Advanced Water Math
Course Syllabus

Purpose

This course is designed to teach you advanced water math concepts.

Topics

<u>Advanced Water Math</u>
Flow Problems
Chemical Dose Problems
Reservoir Problems
Coagulation and Flocculation Problems
Sedimentation Problems
Filtration Problems
Disinfection Problems
Laboratory Problems

CEUs (Contact Hours)

Upon completion of this course, you will receive a certificate for .8 CEUs (8 contact hours).

Completion Requirements

In order to receive IACET CEU credit for this course, you must complete the following:

- Complete each individual lesson module by watching the video lecture, completing the lesson handout, and passing the lesson quiz. A score of 70% of higher is required to pass each quiz.

Once you have completed these elements, your course completion certificate will be automatically placed into your learning account for printing/downloading. It will remain in your learning account even after your course access has expired.

Learning Objectives

<u>Flow Problems</u>
Upon completion of this lesson the student will be able to:

- Recall the conversion factor between MGD (million gallons per day) and gpm (gallons per minute.
- Demonstrate how to calculate problems using the MGD to gpm conversion factors
- Recall the conversion factor between MGD and CFS (Cubic Feet Per Second)
- Demonstrate how to calculate problems using the MGD to CFS conversion factors.

<u>Chemical Dose Problems</u>
Upon completion of this lesson the student will be able to:

- Describe what units are used in Polymer and Alum Dosing
- Describe what units are used in chemical feed pump calibrations and settings
- Explain the jar testing process
- Demonstrate how to calculate jar testing problems
- Explain chemical feed system calibrations
- Demonstrate how to calculate chemical feed calibration problems
- Demonstrate how to calculate feed pump settings in percent stroke

- Demonstrate how to calculate chlorinator settings

Reservoir Problems
Upon completion of this lesson the student will be able to:
- Describe what units are used in calculating the storage volume of a reservoir
- Demonstrate how to calculate reservoir storage volume problems
- Describe what units are used in calculating copper sulfate chemical dose problems
- Demonstrate how to calculate copper sulfate dosing problems

Coagulation and Flocculation Problems
Upon completion of this lesson the student will be able to:
- Demonstrate how to accurately calculate how many pounds of coagulant are used
- Demonstrate how to accurately calculate the proper dose of a coagulant
- Demonstrate how to accurately calculate the percent concentration of a stock solution
- Demonstrate how to accurately calculate percent of coagulant dilution

Sedimentation Problems
Upon completion of this lesson the student will be able to:
- Define what sedimentation basins do
- Demonstrate how to calculate detention time problems
- Recall what units are used in detention time
- Demonstrate how to calculate overflow rate problems (surface loading rate problems)
- Recall what units are used in overflow rate
- Demonstrate how to calculate flow velocity problems
- Recall what units are used in flow velocity
- Demonstrate how to calculate weir loading problems
- Recall what units are used in weir loading

Filtration Problems
Upon completion of this lesson the student will be able to:
- Define what a filter is and what it does
- Demonstrate how to solve filtration rate problems
- Demonstrate how to solve level drop rate problems
- Demonstrate how to solve filter flow rate problems
- Demonstrate how to solve unit filter run volume (UFRV) problems
- Demonstrate how to solve backwash flow problems
- Demonstrate how to solve flow to level increase conversion problems
- Demonstrate how to solve backwash water used problems
- Demonstrate how to solve backwash water to finished water percent problems

Disinfection Problems
Upon completion of this lesson the student will be able to:
- Define what units and formulas are used in disinfection problems
- Demonstrate how to solve chlorine dose problems
- Demonstrate how to solve chlorine demand problems
- Demonstrate how to solve chlorine usage problems
- Demonstrate how to solve hypo chlorinator flow rate problems
- Demonstrate how to solve hypochlorite solution strength problems

- Demonstrate how to solve hypochlorite dilution problems
- Demonstrate how to solve average pounds per day problems
- Demonstrate how to calculate chlorine supply in days

Laboratory Problems

Upon completion of this lesson the student will be able to:
- Define what units and formulas are used in laboratory problems
- Demonstrate how to solve temperature conversions between Fahrenheit to Celsius
- Demonstrate how to solve for the mean and median values of a data set
- Demonstrate how to solve removal efficiency
- Define reservoir vocabulary
- Discuss stratification in reservoirs
- Relate problems with anaerobic conditions
- Discuss potential problems algae can cause
- Apply algae control techniques using copper sulfate

Support

Students can contact our student support staff with any course-related, content-related or technology-related inquiries.
Our office hours are Monday-Thursday, 9-5 PST, and Friday 9-12 PST.

Contact Info

Phone Number: (661) 874-1655
General Course Inquiries: Info@americanwatercollege.org