SIEMENS

Automation - SIMATIC S7 with STEP 7 v5 S7 Programming 3

General Information

Course Code: SCT-S7TIAP3B Length: 4½ Days

Audience

This course is for advanced SIMATIC S7300/400 users who are involved with developing or maintaining automation systems and their control applications.

Prerequisites

S7 Programming 2

Profile

2.9 CEUs (Continuing Education Credits)

This course builds advanced skills in control system programming in a control systems environment. Workstations will include the S7 PLC, Touch Panel HMI, Drive system and both PROFIBUS and Ethernet networks. Students will be challenged with a number of advanced programming techniques including data management routines, advanced system functions, new program efficiency tools and error handling. Advanced level blocks, functions, tools and libraries are discussed and demonstrated. In addition, students will learn systems integration techniques which build efficiency in control systems management. Students will perform basic configurations and integration of the HMI and Drive systems maximizing system efficiency and diagnostics. The course concludes with a brief review of Siemens optional program editors and engineering tools.

The course format consists of instruction and hands-on exercises. Students will use advanced software tools of STEP7 to complete the troubleshooting, commissioning, advanced programming and system integration labs.

Objectives

Upon completion of this course, the student shall be able to:Efficiently apply Data Blocks.

- Efficiently use the various Data Types.
- Manage program errors.
- Build and manage Recipes.
- Understand the advantages of each networking type.
- Set up a basic Ethernet network.
- Understand the optional program editors and their advantages.

Topics

- 1. Training Units and Addressing
 - a. Workstation review

- b. System Configuration
- c. I/O Addressing
- d. Simulator Systems test
- e. Symbolic Addressing
- 2. Block calls and Multi Instance Model
 - a. Blocks Overview
 - b. Blocks in Structured Programming
 - c. The Multi-Instance Model
 - d. FB 1-4 Parameter Descriptions
 - e. Block Connections
 - f. Parameter passing
- 3. Complex Data Type Applications
 - a. Data Types and Variables
 - b. Complex Data Types
 - c. Using Arrays, Strings, Date_Time
 - d. Using STRUCT
 - e. User Defined Data Types (UDTs)
 - f. Structograms
- 4. Indirect Addressing & Registers
 - a. Addressing Data Blocks
 - b. Using Pointers
 - c. Memory Indirect Addressing
 - d. Loading and Addressing Registers
- 5. Block Calls & Parameters
 - a. Parameter Declarations & Passing
 - b. Pointer and Any Data Types
 - c. Calling Functions
- 6. Error Handling
 - a. Asynchronous Errors
 - b. OB 121, 122
 - c. Masking Synchronous Errors SFC 36-38
 - d. Applying Error Filters
- 7. Recipes

8.

- a. Data Record Management
- b. Recipe and Screen creation
- S7 Communications
- a. Sub Nets
- b. Communication Services
- c. Managing Global Data
- d. Peer-to-Peer Communications
- 9. S7 Ethernet
 - a. Basic CP set up
 - b. SIMATIC Net
 - c. Communication Services
- 10. S7 Engineering Tools Overview
 - a. S7 Graph Overview
 - b. Continuous Function Charts
 - c. Structured Control Language
 - d. Sequential Function Charts