

San Bernardino Valley College  
Curriculum Approved: 11/25/2013  
Board Approval: 01/16/2014  
Unique course Identification Number: CCC000552614  
TOP Code: 0958.00 - Water and Wastewater Tech

## **I. CATALOG DESCRIPTION:**

### **A. Department Information:**

Division: Applied Technology, Transportation & Culinary Arts  
Department: WATER SUPPLY TECHNOLOGY  
Course ID: WST010  
Course Title: Test Review for Water Distribution Operators D1  
Units: 0.5  
Lecture: 0.5 contact hour(s) per semester

### Departmental Advisory:

WST 052

### Prerequisite:

WST 061

### **B. Catalog Description:**

This course is a review of the expected Range of Knowledge (ROK) required to obtain the California Department of Public Health (CDPH) Distribution Operator License at level D1. The review topics include distribution system operations, disinfection, related mathematics and safety.

### **C. Schedule Description:**

This course is a review of the expected Range of Knowledge (ROK) required to obtain the California Department of Public Health (CDPH) Distribution Operator License at level D1. The review topics include distribution system operations, disinfection, related mathematics and safety.

## **II. NUMBER OF TIMES COURSE MAY BE TAKEN FOR CREDIT: 1**

## **III. COURSE OBJECTIVES FOR STUDENTS:**

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

- A. Identify the Range of Knowledge (ROK) required to successfully pass the California Department of Public Health (CDPH) Distribution Operator License examination at the D1 level
- B. Identify reliable sources of information which are likely to contain accurate information about water distribution
- C. Identify what information is needed to successfully pass licensing examination and understand how it is organized to find the best sources of information

## **IV. COURSE CONTENT:**

- A. Operator certification requirements
- B. Water distribution mathematics

1. Units and conversion factors
2. Water measurement formulas
  - a. Area
    - i. Pipe cross-section
    - ii. Valve face
  - b. Volume
  - c. Metering
  - d. Flow rates
  - e. Velocity
3. Well calculations
  - a. Depth in a well
  - b. Well drawdown
4. Pressure
5. Disinfectant dosages
- C. Distribution system operation
  1. Purpose
  2. Water storage facilities-types and purposes
  3. Pumps
    - a. Types
    - b. Troubleshoot and repairs
  4. Pipe material
    - a. Excavation, installation and repair
    - b. Joints and fittings
    - c. Leak detection and repair
  5. System lay-out and maps
  6. Service connections
  7. Meters
  8. Valve types and uses
  9. Hydrants
  10. Cross connection and backflow devices
  11. Power generators
  12. Static head - meaning and significance
  13. Chemical feeders
  14. Water hammer
  15. Corrosion control
  16. Inspection
  17. Flushing and cleaning
  18. Tuberculation - causes and effects
- D. Sources and supply
  1. Hydrologic cycle
  2. Well location, construction and yield
  3. Chemical, physical and bacteriological characteristics
  4. Groundwater and surface water
- E. Water quality
  1. Safe drinking water act
  2. Maximum contaminant levels
  3. Elements, compounds, hardness and pH
  4. Significance of organic and inorganic contaminants
  5. Lead and copper rule
  6. Public notification

7. Monitoring and sampling requirements
  8. Coliform groups - occurrences and significance
  9. Potential waterborne diseases
  10. Disinfection by-products, (i.e. Trihalomethanes)
- F. Disinfection
1. Chlorine containers
  2. Hazards and safety precautions
  3. Standard disinfection methods for new/repared mains and storage facilities
  4. Chlorine demand, dosage and residual
- G. Safety
1. CAL-OSHA safety regulations
  2. Traffic control
  3. Trenching and shoring
  4. Confined spaces

**V. METHODS OF INSTRUCTION (May include any, but do not require all, of the following):**

- A. Lecture
- B. Use of films, videotapes, or other media
- C. Use of written materials: texts, journals, etc.
- D. Instructor generated handouts

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

- A. Reading assignments are required and may include (but are not limited to) the following:

Read the handout on "Expected Range of Knowledge for Water Distribution Operator" published by the California Department of Public Health and be prepared for a class discussion.

- B. Critical thinking assignments are required and may include (but are not limited to) the following:

A 32-foot diameter tank, 20-foot tall is 60% full. Calculate the amount of water, in gallons, contained in the tank.

- C. Writing assignments are required and may include (but are not limited to) the following:

List the types of water storage facilities commonly used to store potable water. Be prepared to present the advantages and disadvantages of each type of facility to your class.

**VII. METHODS OF EVALUATION**

- A. Class participation
- B. Presentations (oral or visual)

**VIII. TYPICAL TEXT(S):**

- A. AWWA. Water Distribution Operators Training Handbook. 4th ed. American Water Works Association, 2010.
- B. AWWA. Water Operator Field Guide. Softbound ed. American Water Works Association, 2004.
- C. Kerri, Ken. Water Distribution System Operation and Maintenance. 6th ed. California State University, 2009.

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

- A. Scientific calculator