Adler, U of U. Law School)	17	---
---	3/21	Spring Break	---	---
---	3/23	Spring Break	---	---
19	3/28	Supply Side Challenges: Regional Water Management (Guest: Don Ostler, Exec. Director, Upper Colorado River Commission)	18	---
20	3/30	Supply Side Challenges: Climate Change and Water Resources (Guest: Jeff Niermeyer, Director, Salt Lake City Public Utilities)	19	---

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21	4/4	Integrated Solutions: City Planning for Water (Guest: Nan Ellin, Chair, City and Metropolitan Planning, U. of Utah)	20	---
22	4/6	Demand Side Solutions: Water Conservation (Eric Klotz and Eric Jones)	21	---
23	4/11	Integrated Solutions: Water Policy and Restoration (Guest: Dan McCool, Director, Environmental Studies Program, U. of Utah)	22	---
24	4/13	Global Water – Challenges	23	Project Progress Report
25	4/18	Project Work Day	---	---
26	4/20	Global Water – Solutions	24	---
27	4/25	Position Paper 3 Discussion (Klamath Dam Removal)	25	Position Paper 3
28	4/27	Project Work Day	---	Submit Journals
	5/5	Project Final Presentations, 1:00 – 3:00	---	Project Report

**Required Reading/Viewing Assignments** (Note: Changes to assignments may occur because we likely will find material published during the semester that will be more current – please follow the most recent syllabus posted on WebCT):

1. Barbanell, *Taking Scarcity Seriously*; Barringer, *Lake Mead Drying Up*; Piechota, *Response to Lake Mead Drying Up*
2. Desert Wars Video; Arnold, *Moral Economy of Water in the West*
3. Selected Vision Statements from 2009; *Water is for Fightin'* Video
4. Barbanell, *Water Rights Doctrines*; Debuys, *Problem of Western Water*
5. Water Rights in Utah; Fort, *Water Policy of the West*; Henetz, *Whose Water Is It*
6. Green River Nuclear Power Plant Resources for Position Paper #1
7. Grigg, *Chapter 1 – Management in the Water Industry*; Grigg, *Chapter 24 – Water Management in the Western United States*, Draper, *Section 5 – Water Allocation Strategies*
8. AWWA 50, *Chapter 1 - Introduction to Water Resources Planning*; Grigg, *Chapter 4 – Planning and Decision-Making Processes*; Simms, *Making the Rain*; Steinberg, *Morton Salt Disaster*; Viessman, *Utah Water Planning Overview*
9. Grigg, *Chapter 3 - Water Infrastructure and Systems*; Geronis, *Dam Building May Not Be Over*
10. MODSIM Users Manual (Skim) and MODSIM Tutorial 1 (Poudre)
11. Chatham River Case Study, Warshall, *Watershed Governance: Checklists to Encourage Respect for Waterflows and People*; Grigg, *Denver Two Forks Case Study*
12. Grigg, *Chapter 8 – Water Industry Structure*; Grigg; Cech, *Chapter 10 – Local, Regional, State, and Multistate Water Management Agencies*
13. Larsen and Burian, *Energy Requirements for Water Use in Utah*; Webber, *Catch 22 – Water vs. Energy – in Scientific American, pages 34-41*
14. Totty, *High-Tech Cures for Water Shortages*; Royte, *Tall Drink of Sewage*
15. Lake Powell Pipeline Resources for Position Paper #2

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16. Liquid Assets video; Boyett, *65 Percent Rate Increase*; Salt Lake Trib Water Tax article; Bui, *Phoenix Water Rate Hike*; Kosik, *U.S. Water Infrastructure in Trouble*
17. Adler, *Restoring Colorado River Ecosystems*
18. Ostler, *Upper Colorado River Basin Perspectives on the Drought*
19. IPCC, *Chapter 3 - Water Resources*; Dracup, *Water Sustainability: The Potential Impact of Climate Change*; Hooten, *Global Warming and Climate Change: Is Utah's Water Resources at Risk?*; Fahys, *Utah Outlook: Drier summers, wetter winters*
20. Ellin, *Canalscape: Practising Integral Urbanism in Metropolitan Phoenix*
21. Funk, *Suggestions for Urban Water Conservation*
22. McCool, *Warning: Water Policy Faces an Age of Limits*
23. Cech, *Chapter 15 – Emerging Water Issues*; Black, *Water Insecurity*
24. Page, *China Pushes Water Plan*; Foster, *China Redirects Water*; Watts, *Thirst of China Cities*
25. Position Paper #3 Klamath Dam Removal Resources