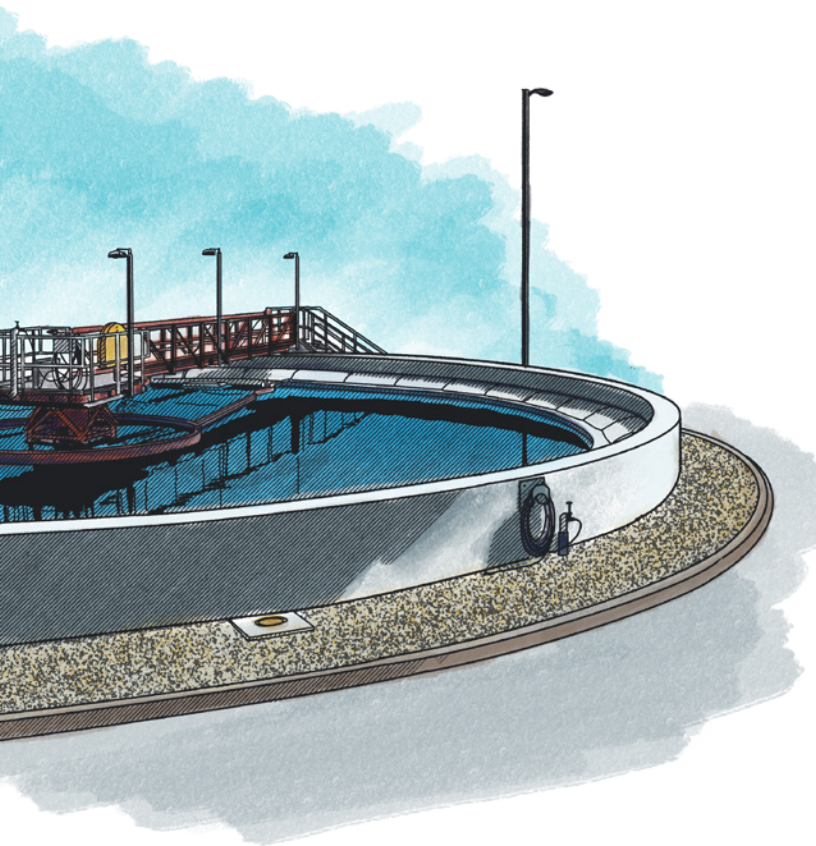


OPERATOR TRAINING OPPORTUNITIES



Purchasing Training Materials/ Course Enrollments

Online

owp.csus.edu

Phone

916. 278. 6142

Walk-in

3020 State University Drive
Modoc Hall, Suite 1001
Sacramento, CA 95819

*Check our website for
the latest information
on office hours.*

Monday–Friday

8 am – 12 pm, 12:30 pm – 4 pm PST

Closed Saturday and Sunday

Payment Options

We accept all major credit cards. To pay for an order with a purchase order, check, or money order, download our order form at owp.csus.edu/order-form. Submit your completed form and payment information by:

Mail

Office of Water Programs
California State University, Sacramento
6000 J Street, Modoc Hall 1001, MS 6025
Sacramento, CA 95819

Fax

916. 278. 5959

Email

wateroffice@owp.csus.edu

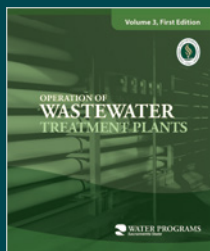
Repeat Courses

New editions of our courses are developed to ensure that students receive the most current information about processes, regulations, and technologies. Once an edition has been replaced with a more current version, it is no longer appropriate to grade tests that are based on outdated material. Courses that have been successfully completed may only be repeated when a revised edition becomes available.

Return/Cancellation Policy

See our full return policy at www.owp.csus.edu/policy/return.php. All returns must be preapproved by OWP. All manual, CD, and DVD return requests must be submitted within 90 days of the purchase date (other conditions apply). All online course return requests must be submitted within 5 days of the purchase date (other conditions apply). All correspondence course return requests must be submitted within 14 days of the purchase date (other conditions apply).

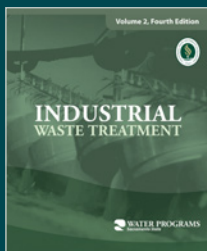
Latest Editions and Courses



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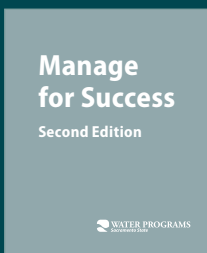


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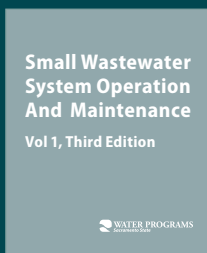
Coming Soon



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Features

- Chapter review sections
- Expanded explanations of math concepts and step-by-step example problems
- Updated, full-color photos and illustrations
- Includes 6-month subscription to eText with manual purchase

Prices subject to change without notice. Check pricing at:
www.owp.csus.edu/pdf/pricing-chart-2024.pdf

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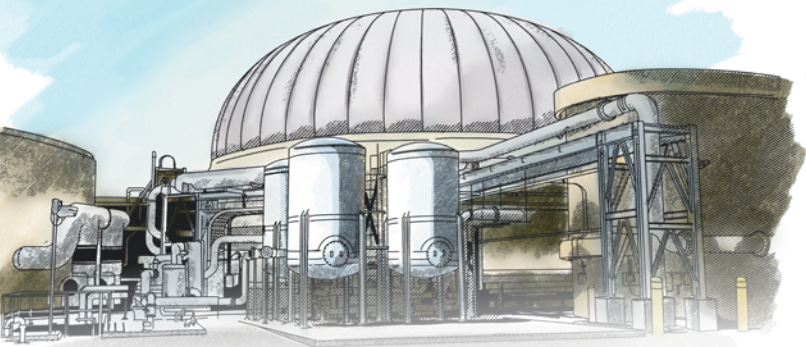
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Course Time Limits

Course Type	Time Limit
Courses earning 0.6 – 3.0 CEUs	3 months from enrollment date
Courses earning 3.1 – 9.0 CEUs Academic credit courses	6 months from enrollment date
Online math courses earning 1.8 – 3.3 CEUs	6 months from enrollment date

When enrolling in a course, you will receive information about the time limit for completing the course. **Each manual, online course, or video is a separate course.** If you enroll in more than one course at the same time, the time limits apply to each course separately and begin at the time of enrollment.



eLearning Courses—Another approach to operator training

There is no denying that online learning grew and changed over the last few years. With the development of new and exciting technical capabilities in delivering training material online, OWP is revamping our online courses. These revisions provide more learning opportunities for all students, and especially those looking for a more interactive and visual learning experience. To reflect this new approach to online instruction, all courses with digital instruction are now in our eLearning collection. (Correspondence courses with online tests are not part of our eLearning collection.)

OWP eLearning courses offer water and wastewater operator training based on information presented in our training manuals. Students customize their learning experience to increase job knowledge and meet continuing education unit (CEU) and contact hour requirements. All OWP eLearning courses are self-paced, asynchronous, and available anywhere that has an internet connection.

We recommend using a desktop or laptop computer or a large tablet device (not a phone or other small mobile device) to get the most out of lessons, interactive exercises, practice math problems, and quizzes. ***Successful course completion requires completing lessons and activities and passing a final comprehensive exam.***

We offer eLearning courses in 2 formats: companion courses and stand-alone courses.

Companion Courses (Coming Soon!)

Our newest course format, companion courses are based on and extend learning for selected chapters of our training manuals. The online lessons include assigned reading in the training manual (required course material), interactive exercises, math practice problems, and quizzes. These self-paced, asynchronous courses offer a visual, participatory method of accessing course content and self-assessment. **Successful completion of the course requires access to the training manual (must be purchased separately) and passing a final exam.** Our first companion course series covers topics from our best-selling Operation of Wastewater Treatment Plants, Volume 1, training manual.

Stand-Alone Courses

OWP continues to offer some eLearning courses in a stand-alone format. Stand-alone courses include all lessons and learning activities in the courses. They are based on selected materials from our training manuals, but do not require access to the training manuals. Some students find referring to the training manual (sold separately) helpful in successfully completing the courses. These self-paced, asynchronous courses present reading assignments (on-screen content), exercises, and quizzes inside the course for self-assessment. **Successful completion of the course requires passing a final exam.**

eLearning courses are listed with their related training manuals throughout this catalog. More about our eLearning courses is available on the eLearning page of our website.

[www.owp.csus.edu/courses/
online-courses.php](http://www.owp.csus.edu/courses/online-courses.php)



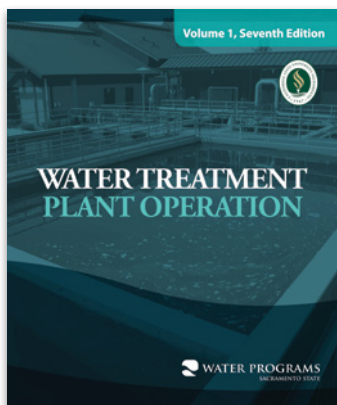


**WATER TREATMENT
& DISTRIBUTION**

Water Treatment Plant Operation

Vol 1, Seventh Edition

Course trains operators to safely and effectively operate and maintain drinking water treatment plants.



**Manual Includes 6-month
Subscription to eText
Enrollment, 9 CEUs**

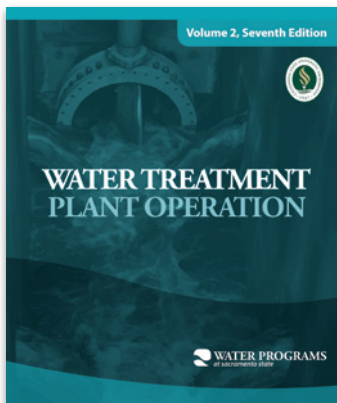
- 1 Introduction to Water Treatment
 - 2 Source Water, Reservoir Management, and Intake Structures
 - 3 Coagulation and Flocculation
 - 4 Sedimentation
 - 5 Filtration
 - 6 Disinfection
 - 7 Corrosion Control
 - 8 Taste and Odor Control
 - 9 Laboratory Procedures
- Appendix A: Introduction to Basic Math for Operators
- Answer Key, Glossary, Index

Instructor guides for water series courses available to qualified instructors. You can find more information about obtaining instructor guides on our FAQ page at www.owp.csus.edu/faq.php.

Water Treatment Plant Operation

Vol 2, Seventh Edition

Course provides operators with the knowledge and skills to properly install, inspect, operate, maintain, and manage water treatment plant systems.



**Manual Includes 6-month
Subscription to eText
Enrollment, 9 CEUs**

1 Producing Safe Water in a Safe Workplace

2 Softening

3 Specialized Treatment Processes

4 Fluoridation

5 Membrane Treatment Processes

6 Process Wastes

7 Instrumentation and Control Systems

8 Plant Maintenance

9 Management

Appendix A: Introduction to Basic Math for Operators

Answer Key, Glossary, Index

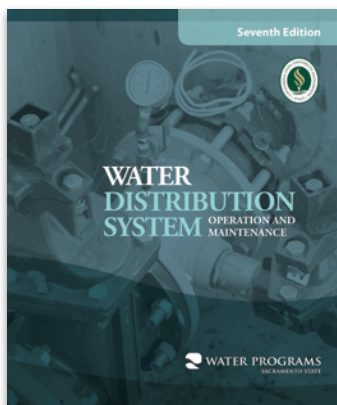
eLearning math course available!

See page 44

Water Distribution System Operation and Maintenance

Seventh Edition

This course trains operators to safely and effectively operate and maintain drinking water distribution systems.



**Manual Includes 6-month
Subscription to eText
Enrollment, 9 CEUs**

1 Introduction to Water Distribution

2 Water Storage Facilities

3 Distribution System Facilities

4 Operation and Maintenance

5 Disinfection

6 Safety

7 Management

Appendix A: Introduction to Basic Math for Operators

Answer Key, Glossary, Index

Instructor guides for water series courses available to qualified instructors. You can find more information about obtaining instructor guides on our FAQ page at www.owp.csus.edu/faq.php.

eLearning math course available!
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Water Distribution System eLearning Courses

These stand-alone eLearning courses feature guided reading assignments, self-assessment questions to help you check your understanding, interactive exercises, video clips, and online resources. The related training manual, *Water Distribution System Operation and Maintenance*, Seventh Edition, is sold separately.

(Note to Texas and Washington operators: Your states require that your exams be proctored and that an affidavit be signed by your proctor. After purchase, you will receive detailed proctoring instructions.)

Online Enrollment, 1.8 CEUs per course



703A Safety

Topics include operator responsibilities; safety programs; safe operation and maintenance of pumps, wells, vehicles, and equipment; traffic routing; working in streets; protecting the public; and conducting waterworks safety inspections.



703B Distribution Facilities

Topics include facility types, purposes, and locations; inspections; troubleshooting; disinfection; corrosion protection; system hydraulics; meters; backflow prevention devices; and recordkeeping.



703C Disinfection

Topics include disinfecting wells, pumps, mains, and storage facilities; operating and maintaining hypochlorinators and chlorinators; troubleshooting chlorination systems; and conducting a chlorine safety program.



703D Operation & Maintenance

Topics include safe operation and maintenance; system surveillance, water quality monitoring, and cross-connection control programs; locating buried pipes and repairing leaks; pipe connections; pipe flushing and cleaning; thawing frozen pipes and hydrants; meter testing; disinfecting mains and storage facilities; recordkeeping; and emergency response.



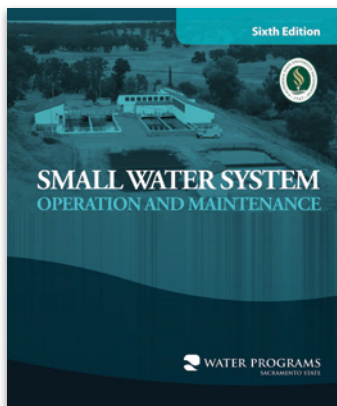
703E Management

Topics include emergency planning; developing an organization chart; writing job descriptions and interview questions; conducting employee evaluations; ensuring equal and fair treatment to employees; financial planning; setting up a safety program; and records management.

Small Water System Operation and Maintenance

Sixth Edition

This course is designed to train operators in the safe and effective operation and maintenance of small water systems and treatment plants. Materials focus on wells, pumps, disinfection, and small water treatment plants serving populations of fewer than 10,000.



**Manual Includes 6-month
Subscription to eText
Enrollment, 9 CEUs**

- 1 Introduction to Small Water Systems
 - 2 Wells
 - 3 Small Water Treatment Plants
 - 4 Disinfection
 - 5 Safety
 - 6 Laboratory Procedures
 - 7 Introduction to Small System Management
- Appendix A: Introduction to Basic Math for Operators
- Answer Key, Glossary, Index

Instructor guides for water series courses available to qualified instructors. You can find more information about obtaining instructor guides on our FAQ page at www.owp.csus.edu/faq.php.

Small Water Systems eLearning Courses

These stand-alone eLearning courses feature guided reading assignments, self-assessment questions to help you check your understanding, interactive exercises, video clips, and online resources. The related training manual, *Small Water System Operation and Maintenance*, Sixth Edition, is sold separately.

(Note to Texas and Washington operators: Your states require that your exams be proctored and that an affidavit be signed by your proctor. After purchase, you will receive detailed proctoring instructions.)

Online Enrollment, 1.8 CEUs per course



702A Wells

Topics include wellhead protection; well and pump system components; maintenance; pump and tank operation; inspection; disinfection; recordkeeping; sand removal; troubleshooting; site selection; evaluation and testing; drilling methods; and well plugging.



702B Treatment Plants

Topics include treatment requirements and methods for surface and groundwaters; coagulation; flocculation; sedimentation; filtration; disinfection; corrosion control; solids-contact clarification; sand filters; mineral removal; maintenance; and safety.



702C Disinfection

Topics include water supply system components; hydrologic cycle; sanitary survey methods; regulations; effectiveness; physical and chemical methods; applicability of disinfection to various types of equipment; chlorination rates; chlorine residual measurement; safety; and applied math solution techniques.



702D Safety

Topics include safety program implementation; equipment use; safe practices; lockout/tagout procedures; inspections; and water rate determination, calculation, and administration.

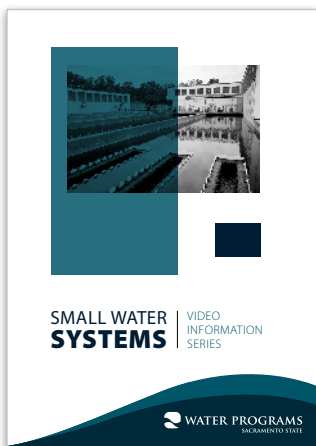


702E Laboratory Procedures

Topics include operator responsibilities; certification requirements; basic laboratory analysis procedures and equipment; sampling techniques and devices; tests (alkalinity, hardness, coliform bacteria counts, jar tests, and others); and applied math problems and solutions.

Small Water Systems Video Information Series

This 10-topic DVD (20 to 60 minutes each) is designed to serve the needs of operators, managers, owners, and elected board members of small water systems. The material focuses on the basic operation and maintenance of small groundwater and surface water supply systems and water distribution systems.



Course Package
(enrollment, DVD set, and learning booklet)

DVD Set
(with learning booklet)

Enrollment, 3 CEUs
Supplemental Learning Booklet

Video Topics

Roles and Responsibilities of Operators, Managers, Owners, and Elected Board Members

Surface Water Treatment, Part 1

Surface Water Treatment, Part 2

Groundwater Treatment, Part 1

Groundwater Treatment, Part 2

Storage and Distribution

Monitoring

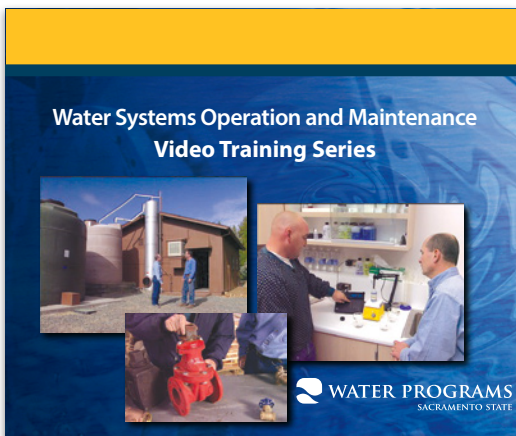
Managerial Responsibilities

Financial Considerations

Emergency Preparedness

Water Systems Operation and Maintenance Video Training Series

This 7-topic DVD presents instruction from working operators, engineers, and managers who are experts in their fields and features operators performing duties at their facilities.



Video Topics

Wellhead Protection

Hypochlorination

Water Storage Tanks

Sampling and Testing

Inspecting a Pump Station

Distribution Systems

Approaches to Compliance with Standards

Course Package

(enrollment, DVD set, and learning booklet)

DVD Set

(with learning booklet)

Enrollment, 3 CEUs

Supplemental Learning Booklet

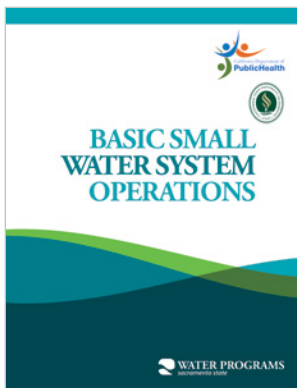
Basic Small Water System Operations

Water supply systems vary among towns, cities, and regions. This manual serves as a resource book for small water systems, providing an overview of the basic operation and maintenance of these systems.

This manual can be used to prepare for further study and a career in the operation and maintenance of water treatment and distribution facilities.

If used in conjunction with a test administered by the California State Water Resources Control Board, the manual can also be used to satisfy the high school diploma requirement for admittance into the California drinking water certified operator examinations.

For more information about this opportunity, call (916) 449-5611 or email dwopcertprogram@waterboards.ca.gov.



Manual

- 1 Roles and Responsibilities of Operators
- 2 Sources of Water
- 3 Wells
- 4 Small Water Treatment Plants
- 5 Water Storage and Distribution
- 6 Drinking Water Laws and Regulations
- 7 Math for Small Water System Operators

Appendix: Practice Test and Suggested Answers, Words, Index



WASTEWATER TREATMENT & COLLECTION

Operation of Wastewater Treatment Plants

Vol 1, Eighth Edition

Courses are designed to train operators in the safe and effective operation and maintenance of wastewater treatment plants. Volume 1 focuses on treatment methods for liquid wastes and how to analyze and solve operational problems.



Manual Includes 6-month Subscription to eText

Enrollment A, 4 CEUs
Safety, Beginning Treatment, and Lagoon Systems

Enrollment B, 3.6 CEUs
Secondary Treatment

Enrollment C, 4.3 CEUs
Disinfection, Laboratory Procedures, and Math

1	Introduction to Wastewater Treatment	A
2	Safety	A
3	Preliminary Treatment	A
4	Primary Treatment	A
5	Activated Sludge Systems (Secondary Treatment)	B
6	Fixed Film Processes (Secondary Treatment)	B
7	Disinfection	C
8	Lagoon Systems	A
9	Laboratory Procedures	C
	Appendix A: Introduction to Basic Math for Operators	C
	Answer Key, Glossary, Index	

Instructor guides for wastewater series courses available to qualified instructors. You can find more information about obtaining instructor guides on our FAQ page at www.owp.csus.edu/faq.php.

Operation of Wastewater Treatment Plants eLearning Courses

These companion eLearning courses are based on the required training manual title: *Operation of Wastewater Treatment Plants, Volume I, Eighth Edition*, which is sold separately.

All courses are online and feature guided reading assignments, self-assessment questions, interactive exercises, videos, and online resources. The readings and student exercises integrate with the online materials.

(Note to Texas and Washington operators: Your states require that your exams be proctored and that an affidavit be signed by your proctor. After purchase, you will receive detailed proctoring instructions.)

NEW COURSES COMING SOON!



601A Preliminary and Primary Treatment

This course, based on chapters 3 and 4, provides an introduction to wastewater treatment operation and maintenance and to the facilities that treat wastewater. It also provides in-depth discussion of preliminary and primary wastewater treatment facility operation and maintenance.



601B Activated Sludge

This course, based on chapter 5, focuses on activated sludge systems in normal operations, including process description, control strategies and procedures, and performance monitoring.



601C Fixed Film Processes

This course, based on chapter 6, covers operation and maintenance of fixed film biological wastewater treatment processes. Facility types covered include trickling filters and rotating biological contactors. Topics covered include operational theory, startup and shutdown, operational strategy, loading criteria, and system sampling and monitoring.



601D Disinfection

This course, based on chapter 7, covers operation and maintenance of disinfection treatment processes with an emphasis on chlorination systems. All common types of chlorination systems are included, along with operation and maintenance of dechlorination systems. Other disinfection processes covered include ultraviolet and ozone treatment.



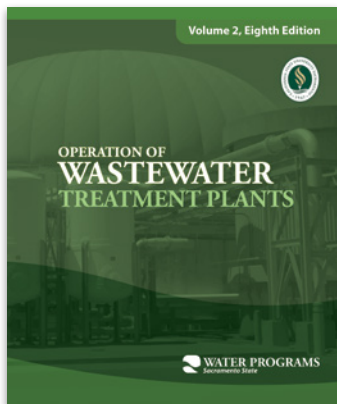
601E Lagoon Systems

This course, based on chapter 8, covers the classifications and applications of lagoon systems as well as their operation and maintenance and troubleshooting and sampling procedures.

Operation of Wastewater Treatment Plants

Vol 2, Eighth Edition

Courses are designed to train operators in the safe and effective operation and maintenance of wastewater treatment plants. Volume 2 focuses on treating, handling, and disposing of solids in wastewater.



**Manual Includes 6-month
Subscription to eText**

Enrollment A, 3.5 CEUs
Treatment Plants and Tertiary
Treatment

Enrollment B, 4 CEUs
Solids Management and Plant
Maintenance

1	Introduction to Wastewater Treatment	A
2	Nutrient Removal (Tertiary Treatment)	A
3	Solids Removal from Effluent (Tertiary Treatment)	A
4	Residual Solids Management	B
5	Plant Maintenance	B

Appendix A: Introduction to Basic Math for Operators

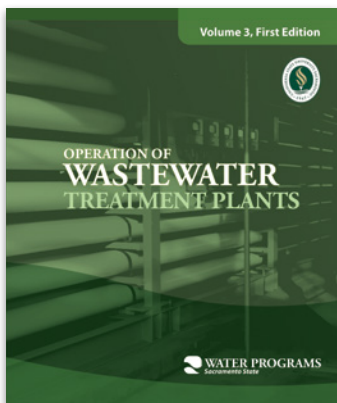
Answer Key, Glossary, Index

Instructor guides for wastewater series courses available to qualified instructors. You can find more information about obtaining instructor guides on our FAQ page at www.owp.csus.edu/faq.php.

Operation of Wastewater Treatment Plants

Vol 3, First Edition

This manual replaces *Advanced Water Treatment*. Courses are designed to train operators in the safe and effective operation and maintenance of wastewater treatment plants. Volume 3 focuses on effluent discharge and reuse, odor control, instrumentation, and utility management.



Manual Includes 6-month Subscription to eText

Enrollment A, 2.3 CEUs
Introduction, Effluent Discharge and Reuse, and Odor Control

Enrollment B, 3.5 CEUs
Instrumentation and Utility Management

1	Introduction to Wastewater Treatment	A
2	Effluent Discharge and Reuse	A
3	Odor Control	A
4	Instrumentation and Control	B
5	Introduction to Wastewater Utility Management	B

Appendix A: Introduction to Basic Math for Operators

Answer Key, Glossary, Index

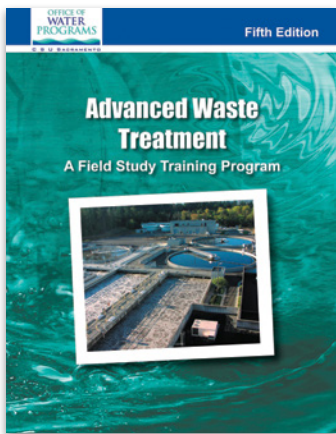
eLearning math course available!

See page 45

Advanced Waste Treatment

Fifth Edition

This course is part of the Operation of Wastewater Treatment Plants series, covering biological, physical, chemical, and advanced waste treatment processes.



Manual
Enrollment, 9 CEUs

- 1 Odor Control
- 2 Activated Sludge (Pure Oxygen Plants and Operational Control Options)
- 3 Residual Solids Management
- 4 Solids Removal from Secondary Effluents
- 5 Phosphorus Removal
- 6 Nitrogen Removal
- 7 Enhanced Biological (Nutrient) Control
- 8 Wastewater Reclamation and Reuse
- 9 Instrumentation and Control Systems

Appendix: Comprehensive Review Questions, Words, Index

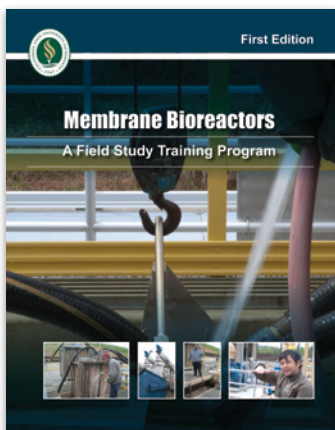
Content adapted into new Operation of Wastewater Treatment series.

Instructor guides for wastewater series courses available to qualified instructors. You can find more information about obtaining instructor guides on our FAQ page at www.owp.csus.edu/faq.php.

Membrane Bioreactors

First Edition

This course describes the membrane bioreactor (MBR) wastewater treatment process; explains how to operate, maintain, and troubleshoot the process; stresses safe procedures for cost-effective O&M; and helps operators develop strategies to correct MBR failures. Procedures are provided for implementing a comprehensive startup, commissioning, and training phase prior to the complete transfer of an MBR plant to the O&M staff.



Manual
Enrollment, 1 CEU

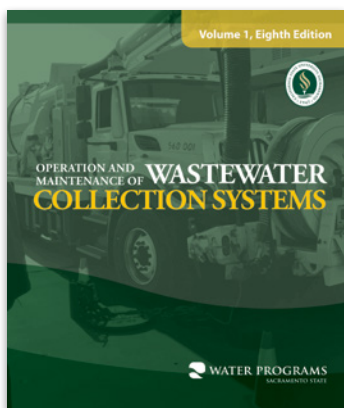
- 1 Membrane Bioreactor (MBR) Overview
- 2 MBR Facilities
- 3 Operation of the MBR Process
- 4 Process Control
- 5 Maintenance
- 6 MBR Startup and Commissioning
- 7 MBR Plant Safety

Appendix: Comprehensive Review Questions, Index

Operation and Maintenance of Wastewater Collection Systems

Vol 1, Eighth Edition

This course is designed to train new and current operators in the safe and effective operation and maintenance of wastewater collection systems. Volume 1 describes various types of collection systems, tasks performed by maintenance crews, and construction inspection.



Manual Includes 6-month
Subscription to eText
Enrollment, 9 CEUs

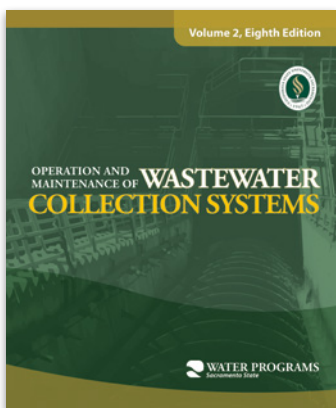
- 1 Introduction to Wastewater Collection
 - 2 Wastewater Collection Systems: Purpose, Components, and Design
 - 3 Safe Procedures
 - 4 Inspecting and Testing Collection Systems
 - 5 Pipeline Cleaning and Maintenance Methods
 - 6 Underground Repair and Construction
- Appendix A: Introduction to Basic Math for Operators
- Answer Key, Glossary, Index

Instructor guides for wastewater series courses available to qualified instructors. You can find more information about obtaining instructor guides on our FAQ page at www.owp.csus.edu/faq.php.

Operation and Maintenance of Wastewater Collection Systems

Vol 2, Eighth Edition

This course, building on Volume 1, focuses on lift station operation and maintenance, equipment maintenance, system rehabilitation programs, and system administration.



Manual Includes 6-month
Subscription to eText
Enrollment, 6.4 CEUs

1 Introduction to CMOM

2 Lift Stations

3 Equipment Maintenance

4 Rehabilitation

5 Management

Appendix A: Introduction to Basic Math for Operators

Answer Key, Glossary, Index

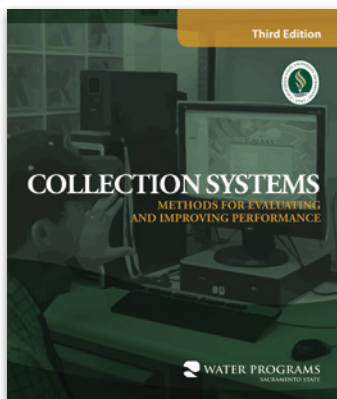
eLearning math course available!

See page 45

Collection Systems: Methods for Evaluating and Improving Performance

Third Edition

This course can assist collection system agencies in evaluating the effectiveness of their O&M program and identifying areas for improvement.



**Manual Includes 6-month
Subscription to eText
Enrollment, 3 CEUs**

- 1 Understanding Wastewater Collection System Problems and Needs
- 2 Researching Trends in Collection System Performance
- 3 Developing Benchmark Data
- 4 Developing, Analyzing, and Interpreting O&M Performance Indicators
- 5 Improving Collection System Performance
- 6 Case Histories and Benchmarking Surveys
- 7 How Has Performance Improved?
Appendix A: Literature Review
Appendix B: Data Collection Forms
Appendix C: Benchmarking Worksheets
Answer Key, Glossary, Index

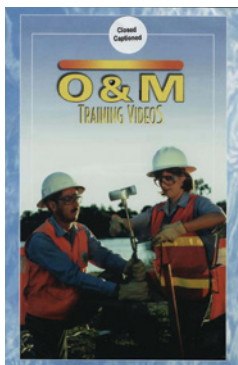
Instructor guides for wastewater series courses available to qualified instructors. You can find more information about obtaining instructor guides on our FAQ page at www.owp.csus.edu/faq.php.

Collection Systems Operation and Maintenance Training Videos

This 6-topic DVD (30 minutes each) is designed for training potential, new, and experienced collection system operators working with both wastewater and combined collection systems. Each video demonstrates the equipment and procedures collection system crews use to safely and effectively operate and maintain their systems. Operators will learn how to properly identify, solve, and document solutions to existing and potential collection system problems.

DVD

Enrollment, 0.6 CEUs



Video Topics

Guardians of Health

Importance of Operators, Inspection, and Testing

TV Stars

Closed-Circuit Television Inspection

Pipe Detectives

Pipeline Cleaning and Maintenance Methods

Way Makers

Pipeline Cleaning and Chemical Control

Flow Movers

Operation of Wastewater Lift Stations

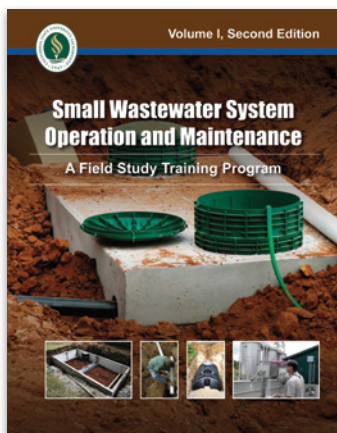
Motor Specialists

Maintenance of Wastewater Lift Stations

Small Wastewater System Operation and Maintenance

Vol 1, Second Edition

This course focuses on the practical, hands-on aspects of safely operating and maintaining small community wastewater collection, treatment, and effluent discharge systems.



Manual
Enrollment, 9 CEUs

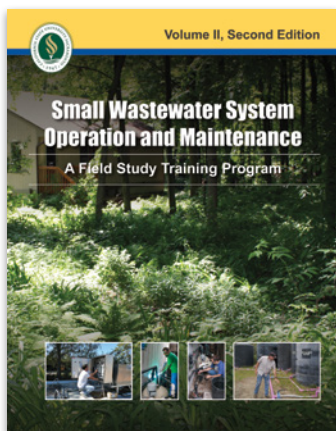
- 1 The Small Wastewater System Operator
 - 2 Small Collection, Treatment, and Discharge Systems
 - 3 Safety
 - 4 Septic Tanks and Pumping Systems
 - 5 Wastewater Treatment and Effluent Discharge Methods
 - 6 Collection Systems
 - 7 Maintenance and Troubleshooting
 - 8 Setting Rates for Small Wastewater Utilities
- Appendix: Comprehensive Review Questions,
Arithmetic, Words, Index

Instructor guides for wastewater series courses available to qualified instructors. You can find more information about obtaining instructor guides on our FAQ page at www.owp.csus.edu/faq.php.

Small Wastewater System Operation and Maintenance

Vol 2, Second Edition

Volume 2 is designed to train operators in the daily practices of safely operating and maintaining small wastewater treatment and disposal system, including several types of package wastewater treatment processes.



Manual
Enrollment, 9 CEUs

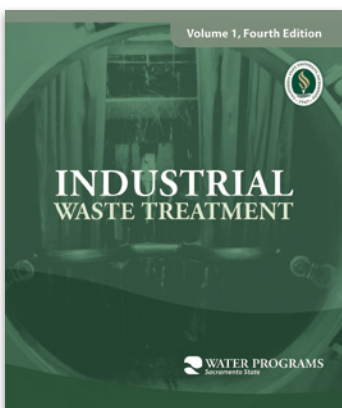
- 9 Wastewater Stabilization Ponds
- 10 Activated Sludge
- 11 Rotating Biological Contactors
- 12 Disinfection and Chlorination
- 13 Alternative Wastewater Treatment, Discharge, and Reuse Methods
- 14 Laboratory Procedures
- 15 Management

Appendix: Comprehensive Review Questions,
Arithmetic, Words, Index

Industrial Waste Treatment

Vol 1, Fourth Edition

These courses are designed to train industrial wastewater treatment operators in the safe and effective operation and maintenance of industrial waste treatment facilities, with chapters focusing on preliminary and primary treatment processes.



Manual Includes 6-month Subscription to eText

Enrollment A, 4.2 CEUs

Introduction, Safety, Waste Monitoring, and Preliminary Treatment

Enrollment B, 3.8 CEUs

Physical and Physical–Chemical Treatment and Treatment of Metal Wastestreams

Enrollment C, 3.3 CEUs

Instrumentation and Control and Facility Maintenance

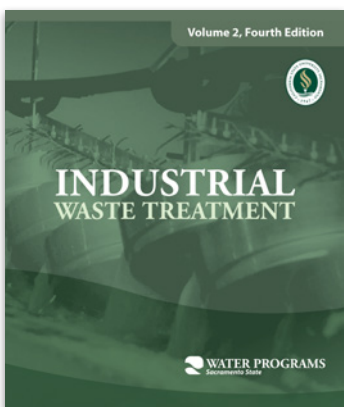
1	Introduction to Industrial Waste Treatment	A
2	Treatment Facility Safety	A
3	Industrial Waste Monitoring	A
4	Preliminary Treatment	A
5	Physical and Physical—Chemical Treatment Processes	B
6	Treatment of Metal Wastestreams	B
7	Instrumentation and Control	C
8	Facility Maintenance	C
	Answer Key, Glossary, Index	

Instructor guides for wastewater series courses available to qualified instructors. You can find more information about obtaining instructor guides on our FAQ page at www.owp.csus.edu/faq.php.

Industrial Waste Treatment

Vol 2, Fourth Edition

Building on Volume 1, this series of courses trains industrial wastewater facility operators to properly operate, maintain, and inspect industrial wastewater treatment facility systems.



Manual Includes 6-month Subscription to eText

Enrollment A, 2.6 CEUs

Introduction and Fixed Film Processes

Enrollment B, 3.7 CEUs

Activated Sludge Processes and Nutrient Removal

Enrollment C, 3.5 CEUs

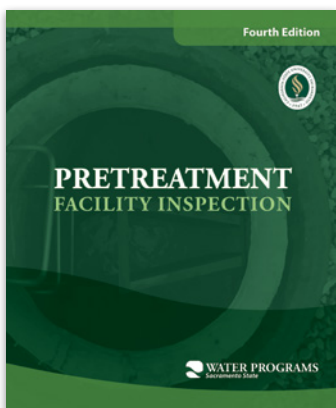
Anaerobic Treatment and Residual Solids Management

1	Introduction to Industrial Waste Treatment	A
2	Fixed Film Processes	A
3	Activated Sludge Processes	B
4	Nutrient Removal	B
5	Anaerobic Treatment	C
6	Residual Solids Management	C
	Answer Key, Glossary, Index	

Pretreatment Facility Inspection

Fourth Edition

This course is designed to train inspectors to use safe and efficient procedures when inspecting industrial pretreatment facilities. Topics include regulations, levels of inspection, measurement methods, and source control. Information about how inspectors can encourage industry professionals to develop waste minimization programs is provided.



**Manual Includes 6-month
Subscription to eText
Enrollment, 7.5 CEUs**

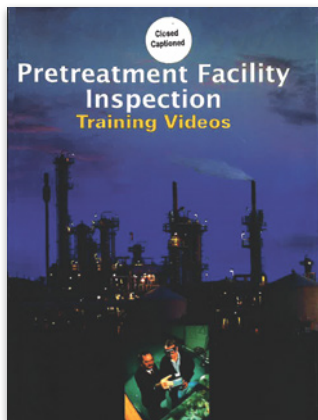
- 1 Introduction to Pretreatment Facility Inspection
- 2 Safety
- 3 Wastewater Characterization and Flow Monitoring
- 4 Inspection and Sampling
- 5 Pretreatment Program Management

Answer Key, Glossary, Index

Instructor guides for wastewater series courses available to qualified instructors. You can find more information about obtaining instructor guides on our FAQ page at www.owp.csus.edu/faq.php.

Pretreatment Facility Inspection Training Videos

The 5-topic DVD provides an introduction to the knowledge, skills, and abilities needed by pretreatment facility inspectors. The 30-minute videos include real-world experiences and feature inspectors of industrial pretreatment facilities performing their duties. Current inspectors may learn tips for improving job performance.



DVD

Enrollment, 0.6 CEUs

Meeting the Goal Together

Discussing the pretreatment facility, inspection program, inspector and administrator responsibilities, environmental protection, and importance of ethical performance

Taking a Closer Look

Scheduling and conducting inspections, entering an industry for an inspection, level of inspection, after the walk-through, and report writing

Starting at the Source

Inspecting a metal finishing industry, on-site industrial inspections, pollution prevention, and data management

Taking Up a Collection

Reasons and preparation for sampling, collecting, handling, and transporting samples, as well as chain of custody

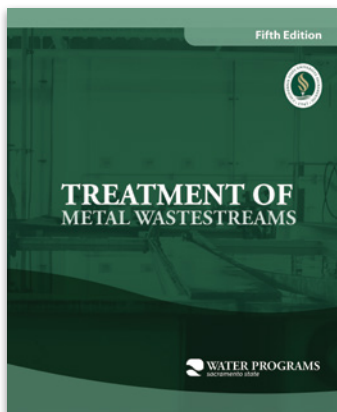
Going with the Flow

Sampling and flow monitoring, instrumentation, and automatic samplers

Treatment of Metal Wastestreams

Fifth Edition

This course provides operators of facilities that treat the wastestreams generated from electroplating, metal finishing, and printed circuit board manufacturing with the knowledge and skills needed to operate and maintain those facilities safely and effectively, protecting workers, wastewater collection and treatment operations, the community, and the environment.



**Manual Includes 6-month
Subscription to eText
Enrollment, 2.6 CEUs**

- 1 Water Quality and Employee Safety
- 2 Methods of Treatment
- 3 Operation and Maintenance (O&M)

Answer Key, Glossary, Index

Instructor guides for wastewater series courses available to qualified instructors. You can find more information about obtaining instructor guides on our FAQ page at www.owp.csus.edu/faq.php.

Struvite Precipitation Potential Calculation Tool

The struvite tool calculates the struvite precipitation potential for a facility based on water quality parameters input by the user. Using data to determine a facility's struvite precipitation potential is important because struvite scale forms in wastewater digestion and post-digestion processes—often fouling equipment and obstructing pipes. Some facilities expend significant maintenance resources to control struvite formation and remove struvite accumulation.

The struvite tool allows the user to vary input parameters to determine what-if scenarios when conditions are changed to control struvite precipitation. This must-have tool for struvite control planning runs in Microsoft Excel® and includes user instructions.

Struvite Tool CD



**Software box for presentation only.*

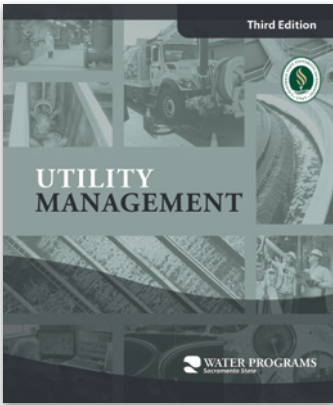


MANAGEMENT COURSES

Utility Management

Third Edition

This course is designed to train water or wastewater utility agency managers in the use of good management practices. It focuses on the primary responsibilities of a utility manager and provides practical guidelines for policies and procedures.



**Manual Includes 6-month
Subscription to eText
Enrollment, 1.6 CEUs**

1 Introduction to Utility Management

2 Managing for the Future

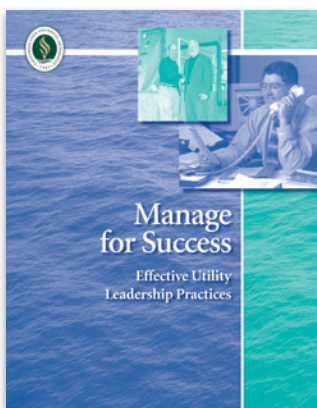
Answer Key, Glossary, Index

Instructor guides for management series courses available to qualified instructors. You can find more information about obtaining instructor guides on our FAQ page at www.owp.csus.edu/faq.php.

Manage for Success

Effective Utility Leadership Practices

This course is designed to help utilities provide training to management staff. Topics include problem identification and solutions, working together as a team, communication, and motivation.



Manual
Enrollment, 4.5 CEUs

- 1 Supervising
 - 2 Communicating
 - 3 Human Relations
 - 4 Planning and Organizing
 - 5 Training and Teaching Skills
 - 6 Problem-Solving Skills
 - 7 Decision Making
 - 8 Technical Issues and Regulatory Compliance
 - 9 Financial Management
 - 10 Computers in Managing a Utility
 - 11 Emergency Planning
 - 12 Health and Safety Programs
 - 13 Community Relations
 - 14 Personal and Professional Skills
- Appendix: Final Exam, Index

Select each item to learn more.

Problem	Therefore, the area of the
Step 1	$A = F \times D^2 = 0.3130 \times 12^2$ [ir
Step 2	
Step 3	

MATH APPLICATIONS
FOR OPERATORS

eLearning Math Applications for Operators

Get ready to promote to the next grade or simply improve your math abilities. Our online math courses give you the skills and CEUs you need!

Each of these stand-alone courses focus on math concepts related to water treatment plant operation, water distribution system operation, collection systems operation, or wastewater treatment plant operation. Students can practice solving work-related math problems in both US customary and metric units.

Step-by-step instructions show operators how to use math to solve problems typically encountered on the job. Audio notes, figures, and tables are included to expand the learning experience. Each course also offers a review of basic math concepts and operations. The courses do not attempt to cover the topics of any state certification exam.

All course material is offered online, but we recommend purchasing the training manual associated with each course for additional material on situations where operators use math on the job.

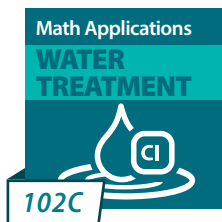
To order any of our *eLearning* math courses, please visit our website at the link below or by scanning the code with your smartphone!

owp.csus.edu/courses/math-courses.php



Math Applications in Water Treatment

Enrollment, 2.1 CEUs



- Topic 1 Basic Concepts
- Topic 2 Reservoir Management
- Topic 3 Coagulation and Flocculation
- Topic 4 Sedimentation
- Topic 5 Filtration
- Topic 6 Disinfection
- Topic 7 Corrosion
- Topic 8 Plant Operation
- Topic 9 Laboratory Procedures

Math Applications in Water Distribution Systems

Enrollment, 1.9 CEUs

Math Applications

WATER DISTRIBUTION



103C

Topic 1 Basic Calculations in in Water Distribution Systems

Topic 2 Distribution Facilities

Topic 3 Distribution Systems Operation and Maintenance

Topic 4 Disinfection

Math Applications in Collection Systems

Enrollment, 1.8 CEUs

Math Applications

COLLECTION SYSTEMS



101C

Topic 1 Design Flow Calculations

Topic 2 Flow Rate and Velocity Measurement

Topic 3 Practice Flow/Velocity Calculations Using the Manning Equation

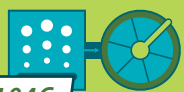
Topic 4 Inspection and Testing Collection Systems

Math Applications in Wastewater Treatment

Enrollment, 3.3 CEUs

Math Applications

WASTEWATER TREATMENT



104C

Topic 1 Basic Calculations in Wastewater Treatment

Topic 2 Preliminary Treatment

Topic 3 Primary Treatment

Topic 4 Activated Sludge System

Topic 5 Tricking Filter System

Topic 6 Rotating Biological Contactor

Topic 7 Wastewater Treatment Ponds (Lagoons)

Topic 8 Wastewater Disinfection Processes

Topic 9 Laboratory and Sampling Procedures

Topic 10 Solids Handling



**CERTIFICATE
PROGRAMS**



Academic Credit Courses

Water Treatment and Wastewater Treatment

We offer two certificate programs for academic credit. Both the *Water Treatment Plant Operation Specialist Certificate Program* and the *Wastewater Treatment Plant Operation Specialist Certificate Program* are designed for students seeking academic credit that may be transferred to other colleges and universities.

Registration requires university enrollment in the Sacramento State College of Continuing Education. If you are not planning to transfer your academic units to a college degree program, our other course offerings may better meet your needs.

Students enrolled in a certificate program earn academic credit for each course completed. Upon completion of all three courses in one of the certificate programs, students earn either a Water Treatment Plant Operation Specialist Certificate or a Wastewater Treatment Plant Operation Specialist Certificate, awarded by California State University, Sacramento.

Each course includes university enrollment, exam materials, administration and grading of an online final exam, and academic credits. The related training manuals are sold separately.

Each course has a 6-month time limit. If you enroll in more than one course at the same time, the time limits apply to each course separately and begin at the time of enrollment.

Contact the Sacramento State College of Continuing Education to register at (916) 278-6984 or www.cce.csus.edu.

**The specialist certificate programs are not available in some states. Please visit the link below for the California State University, Sacramento Office of Academic Affairs web page to see if our program is available in your state.*

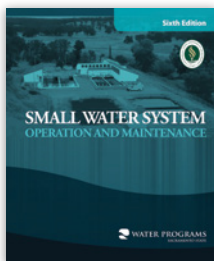
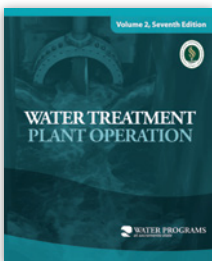
www.csus.edu/academic-affairs/academic-excellence/state-authorization.html



Water Treatment

The **Water Treatment Plant Operation Specialist Certificate Program** consists of three courses in the operation and maintenance of water treatment facilities:

- Water Treatment Plant Operation 1 (CE 28A)
- Water Treatment Plant Operation 2 (CE 28B)
- Small Water System Operation and Maintenance (CE 29)

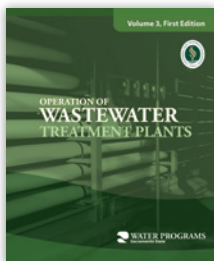
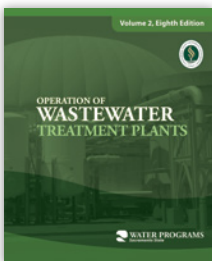
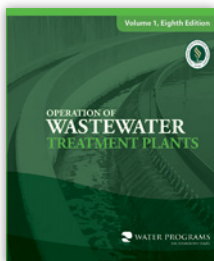


Related training manuals sold separately (prices subject to change)

Wastewater Treatment

The **Wastewater Treatment Plant Operation Specialist Certificate Program** consists of three courses in the operation and maintenance of wastewater treatment facilities:

- Operation of Wastewater Treatment Plants 1 (CE 38A)
- Operation of Wastewater Treatment Plants 2 (CE 38B)
- Operation of Wastewater Treatment Plants 3 (CE 39)



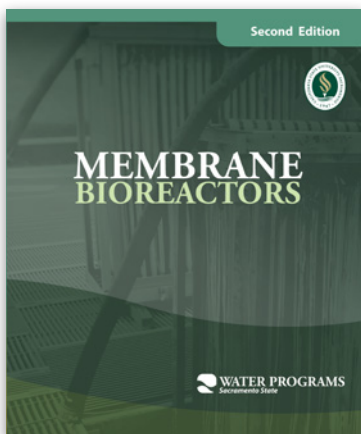
Related training manuals sold separately (prices subject to change)



**COMING
SOON**

Membrane Bioreactors

Second Edition



Membrane bioreactors are well-suited to applications that require small footprints and high contaminant removal efficiency. This completely revised and updated course is designed to train operators in the practical aspects of operating and maintaining membrane bioreactor processes with an emphasis on safe practices and procedures. Information is presented on membrane bioreactor systems, facility safety, process control parameters, commissioning, treatment trains, preliminary treatment flow equalization, bioreactor configurations and operation, disinfection, sludge handling, system maintenance, and troubleshooting.

Streamlined for Faster Learning

- Updated descriptions and graphical representations of bioreactor configurations and process parameters for municipal membrane bioreactor processes
- Revised and expanded math concepts and example problems used in operations and troubleshooting
- Information on achieving regulatory compliance provided throughout
- Free 6-month subscription to eText with manual purchase

Manage for Success

Second Edition

This completely revised edition aims to provide information and guidance on programs and decision-making to the executive team (upper management) of small-to-medium-sized drinking water or wastewater utilities. Topics include asset management, finances and rates, resiliency and security, and workforce development.

Small Wastewater System Operation and Maintenance

Vol 1, Third Edition

This revised edition discusses the safe and effective operation and maintenance of wastewater collection and treatment systems used in small communities. The manual offers information on decentralized systems, but focuses on centralized systems with processes controlled and maintained by licensed operators, including collection systems, sand and gravel filters, and wastewater stabilization lagoons.



APPLIED MATH RESOURCES

US Customary Units

Measure	Name	Abbreviation
Length	foot	ft
Area	foot square	ft ²
Volume	foot cube	ft ³
Mass	pound	lb
Time	second	s
Velocity	distance/time	ft/s
Concentration	mass/volume	mg/L
Flow rate	volume/time	ft ³ /s (cfs)
Pressure	weight/area	lb/in ² (psi)
Density	mass/volume	lb/ft ³

Unit Abbreviations

in = inch	min = minute
ft = foot	h = hour
yd = yard	d = day
mi = mile	y = year
ac = acre	Mgal/d = MGD
gal = gallon	gal/min = gpm
Mgal = million gallon	psi = lb/in ²
lb = pound	hp = horsepower
mol = mole	

Conversion Factors

Measure	Unit	Equivalent
Length	ft	12 in
	yd	3 ft
	mi	5280 ft
Area	ft ²	144 in ²
	ac	43560 ft ²
Volume	ft ³	1728 in ³
	ft ³	7.48 gal
Mass	lb	16 oz
Time	min	60 s
	h	60 min
	d	24 h
	y	365 d

Equivalent Units

1 in	2.54 cm	1 ft ³	28.3 L
1 ft	30.48 cm	1 gal	3.785 L
1 ft ²	0.0929 m ²	1 lb	453.6 g
1 ac	0.405 ha	1 oz	28.35 g
1 ft ³	0.0283 m ³	1 mi	1.6 km
1 psi	6895.93 Pa	1 atm	14.7 psi

Metric Units

Measure	Name	Abbreviation
Length	meter	m
Area	meter square	m ²
Volume	meter cube	m ³
Mass	gram	g
Time	second	s
Velocity	distance/time	m/s
Concentration	mass/volume	mg/L
Flow rate	volume/time	m ³ /s
Pressure	weight/area	Pa (N/m ²)
Density	mass/volume	kg/m ³

Unit Abbreviations

cm = centimeter	kg = kilogram
m = meter	mol = mole
km = kilometer	s = second
ha = hectare	min = minute
L = liter	h = hour
mL = milliliter	d = day
mg = milligram	y = year
g = gram	Pa = Pascal (N/m ²)

Conversion Factors

Measure	Unit	Equivalent
Length	m	100 cm
	cm	10 mm
	km	1000 m
Area	m ²	10 ⁴ cm ²
	ha	104 m ²
Volume	m ³	106 cm ³
	m ³	1,000 L
Mass	kg	1,000 g
Time	h	60 min
	min	60 s
	d	24 h
	y	365 d

Equivalent Units

1 cm	0.3937 in	1 L	0.0353 ft ³
1 m	3.281 ft	1 L	0.2642 gal
1 m ²	10.764 ft ²	1 kg	2.205 lb
1 ha	2.47 ac	1 g	0.0353 oz
1 m ³	35.315 ft ³	1 km	0.6214 mi
1 kPa	0.1450 psi	1 atm	101325 Pa

Water Properties

Density	62.4 lb/ft ³
Density	8.34 lb/gal
Density	1 kg/L
Density	1 g/cm ³
1 ft water	0.433 lb/in ² (psi)
1 m of water	9.81 kPa (kN/m ²)

SI Prefixes

Name	Prefix	Multiplier
giga	G	$10^9 = 1,000,000,000$
mega	M	$10^6 = 1,000,000$
kilo	k	$10^3 = 1,000$
hecto	h	$10^2 = 100$
deca	da	$10^1 = 10$
deci	d	$10^{-1} = 0.1$
centi	c	$10^{-2} = 0.01$
milli	m	$10^{-3} = 0.001$
micro	μ	$10^{-6} = 0.000001$
nano	n	$10^{-9} = 0.000000001$

Selected Greek Characters in Math

Character	Name	Meaning
γ	Gamma	Weight density, $\gamma = \rho \times g$ where g is gravitational acceleration
Δ	Delta	Change (usually accompanied by another variable)
μ	Mu	Micro
π	Pi	Ratio of the circumference of a circle to its diameter
ρ	Rho	Mass density (for water $\rho = 1 \text{ g/cm}^3$)
Σ	Uppercase sigma	Sum
σ	Lowercase sigma	Standard deviation (refer to math appendix for details)

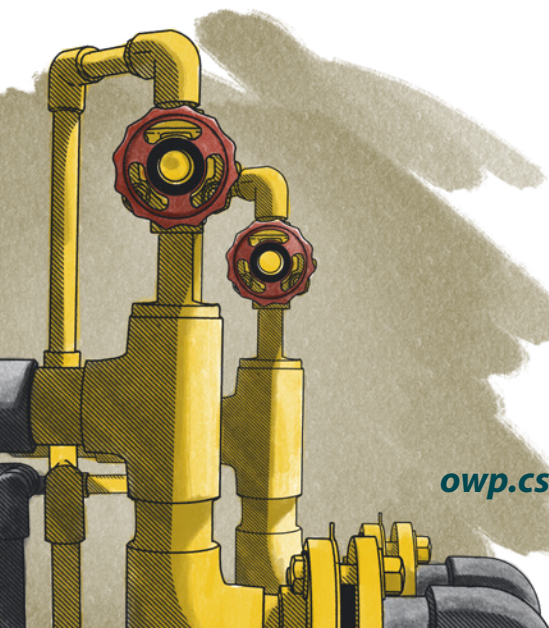
Variables [example units]

A = area [ft ²]
C = concentration [mg/L]
Q = flow rate [Mgal/d or ML/d]
V = volume [gal, L]
v = velocity [ft/s, m/s]
H = pressure head [ft, m]
m = mass [lb, kg]
p = pressure [lb/in ² , Pa]
ρ = density [lb/ft ³ , g/cm ³]
E = efficiency [%]
N = normality [eq/L]
M = molarity [mol/L]
t = time [s]
T = temperature [°F, °C]
D = diameter [ft, m]
LR = loading rate [gal/ft/d, L/m/d]
HLR = hydraulic loading rate [cm/d]
OLR = organic loading rate [kg/m ² /d]
Cl_{dose} = chlorine dose [mg/L]
Cl_{demand} = chlorine demand [mg/L]
Cl_{residual} = chlorine residual [mg/L]
Cl_{feed} = chlorine feed rate [kg/d]
BOD = biochemical oxygen demand [mg/L]
COD = chemical oxygen demand [mg/L]

Water and wastewater sector professionals are always in demand!

- Build a stable, well-paying career*
- Protect public health*
- Maintain critical infrastructure*
- Continue learning throughout your career*
- Advance your skills and pay*
- Mentor new operators as a senior operator*
- Teach the public about the water sector*

OWP is the best selling resource for training operators, managers, and students, meeting continuing education and contact hours requirements, and preparing for state certification exams.



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