

CUYAMACA COLLEGE
COURSE OUTLINE OF RECORD

CENTER FOR WATER STUDIES 105 – WATER CONSERVATION

3 hours lecture, 3 units

Catalog Description

This course provides theoretical and practical training in applied water use efficiency and a foundation in the need for and major components of comprehensive water conservation programs. Topics include residential, commercial, and landscape customers; water uses; budgets; demand management; water audits; Best Management Practices; rate structures; and program design and management.

Prerequisite

None

Course Content

- 1) **Water Issues in California:** A comprehensive overview of the importance of water in California, with emphasis on current issues such as the ongoing drought, the hydrologic cycle and climate change, legal and environmental rulings reducing availability, the politics of water and its impact on the need for water conservation.
- 2) **Introduction and Scope; Water Agencies Roles in Conservation:** Water consumers and uses; current industry issues: sources, agencies, regulations, resources; Best Management Practices; distribution system audits.
- 3) **Residential and Landscape Water Use:** Meters, indoor uses, retrofits, plumbing standards; horticultural principles and practices; xeriscape; irrigation systems; plant material; landscape design.
- 4) **Customers and Water Uses:** Customer base and classifications, uses, rates, conservation pricing, allocations, demand management; role of retail and wholesale water agencies.
- 5) **Residential and Landscape Water Use:** ULF toilets: design, legislation, leaks, repairs, retrofits; indoor water usage survey preparation; irrigation design, hardware, landscape measurement, water budgets, calculating consumption and efficiency; irrigation controllers, scheduling, water audits, landscape principles applied: field audit, written report, calculations.
- 6) **Field Surveys of Ornamental Horticulture Building, Nursery and Water Conservation Garden:** Field trip to observe the use of water and conservation on campus.
- 7) **Commercial, Industrial and Institutional Sites:** Commercial, industrial and institutional customers, consumption, uses; mixed use meters; process uses, cooling towers, engineering estimates; CII survey methods.
- 8) **Program Design and Management:** Design and management of conservation programs: targeting, marketing, customer service, public education; cost-effectiveness analysis; links and partnerships with energy and wastewater; budget tracking, reporting; research on conservation opportunities at San Diego County water agencies.

Course Objectives

Students will be able to:

- 1) Identify at least five water related issues confronting California, including key stakeholders on differing sides of each issue.
- 2) Explain how water conservation efforts are shifting from indoor water conservation measures to outdoor water uses.
- 3) Identify and describe at least ten areas in residential and commercial buildings that are potential water wasting locations.

- 4) Describe the rules that mandate water conservation practices based on approved water conservation guidelines.
- 5) Describe the key elements of a water audit, and list the major issues related to the design and management of water conservation programs.
- 6) Complete the California/Nevada Section American Water Works Association Water Efficiency Use Grade 1 Certification application form to demonstrate knowledge in water conservation.

Method of Evaluation

A grading system will be established by the instructor and implemented uniformly. Grades will be based on demonstrated proficiency in subject matter determined by multiple measurements for evaluation, one of which must be essay exams, skills demonstration or, where appropriate, the symbol system.

- 1) Projects, writing assignments, and exams/quizzes which measure students' ability to describe the essential uses of water, the problems/constraints confronting the water purveyors, and the major regulatory agencies that monitor and regulate the water industry.
- 2) Projects, writing assignments, and exams/quizzes which measure students' ability to identify how source waters are obtained, treated and distributed, and how water conservation represents the cheapest and most reliable sources of new water for the region.

Special Materials Required of Student

None

Minimum Instructional Facilities

Smart classroom

Method of Instruction

- 1) Lecture and discussion
- 2) Multimedia presentations
- 3) Guest speakers
- 4) Field trips

Out-of-Class Assignments

- 1) Reading assignments
- 2) Writing assignments

Texts and References

- 1) Required (representative examples):
 - a. Lohan, Tara ed. *Water Consciousness*. AlterNet Books, 2008. ISBN-13 9780975272442
 - b. Yudelson, Jerry. *Dry Run: Preventing the Next Urban Water Crisis*. New Society Publishers, 2010 (Latest edition available). ISBN 9780865716704
 - c. *Memorandum of Understanding Regarding Urban Water Conservation in California*. California Urban Water Conservation Council, 1998. Available for free at www.cuwcc.org
 - d. *Water Conservation Plan Guidelines*. U.S. EPA, 1998. Available for free at U.S. EPA website: <http://www.epa.gov/watersense/pubs/guide.html>
- 2) Supplemental: None

Student Learning Outcomes

Upon successful completion of this course, students will be able to:

- 1) Identify the major issues confronting the California water supply industry, the key stakeholders in the issues, and discuss the range of solutions that have been proposed to solve the problems.
- 2) Describe the regulatory framework that guides water conservation practices, and the key elements related to the design and management of successful conservation programs.
- 3) List the key elements of xeriscape and natural landscape design and describe its use with water conservation programs.

- 4) Demonstrate knowledge in water conservation principles and practices sufficient to pass the California/Nevada Section American Water Works Association Water Efficiency Use Grade 1 Certification exam.