

I. COURSE INFORMATION:

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

B. Catalog and Schedule Description:

A general introduction to the principles and practice of hydraulics and water quality in the field of water supply distribution. Prepares students for the Department of Health Services (DHS) Grade I exam.

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 physical, chemical and biological aspects of water production.
- B. Analyze, identify, distinguish and explain the harmonies and relationship between earth and water.
- C. Define and discuss social responsibilities of a water production worker.
- D. Define and discuss the physical and mechanical functions of a Water Distribution System.
- E. Demonstrate and apply basic mathematical concepts to problem solving in water distribution.
- 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. Fundamentals of a Water Supply System
 - 1. Sources of water
 - 2. Surface Water
 - 3. Ground water
 - 4. Storage of Water
 - 5. Treatment within reservoirs
 - 6. Distribution service to the customer
- B. Water Operator's Responsibilities
 - 1. Responsibilities within the water industry
 - 2. Operating and maintaining a water production facility
 - 3. Public relations
 - 4. Safety considerations and legal requirements
- C. Water Quality
 - 1. An overview of Public Health Standards
 - 2. Types of contaminants
 - 3. Identification and control of parasites and toxic materials in the water system
- D. Disinfection of Water
 - 1. Materials and processes used to disinfect water supplies
 - 2. Chlorine types and uses
 - 3. Safety and materials, physical and chemical characteristics
- E. Distribution Systems

1. Water quality degradation in distribution systems
 2. Water mains and storage facilities, loss of chlorine residual
 3. Nitrite and Chloramines formation
- F. Personal Safety
1. The importance of safe procedures
 2. Traffic control
 3. Confined space job planning
 4. Organization and application of safe practices around the work site
- G. Mathematics
1. Exercises in introductory arithmetic
 2. Hydraulics and algebra, which have a direct relationship to common work problems in the water field

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 of textbook.
Typical Question: Explain the physical, chemical and biological aspects of water production.
- C. Critical Thinking Assignment. Critical thinking assignments are required and may include (but are not limited to) the following: Observe processes and equipment during field trip. Write a two-page analysis of what you have observed. 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. Kerri, K., Water Distribution System Operation and Maintenance, 4th Edition, California State University, Sacramento, 2002
- B. Water Distribution Operator Training Handbook, American Water Works Association, 1999
- C. Principle and Practices of Water Supply Operations, American Water Works Association, 2003

IX. OTHER SUPPLIES REQUIRED OF STUDENTS:

Calculator