GAVILAN COLLEGE
5055 Santa Teresa Blvd
Gilroy, CA 95023

Course Outline

COURSE: WTRM 133 DIVISION: 50 ALSO LISTED AS:

TERM EFFECTIVE: Fall 2018 **Inactive Course**

SHORT TITLE: WATER CONSERVATION

LONG TITLE: Water Conservation

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

COURSE DESCRIPTION:

This course provides technical and practical information in water use efficiency, the need for and major components of comprehensive water conversation 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 is now listed as WTRM 233.

PREREQUISITES:

COREQUISITES:

CREDIT STATUS: D - Credit - Degree Applicable

GRADING MODES

L - Standard Letter Grade
P - Pass/No Pass

REPEATABILITY: N - Course may not be repeated

SCHEDULE TYPES:

02 - Lecture and/or discussion

STUDENT LEARNING OUTCOMES:

1. 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.

Measure: written exam, homework, discussion
PLO:
ILO: 7,2,1,3
GE-LO:
Anticipated Year of Assessment: 2016-17

2. Explain why water conservation efforts are shifting from indoor water conservation measures to outdoor water uses, and describe which areas in residential and commercial developments have the greatest potential for wasting water.

Measure: written exam, homework, discussion
PLO:
ILO: 7,2,1
GE-LO:
Anticipated Year of Assessment: 2016-17

3. 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.

Measure: written exam, homework, discussion
PLO:
ILO: 7,2,1,3
GE-LO:
Anticipated Year of Assessment: 2016-17

4. List the key elements of xeriscape and natural landscape design and describe its use with water conservation programs.

Measure: written exam, homework
PLO:
ILO: 7,2,1
GE-LO:
Anticipated Year of Assessment: 2016-17

5. Explain various water conservation principles and practices sufficient to complete the AWWA Grade 1 Water Conservation Practitioner Certification process.

Measure: homework, exam
PLO:
ILO: 7,2
GE-LO:
Anticipated Year of Assessment: 2016-17

CONTENT, STUDENT PERFORMANCE OBJECTIVES, OUT-OF-CLASS ASSIGNMENTS
Inactive Course: 11/13/2017
6 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.

Student Performance Objectives (SPO): Examine climate change and its effect on the drought. Discuss the hydrologic cycle. Describe various legal and environmental rulings which have affected the availability of water.

Out-of-Class Assignments: Complete assigned readings on topics. Homework examples: Write a 1-2 page paper on - a short history of water or the hydrologic cycle or climate change or California's drought.

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.

Student Performance Objectives (SPO): Describe the essential uses of water. Name 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.

Out-of-Class Assignments: Complete assigned readings on topics. Homework: Review the most current copy of the CUWCC's Best Management Practices and examine their performance as stated on the BMP reporting website.

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.

Student Performance Objectives (SPO): Describe several ways that one can reduce water usage in a residential setting, both indoors and outdoors. Define xeriscape.

Out-of-Class Assignments: Complete assigned readings on topics. Homework examples: Chart your residential water consumption from inside your home including stating what you are doing, are not doing, or could be doing to conserve water. or Chart your residential water consumption on the outside of your home including stating what you are doing, are not doing, or could be doing to conserve water.

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.

Student Performance Objectives (SPO): List and state the role of various retail and wholesale water agencies in the area. Examine their rates and explain how they are determined.

Out-of-Class Assignments: Complete assigned readings on topics. Homework: Complete worksheet on topics specific to customers and water uses/water resources.

8 Hours

Content: Residential and Landscape Water Use/Water Units Measures and Formulas: Includes 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.

Student Performance Objectives (SPO): Identify and describe at least five areas in residential buildings that are potential water wasting locations. Explain how and why water conservation efforts are shifting from indoor water conservation measures to outdoor water uses. Describe the key elements of a water audit. Perform basic mathematical formulas to assess water usage.

Out-of-Class Assignments: Complete assigned readings on topics. Complete math problems worksheet. Homework examples: Investigate various cost-effective, easy-to-install options for reducing water use inside the home. or Investigate what rebate programs water utilities may offer for the use of various water reducing items.

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.

Student Performance Objectives (SPO): Review possible degrees/majors and/or careers/jobs in the field of water conservation and sustainability. Identify various water conservation efforts that are being used on campus. List various water conservation efforts that could be used by nurseries.

Out-of-Class Assignments: Print a page from an industry related website that shows various career options. Homework examples: Explore the campus and investigate its water conservation efforts and come prepared to discuss them in class. or Explore an area nursery and investigate its water conservation efforts and come prepared to discuss them in class.

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.

Student Performance Objectives (SPO): Identify and describe at least five areas in commercial buildings that are potential water wasting locations. Explain water use in cooling towers. Describe how gray water systems work and state their benefits.

Out-of-Class Assignments: Complete assigned readings on topics. Homework examples: Visit a commercial or an industrial site and determine their water conservation practices/ use of gray water and come prepared to discuss them in class.

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.

Student Performance Objectives (SPO): List the major issues related to the design and management of successful conservation programs. Identify how source waters are obtained, treated and distributed.

Out-of-Class Assignments: Complete assigned readings on topics. Complete sample American Water Works Association Grade 1 Water Certification application form including taking practice test. Homework: Complete worksheet on topics specific to design and management of conservation programs.

METHODS OF INSTRUCTION:

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

METHODS OF EVALUATION:

Category 1 - The types of writing assignments required:

Percent range of total grade: 30 % to 40 %

Written Homework

Category 2 - The problem-solving assignments required:

Percent range of total grade: 10 % to 30 %

Quizzes Exams

Category 3 - The types of skill demonstrations required:

Percent range of total grade: % to %

Category 4 - The types of objective examinations used in the course:

Percent range of total grade: 40 % to 60 %

Multiple Choice

True/False

Matching Items

Category 5 - Any other methods of evaluation:
Participation Percent range of total grade: 0 % to 10 %

REPRESENTATIVE TEXTBOOKS:

Required:

California Urban Water Conservation Council. Memorandum of Understanding Regarding Urban Water Conservation in California. www.cuwcc.org, Amended September 17, 2014. Or other appropriate college level text.

Reading level of text, Grade: 12th Verified by: MS Word

Other textbooks or materials to be purchased by the student: Yudelson, Jerry. Dry Run: Preventing the Next Urban Water Crisis. New Society Publishers, 2010. ISBN: 978-0-86571-670-4 and Water Conservation Plan Guidelines. U.S. EPA. Available for free at U.S. EPA website.

ARTICULATION and CERTIFICATE INFORMATION

Associate Degree:
CSU GE:
IGETC:
CSU TRANSFER:
Transferable CSU, effective 201670
UC TRANSFER:
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: 3
Minimum Hours: 3
Course Control Number: CCC000571986
Sports/Physical Education Course: N
Taxonomy of Program: 095800