Publication date : 05/02/2024

Course : SCADA, safety for industrial systems

Synthesis course - 2d - 14h00 - Ref. DAY
Price : 2020 CHF E.T.

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Industrial control systems (ICS), also known as SCADA systems, control the critical infrastructures of society (power grids, water treatment, chemical industry, etc.). At the end of this course, you'll have the technical knowledge you need to understand SCADA systems, their threats and vulnerabilities.

Teaching objectives

At the end of the training, the participant will be able to:

- Understand the components of an industrial supervision and control system (SCADA)
- Analyze SCADA architecture risks
- Understanding threats and vulnerabilities
- Identify protective measures

Intended audience

CISOs, CIOs, architects, project managers, system and network administrators.

Prerequisites

Basic knowledge of Ethernet, TCP/IP and industrial process architectures.

Course schedule

PARTICIPANTS

CISOs, CIOs, architects, project managers, system and network administrators.

PREREQUISITES

Basic knowledge of Ethernet, TCP/IP and industrial process architectures.

TRAINER QUALIFICATIONS

The experts leading the training are specialists in the covered subjects. They have been approved by our instructional teams for both their professional knowledge and their teaching ability, for each course they teach. They have at least five to ten years of experience in their field and hold (or have held) decision-making positions in companies.

ASSESSMENT TERMS

The trainer evaluates each participant's academic progress throughout the training using multiple choice, scenarios, hands-on work and more.
Participants also complete a placement test before and after the course to measure the skills they've developed.

1 Introduction to Supervisory Control and Data Acquisition (SCADA) systems

- Panorama of industrial cybersecurity.
- Security standards for industrial information systems.
- ANSSI (Agence Nationale de la Sécurité des Systèmes d'Information).
- History of SCADA systems, definition and terminology (SCADA, control systems, control loop).
- Target sectors, typology, target population in French industry.
- Types of SCADA system architectures.
- Functional principles and fields of application of industrial supervision and control.
- Programmable logic controllers (PLC), remote terminals (RTU).

2 SCADA system components and network architectures

- Hardware components: architecture and functions.
- Software components: architectures and functionalities.
- PLCs, valves, chemical or thermal sensors, command and control systems, HMI (Human Machine Interface).
- Communication flows in SCADA systems.
- Network architectures by functional need.
- Real-time communication protocols, PLC.
- Industrial automation programming languages.
- The design of a control system in response to a specification.

3 Introduction to SCADA system safety

- Security issues in SCADA systems.
- Cybersecurity of industrial systems, classification methods.
- Threats and vulnerabilities, known intrusions, APT attacks (advanced persistent threats).
- Real attack scenarios on SCADA systems: STUXNET, FLAME.
- Attack analysis: building the STUXNET attack tree.
- Authentication/encryption.

4 Risk analysis and security requirements for SCADA systems

- Risk analysis methodology.
- SCADA architecture risk analysis.
- Identifying and defining safety requirements.

Dates and locations

REMOTE CLASS
2026 : 26 Mar., 19 May, 13 Oct., 19 Nov.

TEACHING AIDS AND TECHNICAL RESOURCES

• The main teaching aids and instructional methods used in the training are audiovisual aids, documentation and course material, hands-on application exercises and corrected exercises for practical training courses, case studies and coverage of real cases for training seminars.
• At the end of each course or seminar, ORSYS provides participants with a course evaluation questionnaire that is analysed by our instructional teams.
• A check-in sheet for each half-day of attendance is provided at the end of the training, along with a course completion certificate if the trainee attended the entire session.

TERMS AND DEADLINES

Registration must be completed 24 hours before the start of the training.

ACCESSIBILITY FOR PEOPLE WITH DISABILITIES

Do you need special accessibility accommodations? Contact Mrs. Fosse, Disability Manager, at psh-accueil@orsys.fr to review your request and its feasibility.