

LAND 368 – Landscape Irrigation and Water Conservation

Course Syllabus - Spring 2015

Course hours: Mondays and Wednesdays, 3:00am – 4:50pm

Location: Shepardson, Room 102

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Horsetooth Reservoir, Colorado

Overview

Starting in the 20th century, environmental impacts of widespread development and industrial activities such as deforestation, habitat destruction, soil erosion and pollution have created a rapidly growing problem, which threatens not only plants and wildlife, but human health and prosperity as well. Perhaps the single most critical resource threatened by this crisis is water, particularly fresh water, upon which all life depends. The built environment is a critical juncture where man's actions and the natural world's vulnerability highlight the interplay between natural and constructed water systems. Given that the constructed landscape is responsible both for enormous consumption of fresh water and the conveyance of stormwater, a change in approach to the design of built environments offers unique opportunities to help reverse these troubling trends and profoundly affect the future of this vital resource.

Pedagogic Objectives

This course seeks to educate students on the critical role played by water in the built environment and highlight strategies for improving efficiency in water use and ecological awareness in stormwater management. The subject matter is approached both in terms of the broad interrelationships between natural water bodies and man-made water infrastructure, as well as the technical aspects of specific technologies and strategies for managing water systems. Through lectures, readings, field trips and class assignments, students will be introduced to both broad themes and specific issues of water quality and management within the context of site design, planting, irrigation, stormwater infrastructure, and ecologically sound design decision-making.

Class Policy

Attendance

Given the rapid succession of lectures and assignments and the cumulative knowledge that is to be gained from each class, prompt and consistent attendance is mandatory, with exceptions made only for illness and family emergencies. In the event of a missed class, it is your responsibility to obtain the information that was presented in class from one of your classmates and to complete any assignments due before the next class. More than three unexcused absences will warrant a mandatory meeting with the instructor to discuss the student's academic status and possible expulsion from the course.

Additional Assistance

Any students having difficulties due to personal or physical constraints should consult with the instructor prior to the beginning of the semester in order to develop alternative strategies for progressing through the course. The instructor should be informed of any unavoidable absences as soon as possible so that alternate arrangements for the missed class and / or assignment can be made.

Assessment

Students will be asked to work in both team and individual formats. This encourages dialogue and interaction amongst students and simulates the types of conditions typically found in professional practice. Class presentations are expected from each student and should be anticipated at the completion of each major assignment in order to develop the students' public speaking skills and to promote a culture of learning and sharing of ideas within the class.

Timely submission of assigned work is critical to the successful completion of this course. Specific grading details are listed below under the Grading Policy category.

Deliverables

All assignment handouts, readings and lectures will be posted on the course RamCT Blackboard site. Unless instructed otherwise, assignments must be submitted via RamCT Blackboard posting. No application-formatted files (Photoshop, InDesign, AutoCAD, etc.) will be accepted; JPG images or PDF files are expected unless otherwise noted. All files shall be clearly labeled with your name and the title of the assignment or image. Please plan your schedule accordingly to allow for needed production time.

Grading Policy

Grade Breakdown

60% Cumulative average for research and case study projects
30% Final exam
10% Participation and class attendance

Score	Grade	Description
98 or greater	A+	Exceptional Quality of Work
94-97	A	Excellent
90-93	A-	Very Good
87-89	B+	Good
84-86	B	Average
80-83	B-	Below Average
70-79	C	Fair
60-69	D	Poor
59 and below	F	Fail, Incomplete and/or Unacceptable Quality of Work

Late assignment policy

Assignments that are completed late will be penalized 1 point for each day past the due date. Assignments that are completed more than two weeks late will not be accepted and will receive a grade of 'F'.

Resources

Recommended Texts

- Dunnett, Nigel and Andy Clayden. Rain Gardens: Managing Water Sustainably in the Garden and Designed Landscape. Timber Press, Inc., Portland, OR: 2007.
- Hopper, Leonard J., ed. Landscape Architectural Graphic Standards. John Wiley & Sons, Inc., Hoboken, NJ: 2007.
- Thompson, J. William and Kim Sorvig. Sustainable Landscape Construction: A Guide to Green Building Outdoors. Island Press, Washington, D.C.: 2000.
- Strom, Steven. Site Engineering for Landscape Architects. John Wiley & Sons, Inc., Hoboken, NJ: 2009.
- Harris, Charles and Nicholas Dines. Time-Saver Standards for Landscape Architecture. McGraw-Hill Publishing Company, New York: 1998.
- Bay Area Stormwater Management Agencies Association. Start at the Source: Design Guidance Manual for Stormwater Quality and Protection. BASMAA, San Francisco: 2003.
- France, Robert L., ed. Handbook of Water Sensitive Planning and Design. Lewis Publishers, New York: 2002.
- Environmental and Water Resources Institute of the American Society of Civil Engineers. A Guide for Best Management Practice Selection in Urban Developed Area. ASCE Publications, Reston, VA: 2007.
- Denver Water. Xeriscape Plant Guide: 100 Water-Wise Plants for Gardens and Landscapes. Fulcrum Publishing, Golden, CO: 1996.
- Ludwig, Art. The New Create an Oasis with Greywater: Choosing, Building and Using Greywater Systems. Oasis Design Press, Santa Barbara, CA: 2006.
- Stegner, Wallace. Beyond the Hundredth Meridian: John Wesley Powell and the Second Opening of the West. Penguin Books, New York: 1992.
- Reisner, Marc. Cadillac Desert: The American West and Its Disappearing Water. Penguin Books, New York: 2003.
- Worster, Donald. Rivers of Empire: Water, Aridity and the Growth of the American West. Oxford University Press, New York: 1985.

Online Resources

- <http://www.ftcollinswholesalenursery.com> Regional plant list and descriptive guide
- <http://sustainablewaterforum.org> Advocates for alternative waste water systems
- <http://rmi.org/sitepages/pid277.php> Rocky Mountain Institute, Water Research
- <http://www.denverwater.org> Denver Water Board, Xeriscape Resource
- <http://werf.org> Denver BMPs, Case Studies
- <http://www.conps.org> Colorado Native Plant Society, Plant Lists
- http://www.sustainablesites.org/report/guidelinesw%20and%20Performance%20Benchmarks_2009.pdf
ASLA site for sustainability
- www.usgbc.org/leed US Green Building Council, LEED checklist
- www.erosioncontrol.com, www.stormh2o.com, www.waterefficiency.net Trade magazines, products, etc.

Class Schedule (subject to revision):

- Week 1 Class Overview
- Week 2 Water Infrastructure Systems: Past and Present
- Week 3 Land Use and Planning Strategies: Water Resource Management
- Week 4 Land Use and Planning Strategies: Sustainable Development
- Week 5 Sustainable Stormwater Management: Biofiltration Systems
- Week 6 Sustainable Wastewater Management: Rainwater Harvesting and Graywater Reuse
- Week 7 Sustainable Stormwater Management: Constructed Wetlands
- Week 8 Sustainable Stormwater Management:
- Week 9 *Spring Break – no class*
- Week 10 Sustainable Wastewater Management: Intensive & Extensive Green Roof Systems
- Week 11 Xeriscape Principles and Techniques: Overview & General Strategies
- Week 12 Xeriscape Principles and Techniques: Site Design
- Week 13 Irrigation Systems: General Overview and Design Concepts
- Week 14 Irrigation Systems: Technical
- Week 15 Irrigation Systems: Designing a System
- Week 16 LEED and SSI: Overview, Structure, Implementation & Case Studies
- Week 17 Final Exam

Honor Pledge

This course will adhere to the Academic Integrity Policy of the Colorado State University General Catalog and the Student Conduct Code. All graded activities of the course will comply. Additional information concerning CSU's academic policies can be found at: <http://facultycouncil.colostate.edu/files/manual/sectioni.htm#1.5>

- I pledge on my honor that I will not receive or give any unauthorized assistance in this course and endeavor toward meaningful social and environmental responsibility.

Print student name

Student signature and date