

**I. COURSE INFORMATION:**

A. Division: Technical  
Department: Water Supply Technology  
Course ID: WST 141  
Course Title: Water Utilities Distribution II  
Units: 3  
Lecture: 3 hours  
Laboratory: None  
Prerequisite: WST 140  
Corequisite: None  
Dept. Advisory: None

B. Catalog and Schedule Description: Operation and maintenance of water distribution systems.

**II. NUMBER OF TIMES COURSE MAY BE TAKEN FOR CREDIT: One**

**III. EXPECTED OUTCOMES:**

Upon successful completion of the course, the student should be able to:

- A. Define, discuss and explain the basis of the California Watershed Protection Plan.
- B. Identify, distinguish and explain materials of water pipe composition.
- C. Define and discuss legal responsibilities of a water production worker.
- D. Define and discuss the advanced mechanical functions of a Water Distribution System.
- E. Apply an advanced working knowledge of troubleshooting delivery systems.
- F. Define and discuss Safety Laws, regulations and practices in the water industries.
- G. Understand the employment requirements and opportunities within the water industries.

**IV. COURSE CONTENT:**

- A. What is a Water Supply System?
  1. Sources of water
  2. Storage facilities
  3. Treatment facilities
  4. Distribution systems
- B. Water Operation Functions
  1. Storage facilities
  2. Ground level reservoirs
  3. Pumps
  4. Sampling
  5. Corrosion control
  6. Inspections
- C. Water Quality
  1. Maximum contaminant limits
  2. Importance of water quality
  3. Cross connection controls
  4. Biological growth
  5. Age of facilities
- D. Disinfection
  1. Use of chlorine
  2. Training requirements
  3. Chemical characteristics
- E. Personal Safety
  1. Material Safety Data Sheets (MSDS)
- F. Water Related Mathematics
  1. Exercises in advanced arithmetic, hydraulics and algebra

**V. METHODS OF INSTRUCTION: (Please check all that apply and add any additional not listed.)**

- Lecture
- Class and/or small group discussion
- Critical evaluation of texts, newspapers, journal articles, and other printed research
- Critical evaluation of films, videotapes, audiotapes, or other media forms
- Classroom demonstrations
- Field trips
- Guest speakers
- \_\_\_\_\_ Other:
- \_\_\_\_\_ Other:
- \_\_\_\_\_ Other:

**VI. TYPICAL OUT-OF-CLASS ASSIGNMENTS:**

- A. Reading Assignment. Reading assignments are required and may include (but are not limited to) the following: Read one chapter of Water Distribution System per week – review objective questions at the end of each chapter.
- B. Writing Assignment. Writing assignments are required and may include (but are not limited to) the following: Complete Objective Questions at the end of each chapter.  
Typical Question: Explain the basis of the California Watershed Protection Plan.
- C. Critical Thinking Assignment. Critical thinking assignments are required and may include (but are not limited to) the following: Write a two-page summary of what you observed during the field trips. Detail your suggestions for improvements to the system observed.

**VII. EVALUATION:**

A student's grade will be based on multiple measures of performance and will reflect the objectives explained above. A final grade of "C" or better should indicate that the student has the ability to successfully apply the principles and techniques taught in this course. These evaluation methods may include, but are not limited to, the following (Please check all that apply, and add additional ones not listed):

- \_\_\_\_\_ Portfolios
- Projects
- \_\_\_\_\_ Written papers or reports
- \_\_\_\_\_ Presentations (oral and visual)
- \_\_\_\_\_ Work performance (internships or field work)
- \_\_\_\_\_ Lab work
- Comprehensive examinations (cumulative finals or certifications)
- \_\_\_\_\_ Peer evaluation
- \_\_\_\_\_ Self evaluation
- Classroom participation
- \_\_\_\_\_ Homework
- \_\_\_\_\_ Other:
- \_\_\_\_\_ Other:
- \_\_\_\_\_ Other:

**VIII. TYPICAL TEXTS:**

- A. Water Distribution System Operation and Maintenance, 4<sup>th</sup> Edition, California State University, Sacramento, 2002
- B. Water Distribution Operator Training Handbook, American Water Works Association, 1999
- C. Principles and Practices of Water Supply Operations, American Water Works Association, 2003

**IX. OTHER SUPPLIES REQUIRED OF STUDENTS: Calculator**

**PREREQUISITE/COREQUISITE/ADVISORY  
COURSE GRID FORM**

**Target Course:**           WST 141           Water Utilities Distribution II

**Prerequisite Course:** WST 140           Water Utilities Distribution I

**Instructions:**

- 1) List exit competencies (skills) from Prerequisite Course. These skills are listed in the "Student Outcomes" section of the Course Outline ("upon completion of the course, the student should be able to...")
- 2) Indicate which of the listed exit competencies (skills) are necessary entry skills needed for success in the target course. Mark with an "X" each needed skill.
- 3) Indicate the degree of importance of each needed entry skill for course success, using the following rating scale:

1=Critical

2=Very Helpful

3=Desirable

**Skills Analysis**

Entry Skills in Target Course	Exit Skills Provided by Prerequisite Course (Mark with an X if needed and indicate Prerequisite Course if more than one).	Degree of Importance (Rate 1 – 3)
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1. Define, discuss and explain the physical, chemical and biological aspects of water production.	X	1
2. Analyze, identify, distinguish and explain the harmonies and relationship between earth and water.	X	1
3. Define and discuss social responsibilities of a water production worker.	X	1
4. Define and discuss the physical and mechanical functions of a Water Distribution System.	X	1
5. Demonstrate and apply basic mathematical concepts to problem solving in water distribution.	X	1
6. Define and discuss Safety Laws, regulations and practices in the water industries.	X	1
7. Eligible to take an entry level Operator Certification Exam administered by the American Water Works Association.	X	1
8. Understand the employment requirements and opportunities within the water industries.	X	1