Industrial Waste Treatment, Volume 2
A—Introduction and Fixed Film Processes
California State University, Sacramento
(2.6 Continuing Education Units)

COURSE DESCRIPTION

This course is designed to train operators in the practical aspects of operating and maintaining industrial wastewater treatment facilities emphasizing safe practices and procedures. This course presents an overview of industrial waste treatment facilities and their safe operation, information and strategies for monitoring waste in industrial wastestreams, and procedures and practices for the safe and effective operation of fixed film treatment processes, including trickling filters, rotating biological contactors, and submerged fixed film.

COURSE OUTLINE

This course presents an overview of industrial waste treatment facilities and trains industrial wastewater treatment facility operators to safely and effectively operate fixed film processes.

Chapter 1, Introduction to Industrial Waste Treatment

Learning Objectives

1. Explain the role industrial waste treatment facilities and operators play in protecting public health, municipal collection and treatment facilities, and the environment.
2. List the types of industrial waste discharged, how they are measured, and their effects on wastewater collection and treatment systems and other water uses.
3. Explain the difference between pollution prevention and waste treatment.
4. Identify federal, state or provincial, and local pretreatment regulations that apply to your industry.

The main purposes of this chapter are to give an overview of industrial waste treatment facilities and to present information on waste discharges and their sources, pollution prevention, industrial wastestream variables, regulatory requirements, and the operator's role in industrial waste treatment.

Chapter 2, Fixed Film Processes

Learning Objectives

1. Explain fixed film processes and their use in standalone and combined process systems.
2. Identify fixed film key operating parameters to successfully monitor and control fixed film processes.
3. Describe how to safely operate, shut down, and start up fixed film treatment units.
4. Identify operational problems or abnormal operations in fixed film processes using observations and lab results and corrective actions.
5. Calculate key process control metrics to optimize fixed film processes.

The main purpose of this chapter is to train operators in the basic operation and maintenance of fixed film processes at industrial wastewater treatment plants, including trickling filters, rotating biological contactors, and submerged fixed film reactors.

Industrial Waste Treatment, Volume 2, 4th edition, 2023
ISBN 9780138266004

TIME ASSIGNMENT

Text pages: The content from the training manual used in this course, *Industrial Waste Treatment*, Volume 2, includes 216 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 12 math example problems. The projected average time to solve each math problem is 3 minutes.

Section questions: The course contains 148 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 90 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	216	×	4	=	864
Math example problems	12	×	3	=	36
Section questions	148	×	2	=	296
Chapter review questions	95	×	2	=	190
Objective test questions	90	×	2	=	180
					1,566 minutes
					26.1 or 26 hours

Industrial Waste Treatment, Volume 2, 4th edition, 2023
ISBN 9780138266004