

Clackamas Community College

Online Course/Outline Submission System

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APR-113UE Line Estimator Basic III: Wire Circuits

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: Apprenticeship

Submitter

First Name: Shelly

Last Name: Tracy

Phone: 0945

Email: shellyt

Course Prefix and Number: APR - 113UE

Credits: 4

Contact hours

Lecture (# of hours): 44

Lec/lab (# of hours):

Lab (# of hours):

Total course hours: 44

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: Line Estimator Basic III: Wire Circuits

Course Description:

This course covers principles and concepts that govern safe wiring and circuit applications, safe working procedures, Ohm's Law calculations and use of aerial lift in field operations. The focus is on electric utility systems.

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?

No

Are there corequisites to this course?

No

Are there any requirements or recommendations for students taken this course?

Yes

Recommendations: None

Requirements: Accepted into the Line Estimator apprenticeship program

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

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. explain field operations and electrical utility systems, including operational standards and service area requirements,
2. list and define the components of an electric system, energy charges, power factor charges and demand charges,
3. design, develop and disseminate field- and operational-level performance measurements,
4. explain how electrical conductors are sized and classified,
5. list and describe the different methods of tying in,
6. recognize and solve mathematical problems involving the addition of fractions with different denominators and both direct and inverse relationships,
7. use Ohm's Law to solve voltage problems in parallel circuits and to determine currents and voltages through combination circuits,
8. describe ways to properly install overhead services, including tree-trimming procedures,
9. review considerations for a safe and productive jobsite, particularly while working on an aerial lift or platform, taking a line out of service and stringing conductors,
10. analyze components in a combination circuit to determine whether they are connected in series or parallel with other components and calculate total circuit resistance using appropriate methods,
11. install conduit to the proper depth and use proper backfill methods,
12. identify common soil types and hazards associated with excavation.

This course does not include assessable General Education outcomes.

Major Topic Outline:

1. Terms used in conductor stringing.
2. Electron flow creating magnetic fields.
3. Field reactions to physical changes caused by magnetic fields.
4. Basic purpose and operation of a generator.
5. Power requirements of a circuit when it is necessary to do so.
6. Essential parts of an underground system.
7. Construction techniques in the building of a manhole or vault.
8. Types of stranded conductors.
9. General pulling practices and cautions.
10. Components and their uses in URD systems.
11. Grounding electrical circuits and equipment and describing the use of protective grounds.
12. Elements necessary for all lockout/tagout programs.
13. Circuits containing parallel resistors.
14. Factors considered in conductor selection.
15. Proper components to be used for tying conductors.

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

:
