

**Water Systems Operation and Maintenance Video Training Series**  
**Office of Water Programs**  
**California State University, Sacramento**  
(3.0 Continuing Education Units)

**COURSE DESCRIPTION**

This course is designed to prepare water system operators to safely and cost-effectively operate and maintain drinking water systems. The objective of the course is to provide operators with knowledge, skills, abilities, and judgment in seven separate, critical areas of water treatment and distribution.

This series of videos provides needed training for operators of public water systems. Operators have the responsibility of ensuring that safe and pleasant drinking water is delivered to everyone's tap. The information provided in these videos focuses on seven critical areas and will help operators do their jobs with greater knowledge and efficiency.

**COURSE OUTLINE**

The course uses *Water Systems Operation and Maintenance Video Training Series* training videos and Learning Book.

**Chapter 1 – Wellhead Protection**

Identify sources of contamination and take corrective action

- Protect a well from contamination
- Maintain, inspect and troubleshoot a well and pumping station
- Design and implement a wellhead protection program

**Chapter 2 – Hypochlorination**

- Inspect, troubleshoot, maintain and safely operate hypochlorinators
- Safely prepare and mix chlorine solutions
- Administer a hypochlorination safety program

**Chapter 3 – Water Storage Tanks**

- Identify, inspect and safely operate a storage tank
- Collect representative samples
- Troubleshoot problems and protect and disinfect a storage tank

**Chapter 4 – Sampling and Testing**

- Collect representative samples, complete chain-of-custody, and collect and measure chlorine residual samples
- Collect and measure chlorine residual samples
- Properly maintain and store records

**Chapter 5 – Inspecting a Pump Station**

- Describe the purpose of distribution system pumps and well pumps
- Safely inspect and troubleshoot pump control panels
- Safely inspect and troubleshoot pump systems

#### **Chapter 6 – Distribution Systems**

- Identify components of a water distribution system and system valves
- Detect leaking pipes and locate buried pipes
- Repair by replacing a pipe section – cutting, disinfecting, and connecting
- Explain the importance of a cross-connection control program

#### **Chapter 7 – Approaches to Compliance with Standards**

- Identify areas of non-compliance with drinking water standards
- Develop and use a decision tree to assess alternatives
- Apply life cycle cost comparisons of alternatives
- Identify multiple alternatives for achieving compliance

## TIME ASSIGNMENT

**Video:** The course uses training video, organized into seven separate topic areas. Each video topic is complemented by a chapter in the Learning Book *Water Systems Operation and Maintenance Video Training Series*. There is a total of 612 minutes of video.

**Text Pages:** The course uses the Learning Book *Water Systems Operation and Maintenance Video Training Series* (245 pages). The average word count on a page from the training manual is 950 words. Some pages contain tables, graphs, or illustrations to enhance the presentation of information. It is assumed that readers spend equal time studying tables, graphs, and illustrations as they would spend reading the equivalent amount of text. Therefore, each page is assumed to contain the equivalent of 950 words. Accepted average adult reading speed is 200 – 250 words per minute. Therefore, each page is projected to require four minutes of student time for each reading.

**Math problems:** The course contains 13 wastewater treatment math problems. Projected average time to solve each math problem is three minutes.

**Objective test questions:** The course contains 279 objective test questions. Projected average response time is one minute per question.

Component	Minutes per Component Unit	Number of Component Units	Time to Complete Units
Video	1	612	612
Text pages	4	245	980
Math problems	3	13	39
Objective test questions	1	279	279
<b>Total (minutes)</b>			<b>1,910</b>
<b>Total (hours)</b>			<b>32</b>