

WATR 156: WATER TREATMENT I

Citrus College Course Outline of Record

Heading	Value
Effective Term:	Fall 2023
Credits:	3
Total Contact Hours:	54
Lecture Hours :	54
Lab Hours:	0
Hours Arranged:	0
Outside of Class Hours:	108
Strongly Recommended:	WATR 150.
Transferable to CSU:	No
Transferable to UC:	No
Grading Method:	Standard Letter, Pass/No Pass

Catalog Course Description

This course covers water resources, water quality, unit operations of water treatment, public health requirements, and the basics of water chemistry and aquatic microbiology. It prepares students for the T1, T2, and T3 Water Treatment Operator's Certificate and the D1, D2 and D3 Water Distribution Operator's Certificate examinations given by the California State Water Resources Control Board. 54 lecture hours.

Course Objectives

- identify the federal and state regulations on domestic water quality
- Compare and contrast water quality testing methods used in the water industry
- list the constituents that determine the quality of domestic water
- identify the responsibilities of the water operator in maintaining standards in sanitary control of water quality
- interpret the regulations in the federal "Clean Water Act" as they relate to treatment of domestic water supplies
- explain water quality testing methods used in the industry
- identify the major consumer problems related to water quality and recommend solutions
- Examine the history of water supply development and water treatment to gain perspective on the water industry.
- Calculate water treatment needs.
- Examine the regulations in the federal "Safe Drinking Water Act" as they relate to the treatment of domestic water supplies.

Major Course Content

1. Historical Development of Water Systems
 - a. Quality control
 - b. Supply sources
2. Review of Arithmetic
 - a. Problem solving
 - b. Metric system
3. Water Supply Sources
4. Standards of Water Quality

- a. Public health aspects
 - b. Legal regulations
 - i. Federal (EPA) "Clean Water Act"
5. Water Treatment Plant Design
 - a. Layout
 - b. Chemical feeders
 - c. Engineering problems
 6. Problem Solving
 - a. Dosage calculations
 7. Chemical Treatment
 - a. Coagulation
 - b. Flocculation
 - c. Sedimentation
 8. Water Supply Filtration
 - a. Sand filters
 - b. Ozonation and other methods
 9. Water Supply Disinfection
 - a. Chlorination
 - b. Pipeline disinfection
 10. Consumer Problems Related to Water Quality
 - a. Tastes and odors
 - b. Corrosion

Suggested Reading Other Than Required Textbook

California Regulations Related to Drinking Water
http://www.waterboards.ca.gov/drinking_water/certlic/drinkingwater/documents/lawbook/dwregulations-2015-07-16.pdf

Examples of Required Writing Assignments

Respond to a written prompt such as:

While operating a conventional surface water treatment plant during a large rainfall event you notice that your influent turbidity has drastically changed. The influent turbidity has jumped from 1 ntu to 30 ntu's, the water temperature has jumped 5 degrees and your filters are becoming unstable. What effects will this have on the process? What actions would you take? What regulations would you need to be aware of?

Examples of Outside Assignments

Complete worksheets and case studies relating to water treatment diagnosis and calculations.

Instruction Type(s)

Lecture, Online Education Lecture