

**Clackamas Community College**  
Online Course/Outline Submission System

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### Section #1 General Course Information

**Department:** Apprenticeship

**Submitter**

First Name: Shelly

Last Name: Tracy

Phone: 0945

Email: shellyt

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**Course Prefix and Number:** APR - 121UW

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**# Credits:** 5

**Contact hours**

Lecture (# of hours): 55

Lec/lab (# of hours):

Lab (# of hours):

Total course hours: 55

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:** Fundamental Substation Wireman I

**Course Description:**

Fundamental Substation Wireman I continues to explore high voltage substation equipment including transformers, switches, and reactive equipment. Students will also build on their knowledge of Direct Current (DC) theory while beginning the study of the fundamentals of Alternating Current (AC) theory. This course is part of the NJATC substation curriculum.

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**Type of Course:** Career Technical Apprenticeship

Can this course be repeated for credit in a degree?

**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):** Electrical Apprenticeship AAS

Are there prerequisites to this course?

**Yes**

**Pre-reqs:** Successful completion of APR-113UW, Basic Substation Wireman III

**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?

**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 Only**

**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?

**No**

Will this course appear in the schedule?

**No**

Student Learning Outcomes:

Upon successful completion of this course, students should be able to:

1. identify and describe the function of common types of high voltage substation equipment,
2. explain the importance of protecting equipment from high currents and voltages,
3. determine how current, resistance and voltage react in combination DC circuits;
4. calculate power in a DC combination circuit,
5. recognize the differences of DC and AC,
6. describe how AC and DC generators work,
7. explain how 3-phase systems operate,
8. identify physical factors that affect inductance.

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***This course does not include assessable General Education outcomes.***

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Major Topic Outline:

1. Substation Equipment Overview.
2. Applications of DC Theory.
3. Fundamentals of Alternating Current.
4. Introduction to Three-Phase Systems.

Does the content of this class relate to job skills in any of the following areas:

- |                                      |           |
|--------------------------------------|-----------|
| 1. Increased energy efficiency       | <b>No</b> |
| 2. Produce renewable energy          | <b>No</b> |
| 3. Prevent environmental degradation | <b>No</b> |
| 4. Clean up natural environment      | <b>No</b> |
| 5. Supports green services           | <b>No</b> |

Percent of course: 0%

First term to be offered:

**Specify term: Fall 2014**

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