

Clackamas Community College

Online Course/Outline Submission System

Show changes since last approval in red

WET-242 Hydraulics for Water & Wastewater

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 - 242

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: Hydraulics for Water & Wastewater

Course Description:

Introduction to closed conduit and open channel flow. Includes hydrostatics and dynamics, head-loss, pump characteristics, Bernoulli's and the energy equations, and basic characteristics of water.

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?

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?

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. describe fluids, fluid mechanics, and the physics of water as a fluid
2. compare and contrast hydrostatics and hydrodynamics,
3. apply mathematical concepts to water flow meters,
4. assess pump types, maintenance, and mathematical modeling as applied to complex water distribution systems.

This course does not include assessable General Education outcomes.

Major Topic Outline:

1. Physical Properties of Water.
2. Water at Rest “Hydrostatics”.
3. Water Forces and Buoyancy.
4. “Fun” with Water Physics, The “Thinking Chapter”.
5. Water Dynamics and Water Hammer.
6. Bernoulli/Energy Equations/Venturi Meters/Orifice Flows.
7. Hazen-Williams Discussions for Energy Loss.
8. Darcy-Weisbach Discussions for Energy Loss.
9. Manning’s Expression with Open Pipe Flows to Determine Energy Loss.
10. Pumps, Pumping and Energy Efficiencies; Water/Pump/Motor HP.

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

:
