Clackamas Community College

Online Course/Outline Submission System

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Section #1 General Course Information

Department: Apprenticeship

Submitter

First Name: Shelly
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Course Prefix and Number: APR - 123UW

 # 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.

Course Title: Fundamental Substation Wireman III

Course Description:

Fundamental Substation Wireman III students will develop a journey level understanding of cable splicing, fiber optic cables and power transformer maintenance while beginning detailed studies of other major substation equipment. This course is part of the NJATC substation curriculum.

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-122UW

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?

✓ Spring

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. describe a power transformer inspection,
2. perform a transformer turns ratio, power factor, insulation and resistance test;
3. explain the basics of Sulfur Hexafluoride (SF6) gas handling and leak detection,
4. cite EPA Oil leak requirements,
5. demonstrate cable splicing,
6. perform fiber optic cable installation,
7. explain how to test power transformer pressure relays,
8. list the steps to maintain a transformer tap changer,
9. describe various types of power circuit breaker operating mechanisms,
10. explain how power circuit breakers are inspected, maintained, and tested;
11. list procedures to troubleshoot capacitor banks and substation bus,
12. identify typical substation bus configurations,
13. explain how static vikt-amphere reactive (VAR) compensators maintain system voltage and reactive levels.

This course does not include assessable General Education outcomes.

Major Topic Outline:

1. Cable splicing overview.
2. Fiber optics overview.
3. Power transformer principles.
4. Inspection and tests.
5. Power transformers – tap changers.
6. Transformer Turns Ratio (TTR).
7. Transformer oil quality, filtration. analysis and breakdown test.
8. SF6 Gas applications and regulations for use.
9. Circuit breaker operation and maintenance.
10. Capacitor banks and substation bus configurations.

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: Spring 2015