

Clackamas Community College

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Section #1 General Course Information**Department:**Engineering Science**Submitter**

First Name: James

Last Name: Nurmi

Phone: 3813

Email: jamesn

Course Prefix and Number:WET - 111**# Credits:**3**Contact hours**

Lecture (# of hours): 33

Lec/lab (# of hours):

Lab (# of hours):

Total course hours: 33

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:Waterworks Operations I**Course Description:**

Introduction to municipal drinking water treatment and distribution systems. Basic waterworks hydraulics, drinking water regulations, waterworks math, waterworks microbiology, and introduction to water disinfection.

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?

Yes

Pre-reqs:Pass MTH-065 or placement in MTH-080

Have you consulted with the appropriate chair if the pre-req is in another program?

No

Are there corequisites to this course?

Yes

Co-reqs:MTH-082B

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?

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?

✓ **Fall**

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. explain state and federal drinking water regulations, and how the regulations affect water systems in Oregon;
2. describe the fundamentals of water microbiology as it relates to waterborne infectious diseases,
3. explain the requirements for bacteriological testing of drinking water,
4. describe the fundamentals of water disinfection, with an emphasis on chlorination;
5. explain chlorine chemistry,
6. calculate and describe disinfection "CT" values and how they are used in the waterworks industry,
7. identify and explain the different sources of drinking water and their differences.

This course does not include assessable General Education outcomes.

Major Topic Outline:

1. Oregon Water Certification and Introduction to the Safe Drinking Water Act.
2. Drinking water regulations of importance in the Pacific NW. Health effects of drinking water contaminants.
3. Introduction to waterworks hydraulics.
4. Using hydraulic concepts to solve waterworks related problems.
5. Introduction to water microbiology. Fundamental biology of bacteria, viruses, and protozoa.
6. Introduction to the coliform group of bacteria and the coliform rule.
7. Introduction to chlorination chemistry.
8. Chlorination chemistry and the requirements of the disinfection rule. Introduction to the disinfection CT concept.
9. Chlorination equipment.
10. Chlorine handling practices and safety.
11. Introduction to pipe materials used in the waterworks industry.

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

:
