

SCADA and Control Systems in Yukon - Introduction

Course Outline

Course Description

This 2 day (12 hour) course is designed to introduce participants to process control, SCADA and other control system components and their purposes within a control system, as well as methods for troubleshooting operational issues. The focus is on systems typically used in the water and wastewater industry in Yukon. This course provides practical skills that can assist with SCADA and control systems operations, troubleshooting and upgrading/design.

Course Pre-requisites

There are no specific pre-requisites for this course. However, Grade 12 (or equivalent) math skills are an asset. Math upgrades are available –contact us.

Continuing Education Units (CEUs)

This course is recognized by EOCP for 1.2 CEUs (core for SWS, WT, WD, WWT, WWC and SWWS certifications).

Course Duration

- 2 days
- 8:30 am to 4:00 pm each day
- 1 hour lunch break
- morning and afternoon break (15 minutes each)

Course Topics and Learning Outcomes

Upon successful completion of the course, the students will be able to:

1. Interpret process drawings, control narratives, trends and basic ladder logic
2. Differentiate between the different components of a control system (e.g. PLC, instruments, HMI, SCADA)
3. Explain the purpose of the various components within a control system
4. Operate user interfaces on site and via remote access
5. Describe control system maintenance and troubleshooting steps
6. Identify appropriate troubleshooting steps to use for given operational issues
7. Recommend appropriate solutions to operational issues
8. Contribute to the design/upgrading of SCADA and control systems

Delivery Method/Format

Instructional Method	Percentage of Class Time
Hands-on/Q & A	10%
Examples/Case Study	30%
Presentation/Lecture	50%
Demonstration	5%
Video/DVD	5%

Material/Handouts (supplied)

- Student Binder: Yukon University. SCADA and Control Systems in Yukon - Introduction; an Elective –Technical Development– course. Whitehorse, Yukon.
- EOCP Course Completion and Evaluation Form.
 - every student needs to complete and return this form for any CEU allocation
- Calculators are provided but students are welcome to use their own.
 - please return

Course Requirements

Attendance and participation in class are required. CEUs will be allocated based on attendance and course completion; Yukon University records will show a pass or fail result. If the participant doesn't attend the class, Yukon University records will show a "no show" result and no CEUs will be allocated.

Evaluation

There will be a quantifiable evaluation at the end of this course with a passing mark of 70%. Please note that this evaluation is for self-assessment purpose only.

Appropriate Language

In all areas of the University environment, students are responsible for showing respect for others. Swearing, or language that is discriminatory or derogatory in relation to race, sex, ethnic background, religious beliefs, age, and physical condition is not appropriate.

Computer classes can be particularly frustrating for students; therefore, students are encouraged to manage their stress in such a way that it does not disturb others. There may be times it is best for the student to step out of the classroom to manage stress and minimize the disruption of others in the class.

Electronic Devices

In order to be successful in classes and minimize distractions for others, cell phones, iPods, and other electronic devices must be turned off while students are in class. In an emergency situation, the instructor may give a student permission to use a cell phone or pager.

Academic and Student Conduct

Information on academic standing and student rights and responsibilities can be found in the current Academic Regulations that are posted on the Student Services/Admissions & Registrations web page.

Plagiarism

Plagiarism is a serious academic offence. Plagiarism occurs when students present the words of someone else as their own. Plagiarism can be the deliberate use of a whole piece of another person's writing, but more frequently it occurs when students fail to acknowledge and document sources from which they have taken material. Whenever the words, research or ideas of others are directly quoted or paraphrased, they must be documented according to an accepted manuscript style (e.g., APA, CSE, MLA, etc.). Resubmitting a paper which has previously received credit is also considered plagiarism. Students who plagiarize material for assignments will receive a mark of zero (F) on the assignment and may fail the course. Plagiarism may also result in dismissal from a program of study or the University

Academic Accommodation

Reasonable accommodations are available for students requiring an academic accommodation to fully participate in this class. These accommodations are available for students with a documented disability, chronic condition or any other grounds specified in section 8.0 of the Yukon University Academic Regulations (available on the Yukon University website). It is the student's responsibility to seek these accommodations. If a student requires an academic accommodation, they should contact the Learning Assistance Centre (LAC) at LearningAssistanceCentre@yukonu.ca.

Class Outline

Day 1

Topic	Time Allocation (min)
Introductions/Housekeeping	30
Process Control	15
Electricity	30
Instrumentation and Controlled Devices	45
Process Drawings	60
Control Narratives	75
PLCs and Ladder Logic	75
User Interfaces	30

Day 2

Topic	Time Allocation (min)
Day 1 Review	15
User Interfaces - Continued	30
Reading Trends	45
SCADA Design Considerations and Software	30
Remote Access	15
Guest Speaker	30
Alarm Call-outs	15
Control System Review	30
Control System Maintenance	15
Control System Troubleshooting	45
Contributing to Design/Upgrades	30
Tour	30
Final exam	30