

Clackamas Community College

Online Course/Outline Submission System

Show changes since last approval in red

WET-123 Environmental Chemistry I

General education certified: Yes No

- Writing
- Oral Communication
- Arts and Letters
- Science & Computer Science
- Mathematics
- Social Science
- Cultural Literacy
- Health & Physical Education

Approved Date (mm/dd/yyyy): / /

Section #1 General Course Information

Department: Engineering Science

Submitter

First Name: **Matthew**

Last Name: **LaForce**

Phone: **3148**

Email: **laforce**

Course Prefix and Number: WET - 123

Credits: 3

Contact hours

Lecture (# of hours): 22

Lec/lab (# of hours):

Lab (# of hours): 33

Total course hours: 55

For each credit, the student will be expected to spend, on average, 3 hours per week in combination of in-class and out-of-class activity.

Course Title: Environmental Chemistry I

Course Description:

Theory and applied laboratory techniques for testing water and wastewater. Students will test wastewater for NPDES required tests.

Type of Course: Career Technical Preparatory

Is this class challengeable?

Yes

Can this course be repeated for credit in a degree?

No

Is general education certification being sought at this time?

No

Does this course map to any general education outcome(s)?

No

Is this course part of an AAS or related certificate of completion?

Yes

Name of degree(s) and/or certificate(s): Water Quality AAS

Are there prerequisites to this course?

No

Are there corequisites to this course?

No

Are there any requirements or recommendations for students taken this course?

No

Are there similar courses existing in other programs or disciplines at CCC?

No

Will this class use library resources?

Yes

Have you talked with a librarian regarding that impact?

No

Is there any other potential impact on another department?

No

Does this course belong on the Related Instruction list?

No

GRADING METHOD:

A-F or Pass/No Pass

Audit: Yes

When do you plan to offer this course?

Winter

Is this course equivalent to another?

If yes, they must have the same description and outcomes.

No

Will this course appear in the college catalog?

Yes

Will this course appear in the schedule?

Yes

Student Learning Outcomes:

Upon successful completion of this course, students should be able to:

1. describe the basic NPDES required testing on wastewater samples, to include: BOD, TSS, TS, TVS, pH, Chlorine Residual, DO, COD, et. al.,
2. perform basic math as related to laboratory tests and solution preparation,
3. identify and correctly name/label basic laboratory equipment,
4. prepare all reagents and solutions required to perform the basic NPDES tests,
5. perform lab experiments in a safe manner.

This course does not include assessable General Education outcomes.

Major Topic Outline:

1. Understand the preparation of chemical solutions.
 - a. Normality, Molarity, Percent (%), and "a + b" solutions.
 - b. Solution adjustments to obtain proper strengths, based on the one and two normal equations.
2. Understand the element cycles for Sulfur, Nitrogen, Phosphorus, and other important ions in water and wastewater.
3. Understand the Dissolved Oxygen (DO) test as performed on water.
 - a. Winkler titration chemistry.
 - b. The DO meter (polarographic) method.
4. Understand elements of the BOD test.
 - a. Nitrogenous and Carbonaceous variations.
 - b. Seeding and de-chlorination.
 - c. Calculations and the graphing method.
5. Understand the Solids profile for wastewater and application of the lab results.
 - a. Total Solids = Total Dissolved Solids + Total Suspended Solids.
 - b. Total Volatile Solids = Total Solids - Total Nonvolatile Solids.
 - c. Proper Drying/Volatilizing Temperatures.
6. Understand the COD test.
 - a. Significance of the reagents used.
 - b. Relationships between BOD and COD.
 - c. Explanation of the "Rapid" COD test (Jeris) as time allows.
7. Understand Chlorine Residual.
8. Understand pH and how it is used for water and wastewater investigations.

Does the content of this class relate to job skills in any of the following areas:

- | | |
|--------------------------------------|----|
| 1. Increased energy efficiency | No |
| 2. Produce renewable energy | No |
| 3. Prevent environmental degradation | No |
| 4. Clean up natural environment | No |
| 5. Supports green services | No |

Percent of course: 0%

First term to be offered:

Next available term after approval

:
