

Clackamas Community College

Online Course/Outline Submission System

Show changes since last approval in red

WET-110 Wastewater Operations 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: **Matt**

Last Name: **LaForce**

Phone: **3148**

Email: **laforce**

Course Prefix and Number: WET - 110

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: Wastewater Operations I

Course Description:

Introduction to the fundamentals of wastewater character and operations. Includes collections systems, preliminary and primary treatment, waste characteristics including organic removals, and solids profiles.

Type of Course: Career Technical Preparatory

Is this class challengeable?

No

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): AAs for Water & Environmental Technology and 1-year Certificate in WET

Are there prerequisites to this course?

No

Are there corequisites to this course?

Yes

Co-reqs: MTH-082A

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: No

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 concepts and equipment involved with Preliminary Wastewater Treatment,
2. explain the concepts and equipment involved with Primary Wastewater Treatment,
3. categorized wastewater strength (BOD and TSS) and treatability.

This course does not include assessable General Education outcomes.

Major Topic Outline:

1. Monitoring of Flows.
 - a. Flumes, i.e. Palmer Bowlus.
 - b. Flow Continuity: Velocity x Area Approach, $Q = AV$.
 - c. Manning's Equation (optional, as time allows).
2. Sanitary Wastewater Composition.
 - a. "Solids" Profiling: TS, TSS, TDS, etc.
 - b. "Organic" Composition: BOD/COD/TOC.
 - c. pH, Acid/Alkaline, 0-14 scale.
 - d. Organic vs. Inorganic Contaminants in Wastewater.
 - e. Compatible vs. Incompatible Contaminants in Wastewater.
3. Collection System Basics/Description.
 - a. Domestic Wastewater.
 - b. Industrial Wastewater.
 - c. Sanitary Wastewater.
 - d. Combined Sewage Systems and CSO/SSO definitions/explanations.
 - e. Storm Sewers and Surface Runoff.
4. Pumping Stations.
 - a. P/S Placement and its importance as a part of the Sewerage System.
 - b. Design Descriptions.
5. Bar Screens and Bar Racks; both manual and mechanical.
6. Comminutors and Barminutors.
7. Flow Equalization/ On-line or Off-line.
8. Flowrate/ Indication, Recording, Totalizing.
9. Grit Removal Systems and Rock Pockets.
 - a. Grit Channels, Sutro and Flow Proportional control.
 - b. Aerated.
 - c. Swirl Concentration, i.e. Pista-Grit.
10. Description of the four types of sedimentation.
11. Process of Sedimentation vs. Clarification.
12. Clarifier/Sedimentation Basins.

- a. Circular shaped basins.
 - a1. Center Feed.
 - a2. Periphery Feed (Rim Feed).
 - b. Rectangular.
 - c. Square.
13. Screening Process and Screenings (debris).

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:

Specify term: **Fall 2015**
