Training course on Cybersecurity Best Practices for Smart Infrastructure

Professional Development Training Course Outline

Category	Civil Engineering and Infrastructure Management	**Duration**	5 Days
Base Fee	$1,500 USD	**Delivery Mode**	Online / On-site Hybrid

Course Introduction

The rapid transformation of critical infrastructure?encompassing essential systems such as energy grids, transportation networks, water distribution, and evolving smart cities?through extensive digitalization, the widespread adoption of IoT devices, and the critical convergence of Information Technology (IT) and Operational Technology (OT) systems is undeniable. While this increased interconnectedness offers immense benefits in terms of efficiency, performance, and citizen services, it simultaneously exposes these vital assets to a landscape of sophisticated and escalating cyber threats. These threats range from pervasive data breaches and debilitating ransomware attacks to highly disruptive industrial control system (ICS) compromises and even potential acts of sabotage. Consequently, robust cybersecurity is no longer merely an IT concern; it has become an existential imperative for ensuring the uninterrupted resilience, inherent safety, and continuous operational integrity of our increasingly complex and interconnected smart infrastructure. Training Course on Cybersecurity Best Practices for Smart Infrastructure is meticulously designed to provide participants with the practical application of cutting-edge cybersecurity best practices and comprehensive frameworks specifically tailored for the intricate task of protecting smart infrastructure. The curriculum will encompass a deep understanding of the unique attack surface presented by converged IT/OT environments; a thorough exploration of prevalent cyber threats and vulnerabilities impacting smart grids, intelligent transportation systems, and smart water networks; and mastery of advanced techniques for rigorous risk assessment, swift incident response, and resilient disaster recovery. Furthermore, participants will implement robust security controls, including strategic network segmentation, stringent access management, advanced anomaly detection, and inherently secure system design principles. Through a balanced blend of essential theoretical foundations, extensive hands-on exercises, realistic simulated attack scenarios, and practical policy development, this course will comprehensively prepare attendees to proactively defend, meticulously monitor, and effectively respond to evolving cyber threats within the increasingly smart and interconnected infrastructure environments of today and tomorrow.

Programme Curriculum

Training Course on Cybersecurity Best Practices for Smart Infrastructure

Introduction

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Course Objectives

Upon completion of this course, participants will be able to:

1. Analyze the fundamental concepts of cybersecurity and its critical importance in securing smart infrastructure.
2. Comprehend the unique characteristics and vulnerabilities of IT/OT convergence in critical infrastructure systems.
3. Master techniques for conducting comprehensive cyber risk assessments specific to smart infrastructure environments.
4. Develop expertise in utilizing cybersecurity frameworks and standards (e.g., NIST, IEC 62443) for infrastructure protection.
5. Formulate strategies for implementing robust network segmentation and secure communication protocols in smart infrastructure.
6. Understand the critical role of identity and access management (IAM) for both IT and OT assets.
7. Implement robust approaches to continuous monitoring, anomaly detection, and threat intelligence for infrastructure security.

8. Explore key strategies for developing and testing effective incident response and disaster recovery plans for cyberattacks.
9. Apply methodologies for secure system design, development, and procurement in smart infrastructure projects.
10. Understand the importance of supply chain security, third-party risk management, and regulatory compliance.
11. Develop preliminary skills in utilizing security tools for vulnerability scanning, intrusion detection, and log analysis.
12. Design a conceptual cybersecurity strategy for a specific smart infrastructure asset (e.g., smart grid, intelligent transport system).
13. Examine global best practices and future trends in infrastructure cybersecurity, including AI for threat detection and quantum-safe cryptography.

Target Audience

This course is ideal for professionals involved in securing critical infrastructure, IT, and operational technology:

1. IT Security Professionals: Moving into securing Operational Technology (OT) environments.
2. OT Engineers & Technicians: Responsible for industrial control systems (ICS) and smart devices.
3. Infrastructure Asset Managers: Overseeing critical infrastructure operations and resilience.
4. Civil Engineers: Involved in designing and deploying smart infrastructure.
5. Cybersecurity Analysts & Consultants: Specializing in critical infrastructure protection.
6. Urban Planners & Smart City Developers: Focusing on securing interconnected city systems.
7. Government Officials & Policymakers: Developing regulations and strategies for infrastructure security.
8. Risk Managers: Assessing and mitigating cyber risks in large-scale projects.

Course Duration: 5 Days

Course Modules

- **Module 1: Introduction to Cybersecurity for Smart Infrastructure**
  - Define smart infrastructure and its components (IoT, sensors, control systems).
  - Discuss the increasing digitalization and interconnectedness of critical infrastructure.
  - Understand the unique cybersecurity landscape for IT/OT converged environments.
  - Explore the types of cyber threats to smart infrastructure: ransomware, data breaches, ICS attacks.
  - Identify the potential consequences of cyber incidents on critical infrastructure (safety, economic, reputational).
- **Module 2: Threat Landscape and Vulnerabilities in Smart Infrastructure**
  - Comprehend common attack vectors and methodologies targeting smart infrastructure systems.
  - Learn about vulnerabilities specific to IoT devices, legacy OT systems, and network protocols.
  - Master techniques for identifying and assessing weaknesses in smart grid, intelligent transport, and water networks.
  - Discuss the role of human factors and insider threats in infrastructure cybersecurity.
  - Apply knowledge to analyze recent real-world cyber incidents affecting critical infrastructure.
- **Module 3: Cybersecurity Frameworks and Risk Management**
  - Develop expertise in utilizing leading cybersecurity frameworks and standards (e.g., NIST Cybersecurity Framework, IEC 62443).
  - Learn about comprehensive cyber risk assessment methodologies (identification, analysis, evaluation, treatment).

    - Master techniques for categorizing assets, determining impact levels, and prioritizing risks.
    - Discuss the implementation of risk mitigation strategies and controls.
    - Apply framework principles to develop a basic cyber risk register for a smart infrastructure component.
- **Module 4: Secure Network Architectures and Protocols**
    - Formulate strategies for designing and implementing secure network architectures for IT/OT convergence.
    - Understand the principles of network segmentation, firewalls, and demilitarized zones (DMZs).
    - Explore techniques for securing industrial control system (ICS) networks and SCADA systems.
    - Discuss the use of secure communication protocols (e.g., VPNs, encrypted channels).
    - Apply network security concepts to a smart infrastructure network diagram.
- **Module 5: Identity and Access Management (IAM) and Endpoint Security**
    - Understand the critical role of Identity and Access Management (IAM) for both human and machine identities in smart infrastructure.
    - Implement robust approaches to authentication, authorization, and privilege management for IT and OT devices.
    - Explore techniques for securing endpoints: patching, anti-malware, device hardening for IoT and legacy systems.
    - Discuss the importance of secure configurations and vulnerability management for all assets.
    - Examine best practices for managing third-party access and supply chain security.
- **Module 6: Monitoring, Detection, and Incident Response**
    - Apply methodologies for continuous security monitoring and logging in smart infrastructure environments.
    - Master techniques for anomaly detection, intrusion detection (IDS/IPS), and Security Information and Event Management (SIEM).
    - Understand the process of developing and testing effective incident response plans for cyberattacks.
    - Discuss strategies for forensics, containment, eradication, and recovery post-incident.
    - Explore communication protocols and stakeholder coordination during a cyber crisis.
- **Module 7: Secure-by-Design and Regulatory Compliance**
    - Explore key strategies for integrating cybersecurity considerations into the design and procurement phases of smart infrastructure projects.
    - Learn about secure software development lifecycle (SSDLC) principles for OT applications.
    - Discuss the importance of security testing, penetration testing, and vulnerability assessments.
    - Understand relevant industry regulations, compliance requirements, and data privacy laws (e.g., GDPR, local infrastructure security acts).
    - Examine best practices for developing cybersecurity policies and procedures for smart infrastructure.
- **Module 8: Future Trends and Advanced Cybersecurity Technologies**
    - Examine global best practices and innovative case studies in securing critical smart infrastructure.
    - Develop preliminary skills in assessing emerging technologies: AI and Machine Learning for advanced threat detection.
    - Discuss the role of blockchain for secure data integrity and supply chain transparency.
    - Explore future trends: quantum-safe cryptography, digital twin for security simulation, zero-trust architectures for OT.
    - Design a strategic roadmap for enhancing cybersecurity posture within an infrastructure organization.

Training Methodology

- **Interactive Workshops:** Facilitated discussions, group exercises, and problem-solving activities.
- **Case Studies:** Real-world examples to illustrate successful community-based surveillance practices.
- **Role-Playing and Simulations:** Practice engaging communities in surveillance activities.
- **Expert Presentations:** Insights from experienced public health professionals and community leaders.
- **Group Projects:** Collaborative development of community surveillance plans.
- **Action Planning:** Development of personalized action plans for implementing community-based surveillance.
- **Digital Tools and Resources:** Utilization of online platforms for collaboration and learning.
- **Peer-to-Peer Learning:** Sharing experiences and insights on community engagement.
- **Post-Training Support:** Access to online forums, mentorship, and continued learning resources.

Register as a group from 3 participants for a Discount

Send us an email: info@fineskilltrainingcenter.org or call +254769199797

Certification

Upon successful completion of this training, participants will be issued with a globally recognized certificate.

Tailor-Made Course

We also offer tailor-made courses based on your needs.

Key Notes

- Participants must be conversant in English.
- Upon completion of training, participants will receive an Authorized Training Certificate.
- The course duration is flexible and can be modified to fit any number of days.
- Course fee includes facilitation, training materials, 2 coffee breaks, buffet lunch, and a Certificate upon successful completion.
- One-year post-training support, consultation, and coaching provided after the course.
- Payment should be made at least a week before the training commencement to Fineskill Training Center account, as indicated in the invoice, to enable better preparation.

Upcoming Scheduled Sessions

Start Date	End Date	Location	Price
21 Sep 2026	25 Sep 2026	Online	$1,000
21 Sep 2026	25 Sep 2026	Physical	$1,500
21 Sep 2026	25 Sep 2026	Physical	$0

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21 Sep 2026	25 Sep 2026	Physical	$0
21 Sep 2026	25 Sep 2026	Physical	$0
21 Sep 2026	25 Sep 2026	Physical	$0
21 Sep 2026	25 Sep 2026	Physical	$0
21 Sep 2026	25 Sep 2026	Physical	$0

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