Short Course in

Industrial Automation Software Programming Fundamentals

Short Course Overview

This three-day course will help you acquire the fundamental knowledge to design, configure, connect, program, commission, and document *Programmable Logic Controller* (*PLC*) and *Supervisory Control and Data Acquisition* (*SCADA*) projects using *Control Expert* (formerly *Unity Pro*) and *Plant SCADA* (formerly *Citect SCADA*) software.

It is designed for users with no previous PLC and SCADA programming experience, and experienced programmers who are new to Control Expert and Plant SCADA as a guide to the differences between these software packages and other solutions.

Learning Outcomes

On completion of this course, participants should be able to:

- understand the fundamentals of Control Expert
- communicate with a PLC using Control Expert
- use TCP/IP communication in Control Expert
- use Control Expert for motor control
- create Plant SCADA projects and graphics
- set up communications between Plant SCADA and PLC
- add and configure equipment in Plant SCADA
- apply security in Plant SCADA
- program HMI touch panels

Duration

The course will be delivered over three days. It runs for 6.5 hours per day, with tea and lunch breaks.

Delivery Method

The School provides a high level of support with tuition by discipline experts and exposure to industry standard software. The delivery mode of this short course consists of face-to-face hands-on workshops in an on-campus state-of-the-art industrial automation laboratory.

About the Presenter

The course is delivered by Dr Octavian Bass, a Senior Lecturer at the School of Engineering, Edith Cowan University. Octavian holds a PhD from the Politehnica University of Timisoara (Romania). He has held research positions at the Budapest University of Technology and Economics (Hungary), Hong Kong Polytechnic University, Hull University (UK), and Utsunomiya University (Japan). Prior to joining Edith Cowan University, Octavian was a Lecturer at James Cook University from 2006 to 2009. His fields of interest include smart grid technologies, renewable energy resources, and non-linear dynamics in power electronics.

Course Details

Date: Monday to Wednesday, 29-31 May 2023
Time: 9:30 AM – 4:00 PM
Venue: Building 23, Room 23.223, School of Engineering, ECU Joondalup Campus
Cost: $2,900 plus GST
*This cost includes lunch and afternoon tea.

**Discount available to ECU alumni and group booking from the same company.

Bookings

https://www.ecu.edu.au/short-courses/engineering

Enquiries

Contact seadmin@ecu.edu.au

Appendix 1 – Short Course Program

Day 1
Workshop 1: Hardware and Software Configuration of M580 PLC
This section provides a broad overview on: • M580 racks and their features • M580 processor comms ports, and their features and functions • Discrete I/O, analog I/O and extension modules available for M580 PLCs
Workshop 2: Control Expert Programming Languages Fundamentals
This section introduces the skills required to: • set up, configure and I/O address a multi-rack M580 PLC • create, test and debug a Control Expert project • employ the four main Control Expert programming languages
Workshop 3: User Defined Control Expert Structure
This section helps the participant to: • understand the purposes and principles of Derived Data Types and Derived Function Blocks • correctly create and apply a Derived Data Type • correctly create and apply a Derived Function Block

Day 2
Workshop 1: PLC Networking via Ethernet
This section provides the skills necessary to: • understand the basic principles of industrial communication • understand how these principles apply to the most popular industrial network • implement requests to read and write discrete and analog data over an Ethernet network
Workshops 2 and 3: Plant SCADA Fundamentals
This section covers the steps required to: • create new Plant SCADA projects • utilise the benefits of an equipment hierarchy • create graphics pages and manipulate graphics symbols

Day 3
Workshop 1: PLC and SCADA Integration
This section helps the participant to: • use Plant SCADA to communicate with an M580 PLC • generate and manage alarms and trends • troubleshoot and resolve problems encountered during the integration process

Workshops 2 and 3: Level Process Case Study
This section introduces the participant to the: • familiarisation with a level process control system • use of M580 PLC for the implementation of various control solutions (including on/off, open-loop and PID) on the level process control system • use of Plant SCADA for the design of a SCADA page for the level process control system