

# Clackamas Community College

## Online Course/Outline Submission System

Show changes since last approval in red

WET-125 High Purity Water Production I

General education certified:  Yes  No

- Writing
- Oral Communication
- Arts and Letters
- Science & Computer Science
- Mathematics
- Social Science
- Cultural Literacy
- Health & Physical Education

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Approved Date (mm/dd/yyyy):  /  /

### Section #1 General Course Information

**Department:** Engineering Science

**Submitter**

First Name: **Matthew**

Last Name: **LaForce**

Phone: **3148**

Email: **laforce**

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**Course Prefix and Number:** WET - 125

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**# 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.

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**Course Title:** High Purity Water Production I

**Course Description:**

Fundamentals of high purity water chemistry, reverse osmosis treatment, ion exchange treatment, electrode ionization treatment, UV, ozonation, degasification and microfiltration as applied to the production of high purity water for the semiconductor, pharmaceutical and electric power generating industries.

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**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):** High Purity Water Certificate

Are there prerequisites to this course?

Yes

**Pre-reqs:** Pass CH-104

**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-082E

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?

Not every year

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 the basic chemistry concepts of high purity water in the production of CMOS devices,
2. describe the characteristics and/or specifications for high purity water and understand basic methods used to produce high purity water for the microelectronics industry.

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This course does not include assessable General Education outcomes.

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**Major Topic Outline:**

1. Introduction to semiconductor manufacturing and high purity water production.
2. Applied water chemistry for high purity water including lab.
3. Introduction to Reverse Osmosis treatment.
4. Applications and operation of ion exchange deionization equipment used in high purity water production, including lab.
5. Introduction to electro-deionization treatment.
6. Introduction to water pretreatment and microfiltration.
7. High purity water applications of UV, ozone, and vacuum degasification.

**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

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