Operation of Wastewater Treatment Plants, Volume 2
California State University, Sacramento
B—Solids Management and Plant Maintenance
(4.0 Continuing Education Units)

COURSE DESCRIPTION

This course is designed to train operators in the practical aspects of operating and maintaining wastewater treatment plants, emphasizing safe practices and procedures. Information is presented on solids handling and disposal including preliminary sludge processing, sludge thickening, sludge stabilization, and dewatering and volume reduction and procedures to safely maintain wastewater treatment plants and equipment, including motors, pumps, pneumatic systems, pipes, pumps, and valves.

COURSE OUTLINE

The course uses selected chapters from the training manual, *Operation of Wastewater Treatment Plants,* Volume 2.

Chapter 4, Residual Solids Management

Learning Objectives

1. Understand sludge types, characteristics, processing needs and pumping processes, and the regulatory framework through which these materials can be treated and disposed of.
2. Explain the startup, operation, shutdown, and maintenance requirements for sludge treatment processes. Develop operating procedures and strategies for all operating conditions, including process performance troubleshooting.
3. Identify potential safety hazards and conduct operation and maintenance duties using safe procedures.
4. Describe the solids or biosolids disposal options and how each option is performed within federal, state, and local regulations and guidelines.

The main purpose of this chapter is to train operators in the basic operation and maintenance of processes to treat solids generated from wastewater treatment plants so that they can be safely discharged or reused.

Chapter 5, Plant Maintenance

Learning Objectives

1. Explain the possible consequences of an inexperienced, unqualified, or unauthorized operator attempting to troubleshoot or repair electrical equipment.
2. Understand the terms, nature of, and safety procedures for electricity.
3. Properly select and use meters.
4. Discuss the types of and maintenance for different motor and pump varieties.
5. Develop and conduct an effective maintenance program.

The main purpose of this chapter is to train operators in the basic maintenance procedures for general wastewater treatment equipment.

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TIME ASSIGNMENT

Text pages: The content from the training manual used in this course, *Operation of Wastewater Treatment Plants*, Volume 2, includes 408 pages. The average word count on a page from the training manual is 525 words. The training manual used for this course contains text, tables, graphs, illustrations, math example problems, section questions, and chapter review questions to enhance the presentation of information and the student learning experience. The course is designed for students to spend the same amount of time reading the tables, graphs, and illustrations as they spend reading the equivalent amount of related chapter text. Therefore, each page is assumed to contain the equivalent of 525 words. The average reading speed is 130 words per minute; therefore, each page is projected to require 4 minutes of student time for each reading.

Math example problems: The course contains 53 math example problems. The projected average time to solve each math problem is 3 minutes.

Section questions: The course contains 146 section questions, located in the "Check Your Understanding" sections integrated throughout the chapter text. These questions enable students to self-assess their understanding of a section's material before proceeding to the next section. The projected average response time is 2 minutes per question.

Chapter review questions: The course contains 95 review questions, located in the "Chapter Review" at the end of each chapter. Question types include fill-in, multiple choice, and matching. The projected average response time is 2 minutes per question.

Objective test questions: The course contains 75 test questions. There is 1 objective test per chapter. The projected average response time is 2 minutes per question.

Course component	Number of component units		Minutes required to complete component unit		Total time assignment for component
Text pages	408	×	4	=	1,632
Math example problems	53	×	3	=	159
Section questions	146	×	2	=	292
Chapter review questions	95	×	2	=	190
Objective test questions	75	×	2	=	150
					2,423 minutes
					40.4 hours

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