



5055 Santa Teresa Blvd  
Gilroy, CA 95023

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### Course Outline

**COURSE:** WTRM 233      **DIVISION:** 50      **ALSO LISTED AS:** WTRM 133

**TERM EFFECTIVE:** Summer 2024

**CURRICULUM APPROVAL DATE:** 06/11/2024

**SHORT TITLE:** WATER CONSERVATION

**LONG TITLE:** Water Conservation

<u>Units</u>	<u>Number of Weeks</u>	<u>Type</u>	<u>Contact Hours/Week</u>	<u>Total Contact Hours</u>
3	18	Lecture:	3	54
		Lab:	0	0
		Other:	0	0
		Total:	3	54

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Out of Class Hrs:      108.00

Total Learning Hrs:      162.00

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#### **COURSE DESCRIPTION:**

This course provides technical and practical information in water use efficiency, the need for and major components of comprehensive water conservation programs and the role of the water conservation coordinator in the public water supply industry. Topics include: customers and their water uses, water sustainability factors, regulatory agencies and careers/opportunities in the field of water management. This class will help the student prepare for the AWWA Grade 1 Water Conservation Practitioner Certification. This course was previously listed as WTRM 133.

**PREREQUISITES:**

**COREQUISITES:**

**CREDIT STATUS:** D - Credit - Degree Applicable

**GRADING MODES**

L - Standard Letter Grade

**REPEATABILITY:** N - Course may not be repeated

**SCHEDULE TYPES:**

- 02 - Lecture and/or discussion
- 05 - Hybrid
- 71 - Dist. Ed Internet Simultaneous
- 72 - Dist. Ed Internet Delayed

**STUDENT LEARNING OUTCOMES:**

By the end of this course, a student should:

1. Describe the regulatory framework that guides water conservation practices, the key elements of a water audit, and the key elements related to the design and management of successful conservation programs.
2. Identify the major issues confronting the California water supply industry, including the key stakeholders, and discuss the range of solutions that have been proposed to solve the problems.
3. Explain various water conservation principles and practices sufficient to complete the Water Conservation Practitioner Certification process.

**COURSE OBJECTIVES:**

By the end of this course, a student should:

1. Examine climate change and its effect on drought.
2. Describe the essential uses of water.
3. Describe several ways that one can reduce water usage in a residential setting, both indoors and outdoors.
4. Describe the state's role in various retail and wholesale water agencies in the area.
5. Identify and describe areas in residential buildings that are potential water wasting locations.
6. Review possible degrees/majors and/or careers/jobs in the field of water conservation and sustainability.
7. Identify and describe areas in commercial buildings that are potential water wasting locations.
8. Identify the major issues related to the design and management of successful conservation programs.

## **COURSE CONTENT:**

Curriculum Approval Date: 06/11/2024

Hours

Content: 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, and the politics of water and its impact on the need for water conservation. Discuss the hydrologic cycle. Describe various legal and environmental rulings which have affected the availability of water.

6 Hours

Content: Introduction and Scope/Water Agencies Roles in Conservation/Professional Association Regulations: Includes water consumers and uses; current industry issues - sources, agencies, regulations, resources; Best Management Practices; and distribution system audits. Discuss the major regulatory agencies that monitor and regulate the water industry. Describe the problems/constraints confronting the water purveyors. Identify water related issues confronting California. List the Best Management Practices contained in the Memorandum of Understanding Regarding Urban Water Conservation in California. Describe the regulatory rules that mandate water conservation practices based on approved water conservation guidelines.

6 Hours

Content: Residential and Landscape Water Use: Includes meters, indoor uses, retrofits, plumbing standards; horticultural principles and practices; xeriscape; irrigation systems; plant material; and landscape design. Discuss xeriscape, natural landscape design and its use within water conservation programs.

6 Hours

Content: Customers and Water Uses/Water Resources: Customer base and classifications, uses, rates, conservation pricing, allocations, demand management; role of retail and wholesale water agencies. Examine their rates and explain how they are determined.

8 Hours

Content: Residential and Landscape Water Use/Water Units Measures and Formulas: Includes 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. Discussion on how and why water conservation efforts are shifting from indoor water conservation measures to outdoor water uses. Discuss the key elements of a water audit and basic mathematical formulas to assess water usage.

6 Hours

Content: Careers/Opportunities in Water Conservation and Sustainability Field: Jobs, Degrees/Majors. AND Field Surveys of Campus Grounds and Buildings, Nurseries and Water Conservation Gardens: Could include field trips to observe the use of water and conservation on campus and at surrounding area locations. Discuss various water conservation efforts that are being used on campus and various water conservation efforts that could be used by nurseries.

6 Hours

Content: Commercial, Industrial and Institutional Sites/Utility Water Conservation: Commercial, industrial and institutional customers, consumption, uses, practices, leak detection, landscape measures (gray water); mixed use meters; process uses, cooling towers, engineering estimates; CII survey methods. Explanation of water use in cooling towers, gray water and benefits of each system.

8 Hours

Content: Program Design and Management: Includes 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 area county water agencies. Discuss how source water is obtained, treated and distributed.

2 Hours

Final Exam.

**METHODS OF INSTRUCTION:**

lecture, discussion, multimedia presentations, guest speakers, field trips

**OUT OF CLASS ASSIGNMENTS:**

Required Outside Hours 54

Assignment Description

Complete assigned readings on topics. Study for exams.

Required Outside Hours 54

Assignment Description

Writing Assignments/Homework.

**METHODS OF EVALUATION:**

Writing assignments

Evaluation Percent 40

Evaluation Description

Percent range of total grade: 30% to 50%

Written Homework

Problem-solving assignments

Evaluation Percent 10

Evaluation Description

Percent range of total grade: 10% to 30%

Quizzes,

Exams,

Math Worksheet - Show work

Objective examinations

Evaluation Percent 50

Evaluation Description

Percent range of total grade: 40% to 60%

Multiple Choice,

True/False,

Matching Items

Other methods of evaluation

Evaluation Description

Percent range of total grade: 0% to 10%

Student Participation

**REPRESENTATIVE TEXTBOOKS:**

California Urban Water Conservation Council (CUWCC), 2018.

ISBN:

Rationale: Resource only

Grade Verified by:

Dry Run: Preventing the Next Urban Water Crisis, Yudelson, Jerry, New Society Publishers, or a comparable textbook/material.

ISBN:

Grade Verified by:

**OTHER MATERIALS:**

Water Conservation Plan Guidelines. U.S. EPA. Available for free at U.S. EPA website., .

ISBN:

Rationale: Resource Only

**ARTICULATION and CERTIFICATE INFORMATION**

Associate Degree:

CSU GE:

IGETC:

CSU TRANSFER:

Not Transferable

Not Transferable

UC TRANSFER:

Not Transferable

Not Transferable

**SUPPLEMENTAL DATA:**

Basic Skills: N

Classification: Y

Noncredit Category: Y

Cooperative Education:

Program Status: 1 Program Applicable

Special Class Status: N

CAN:

CAN Sequence:

CSU Crosswalk Course Department:

CSU Crosswalk Course Number:

Prior to College Level: Y

Non Credit Enhanced Funding: N

Funding Agency Code: Y

In-Service: N

Occupational Course: C

Maximum Hours:

Minimum Hours:

Course Control Number: CCC000588886

Sports/Physical Education Course: N

Taxonomy of Program: 095800