

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 - 223UG

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: Hydro-Generation: Operations III

Course Description:

Third of three courses designed to instruct third year students on the performance of system protection and power grid operations.

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): Electrician Apprenticeship Technology AAS

Are there prerequisites to this course?

Yes

Pre-reqs: MTH-095 or instructor consent

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?

Yes

Recommendations: Take 200 level UG classes in sequence, but not required.

Requirements: MTH-095 or successful completion of the POSS test.

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 Only

Audit: No

When do you plan to offer this course?

✓ **Not every term**

✓ **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?

No

Will this course appear in the schedule?

No

Student Learning Outcomes:

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

1. diagram and describe the purpose and characteristics of protection systems,
2. identify types of relay devices and explain their application,
3. follow the principles of operating limits,
4. apply principles of interconnected operations,
5. apply principles of automatic generation control,
6. employ PLC and SCADA software systems to maintain power stability,
7. perform computer system functions.

This course does not include assessable General Education outcomes.

Major Topic Outline:

1. Protection systems.
2. Relay devices and application.
3. Principles of operating limits.
4. Programmable Logic Control (PLC).
5. Supervisory Control and Data Acquisition (SCADA) systems.
6. Interconnected operations.
7. Automatic control using PLC and SCADA.

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

:
