

Clackamas Community College
Online Course/Outline Submission System

Show changes since last approval in red

Print

Edit

Delete

Back

Reject

Publish

Section #1 General Course Information

Department: Engineering Science

Submitter

First Name: Matt

Last Name: LaForce

Phone: 3148

Email: laforce

Course Prefix and Number: MTH - 082A

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: Wastewater Math I

Course Description:

Quantitative component to understanding wastewater operations. Simple unit conversions, fraction to decimal conversions and more complicated problem solving as applied to wastewater preliminary & primary treatment.

Type of Course: Developmental Education

Can this course be repeated for credit in a degree?

No

Are there prerequisites to this course?

No

Are there corequisites to this course?

Yes

Co-reqs: WET-110

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

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?

✓ **Fall**

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. perform applied mathematical conversions and dimensional analysis(flow rate, temperature, etc)necessary to pass the Oregon Water or Wastewater certification exams;
2. calculate the area and volume of a circle and rectangular clarifier and understand the role of these shapes in water and wastewater treatment processes;
3. determine flowrate in a pipe using the continuity equation and comprehend these relationships in water and wastewater collection and treatment operations;
4. determine the velocity of flow and focus on hydraulic detention times for treatment processes;
5. describe the multiple usages of the pounds formula (Mass & Mass Flux) in plant operation and control. Mass is based on pounds held within a process, Mass Flux is mass moved over time or ppd through a water body;
6. quantitatively assess all solids analysis measurements;
7. describe the need for proper mathematical assessment of BOD in National Pollutant Discharge Elimination Systems permit;

8. assess pump and lift station detention times and pumping rates;
9. describe headworks treatment as it applies to bar screens, bar racks, and grit channels;
10. process Clarification and Loading calculations in primary and secondary treatment

This course does not include assessable General Education outcomes.

Major Topic Outline:

1. Sanitary Wastewater Composition.
2. Pumping Stations.
3. Bar Screens and Bar Racks, and Grit Channels.
4. Process Clarification and Loading.
5. Mass & Mass Flux and the difference between the two.
6. Flow and Contaminant Discussion, aka "Solution to Pollution is Dilution."

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

:
