Cybersecurity for Satellite Communications (SATCOM) Training Course

Professional Development Training Course Outline

Category	Defense and Security	**Duration**	10 Days
Base Fee	$3,000 USD	**Delivery Mode**	Online / On-site Hybrid

Course Introduction

Cybersecurity for Satellite Communications (SATCOM) Training Course is designed to equip professionals with advanced knowledge and practical skills to protect satellite networks and associated systems from emerging cyber threats. In an era where satellite communications are integral to defense, maritime, aviation, and global connectivity, vulnerabilities in SATCOM networks can lead to data breaches, service disruptions, and strategic risks. This course covers the latest cybersecurity frameworks, threat detection strategies, encryption techniques, and incident response protocols to enhance resilience and safeguard satellite operations.

Participants will explore practical approaches to securing satellite links, ground stations, user terminals, and space assets while understanding compliance with international standards, regulatory requirements, and industry best practices. The course emphasizes hands-on exercises, case studies, and scenario-based simulations that enable learners to detect, prevent, and respond to cyber incidents, thereby protecting both critical infrastructure and operational continuity. By the end of the program, participants will have actionable strategies for implementing robust SATCOM cybersecurity programs.

Programme Curriculum

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Course Objectives

1. Understand core cybersecurity principles in satellite communications networks.
2. Identify emerging cyber threats targeting SATCOM systems.
3. Apply risk assessment frameworks to satellite infrastructure and operations.
4. Implement encryption, authentication, and access control protocols for SATCOM.
5. Detect and mitigate cyber attacks using advanced monitoring and intrusion detection systems.
6. Secure ground stations, user terminals, and space-based assets.
7. Develop incident response strategies and disaster recovery plans for SATCOM networks.
8. Apply regulatory and compliance standards for SATCOM cybersecurity.
9. Evaluate vulnerabilities in communication protocols, RF links, and satellite payloads.
10. Integrate cybersecurity considerations into satellite mission planning and design.
11. Assess vendor and supply chain risks affecting SATCOM operations.
12. Conduct penetration testing and vulnerability assessments on SATCOM networks.
13. Promote organizational culture of cybersecurity awareness and continuous improvement.

Organizational Benefits

- Enhanced protection of satellite network infrastructure and data integrity
- Improved ability to detect and respond to cyber threats in real time
- Strengthened compliance with international SATCOM cybersecurity standards
- Reduced operational and strategic risks associated with cyber attacks
- Enhanced trust and reliability for stakeholders and end-users
- Better integration of cybersecurity in mission planning and operations
- Increased resilience of ground stations, user terminals, and space assets
- Streamlined incident response and disaster recovery processes
- Improved staff capability and awareness on SATCOM cybersecurity
- Competitive advantage in secure satellite communication solutions

Target Audiences

- Satellite communications engineers and network administrators
- Cybersecurity analysts and risk managers
- Defense and aviation communication specialists
- Space systems operators and mission planners
- Regulatory compliance and audit officers
- IT and network security officers in telecom organizations
- Consultants and trainers in satellite security
- Project managers overseeing SATCOM system deployments

Course Duration: 10 days

Course Modules

Module 1: Overview of SATCOM Networks and Cybersecurity

- Architecture and components of SATCOM systems
- Critical dependencies and vulnerabilities in satellite networks
- Emerging cybersecurity threats and trends in SATCOM
- Security standards and best practices for satellite communications
- Cyber risk assessment frameworks for SATCOM
- Case Study: Cyber attack impact on a commercial satellite operator

Module 2: SATCOM Protocols and Vulnerability Assessment

- Communication protocols in satellite networks (RF, IP, etc.)
- Common vulnerabilities in protocol implementations
- Threat modeling and penetration testing approaches
- Assessing the security posture of ground-to-space links
- Strategies to mitigate protocol-based attacks
- Case Study: Protocol exploitation in maritime SATCOM systems

Module 3: Ground Station Security

- Securing physical infrastructure of ground stations
- Implementing access controls and monitoring systems
- Network segmentation and firewall deployment
- Threat detection and response for ground station networks
- Best practices for patch management and updates
- Case Study: Compromised ground station incident analysis

Module 4: Space Asset Cybersecurity

- Securing satellite payloads and onboard systems
- Vulnerabilities in command and control links
- Encryption and authentication for space assets
- Monitoring for anomalies and intrusion attempts
- Mitigating risks from jamming and spoofing attacks
- Case Study: Satellite command hijacking scenario

Module 5: User Terminal Protection

- Hardening satellite user terminals
- Securing VSATs, modems, and mobile SATCOM devices
- Device authentication and firmware integrity checks
- Preventing endpoint intrusion and malware infection
- Remote monitoring and vulnerability patching
- Case Study: Malware outbreak through SATCOM terminal

Module 6: Encryption and Secure Communications

- End-to-end encryption methods for SATCOM data
- Key management strategies and best practices
- Securing voice, video, and data transmissions

- Implementing VPNs and secure tunnels in satellite links
- Compliance with encryption regulations
- Case Study: Breach prevented using strong encryption

Module 7: Intrusion Detection and Monitoring

- Deploying network monitoring tools for SATCOM
- Detection of anomalies and potential attacks
- Logging and analyzing security events
- Correlation with global threat intelligence
- Automated response to intrusion attempts
- Case Study: Detection of signal spoofing in real time

Module 8: Incident Response and Disaster Recovery

- Preparing SATCOM incident response plans
- Roles and responsibilities during cyber incidents
- Containment, mitigation, and recovery strategies
- Testing response plans through simulations
- Documentation and lessons learned
- Case Study: Satellite network recovery after cyber attack

Module 9: Cybersecurity Governance and Policy

- Developing cybersecurity policies for SATCOM operations
- Compliance with international and regional standards
- Risk management frameworks and auditing
- Staff training and awareness programs
- Vendor and contractor compliance management
- Case Study: Policy implementation for a multi-national SATCOM operator

Module 10: Supply Chain and Vendor Security

- Identifying risks from third-party providers
- Vendor assessment and security audits
- Contractual obligations and liability management
- Monitoring supply chain for cybersecurity threats
- Integrating supply chain security into risk frameworks
- Case Study: Vendor-related compromise in satellite network

Module 11: Cyber Threat Intelligence and Analytics

- Gathering and analyzing SATCOM cyber threat data
- Real-time threat intelligence platforms
- Predictive analytics for potential cyber incidents
- Correlating threats across networks and regions
- Integrating threat intelligence into operational security
- Case Study: Preventive actions from threat intelligence insights

Module 12: Advanced Attack Techniques

- Jamming, spoofing, and signal interception threats

- Malware and ransomware targeting SATCOM networks
- Advanced persistent threats (APT) in satellite systems
- Red teaming exercises for satellite networks
- Detection and mitigation of sophisticated cyber attacks
- Case Study: Jamming attack on a military SATCOM system

Module 13: Cloud and Data Security in SATCOM

- Securing cloud-hosted satellite services
- Data storage, access control, and encryption
- Threats in cloud-integrated SATCOM architectures
- Regulatory compliance for cloud-hosted satellite data
- Continuous monitoring and vulnerability management
- Case Study: Cloud breach prevention in a SATCOM provider

Module 14: Emerging Technologies and Cybersecurity

- AI and machine learning in SATCOM threat detection
- Blockchain for secure satellite communications
- Quantum-resistant encryption in future SATCOM networks
- IoT and connected device security in satellite systems
- Preparing for next-generation satellite cybersecurity threats
- Case Study: AI-enabled threat detection pilot in SATCOM

Module 15: Organizational Culture and Continuous Improvement

- Building a culture of cybersecurity awareness
- Leadership roles in SATCOM security programs
- Continuous improvement frameworks and metrics
- Integrating lessons learned into operations
- Staff training, certification, and professional development
- Case Study: Institutionalizing cybersecurity practices in a global SATCOM operator

Training Methodology

- Instructor-led presentations and concept briefings
- Hands-on exercises and SATCOM network simulations
- Case study discussions and real-world scenario analysis
- Group activities for risk assessment and incident response planning
- Practical tools, templates, and checklists for cybersecurity operations
- Continuous assessment, feedback sessions, and action plan development

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

a. The participant must be conversant with English.

b. Upon completion of training the participant will be issued with an Authorized Training Certificate

c. Course duration is flexible and the contents can be modified to fit any number of days.

d. The course fee includes facilitation training materials, 2 coffee breaks, buffet lunch and A Certificate upon successful completion of Training.

e. One-year post-training support Consultation and Coaching provided after the course.

f. Payment should be done at least a week before commence of the training, to Fineskill Training Center account, as indicated in the invoice so as to enable us prepare better for you.

Upcoming Scheduled Sessions

Start Date	End Date	Location	Price
21 Sep 2026	02 Oct 2026	Online	$2,000
21 Sep 2026	02 Oct 2026	Physical	$3,000
21 Sep 2026	02 Oct 2026	Physical	$0
21 Sep 2026	02 Oct 2026	Physical	$0
21 Sep 2026	02 Oct 2026	Physical	$0
21 Sep 2026	02 Oct 2026	Physical	$0
21 Sep 2026	02 Oct 2026	Physical	$0
21 Sep 2026	02 Oct 2026	Physical	$0

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