

# Clackamas Community College

## Online Course/Outline Submission System

Show changes since last approval in red

APR-116UW System Control & Data Acquisitions (SCADA) Overview

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 - 116UW

---

**# Credits:** 2

**Contact hours**

Lecture (# of hours):

Lec/lab (# of hours): 40

Lab (# of hours):

Total course hours: 40

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:** System Control & Data Acquisitions (SCADA) Overview

**Course Description:**

In this course, students will learn the job requirements of a System Control and Data Acquisitions (SCADA) Technician and develop an understanding of the SCADA hardware used at the substations, in the field, and at the System Control Center. The apprentice will be given an overview of how SCADA information is sent from the field to the System Control Center and the troubleshooting techniques used to resolve SCADA telemetry problems.

---

**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?

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?

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. describe how SCADA Technicians continually inspect, repair, calibrate and maintain SCADA systems, equipment and related computer software and hardware at substations and other facilities,
2. explain how SCADA Technicians install settings into the main substation Primary Logic Controllers (PLCs),
3. give examples of how SCADA Technicians perform SCADA controls, statuses and analog checkout on new and existing substation equipment, including simulating inputs necessary to fully and accurately test devices providing data to the SCADA system,
4. list the steps for verifying metering quantities relating to SCADA,
5. outline the importance of frequently testing and maintaining RTUs and related equipment,
6. describe how SCADA Technicians test and maintain various SCADA protocols and external interface devices, including RTDs and various EMS components,
7. discuss the importance of SCADA Technicians engaging in independent study to keep up with changing technology and attending vendor and other training schools as required,
8. summarize working conditions for SCADA Technicians, including working alone or with other technicians with minimal supervision, frequently driving considerable distances, working on temporary assignments and responding to emergency call-outs at unscheduled hours,
9. identify and outline ways SCADA Technicians “markup” as-built documentation for as-left conditions or for minor rework as necessary to ensure accurate drawings,
10. describe the daily function of System Control and the Trading Floor located at 3WTC.

---

This course does not include assessable General Education outcomes.

---

**Major Topic Outline:**

1. Complex instrument and control equipment relating to SCADA at substation and other facilities.
2. Inspecting, repairing, calibrating and performing preventive maintenance of SCADA systems.
3. Computer software and hardware, station networks and protocol translators and ensuring equipment is functioning properly.
4. Programmable Logic Controllers (PLCs).
5. SCADA controls, statuses and analog checkout on new and existing substation equipment.
6. Metering quantities relating to SCADA.
7. Station remote terminal units (RTUs) and related equipment.
8. Protocols and external interface devices, including resistance temperature detectors (RTDs).
9. Emergency management system (EMS) components.
10. Emergency call-outs at unscheduled hours.
11. "Markup" as-built documentation.
12. Attending vendor and other training schools as required.
13. Trading Floor located at 3WTC.

**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

:

---