

Clackamas Community College

Online Course/Outline Submission System

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

First Name: James

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Course Prefix and Number:MTH - 082D

Credits:1**Contact hours**

Lecture (# of hours): 11

Lec/lab (# of hours):

Lab (# of hours):

Total course hours: 11

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 Math II**Course Description:**

Problem solving for waterworks applications. Introduction to contact-time (CT) calculations, how to determine chemical concentrations, the pounds formula, and basic hydraulics.

Type of Course:Developmental Education

Can this course be repeated for credit in a degree?

No

Are there prerequisites to this course?

Yes**Pre-reqs:**Pass MTH-082A, MTH-082B or instructor consent.

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:WET-121

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

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?

✓ Winter

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. solve waterworks math problems equivalent to those on State of Oregon Level I and Washington OIT Certification Exams,
2. calculate the specific gravity of a solid or liquid given the weight per volume,
3. calculate the chemical dosage using the standard "pounds formula,"
4. determine the pounds of active chemical in a solution with a given percent solution strength and specific gravity,
5. determine the pounds of active chemical in a dry chemical reagent that has a given percent active ingredient,

6. calculate the dosage pump setting to provide a given chemical dosage in a water treatment application,
7. determine chlorine demand given information on chlorine dose and chlorine residual,
8. solve problems related to water distribution hydraulics including uneven pipe thrust, total force exerted by fluids, hydrostatic pressure, and hydraulic detention time.

This course does not include assessable General Education outcomes.

Major Topic Outline:

1. Introduction to solutions and solution concentrations.
2. Introduction to chlorine disinfections.
3. Introduction to C X T calculations.
4. Introduction to chemical dosage problems.
5. Chlorine profiles with the Pounds Formula.
6. Organic profiles with the Pounds Formula.
7. Manipulation of Pounds formula.
8. Application of waterworks hydraulics.
9. Pipe flow and thrust.

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 | Yes |
| 4. Clean up natural environment | Yes |
| 5. Supports green services | No |

Percent of course:100%

First term to be offered:

Next available term after approval

:
