



#### **Course Modules**

#### **Security Operations and Administration**

#### 1.Comply with codes of ethics

- •ISC2 Code of Ethics
- Organizational code of ethics

#### 2. Understand security concepts

- Confidentiality
- Integrity
- Availability
- Accountability
- Privacy
- Non-repudiation
- •Least privilege
- Segregation of duties (SoD)

#### 3. Identify and implement security controls

- •Technical controls (e.j., session timeout, password aging)
- Physical controls (e.g., mantraps, cameras, locks)
- Administrative controls (e.g., security policies, standards)
- Assessing compliance
- Periodic audit and review

#### 4. Document and maintain functional security controls

- Deterrent controls
- Preventative controls
- Detective controls
- Corrective controls
- Compensating controls

#### 5. Participate in asset mngmnt lifecycle (hardware, software)

- Process, planning, design and initiation
- Development/Acquisition
- Inventory and licensing
- Implementation/Assessment
- Operation/Maintenance
- Archiving and retention requirements
- Disposal and destruction

#### 6. Participate in change management lifecycle

- Change management (e.g., roles, responsibilities, processes)
- Security impact analysis
  - Configuration management (CM)

# Participate in implementing security awareness and training Collaborate with physical security operations

#### **Access Controls**

#### 7.Implement and maintain authentication methods

- Single/Multi-factor authentication (MFA)
- Single sign-on (SSO) (e.g., Active Directory Federation Services
- Device authentication
- Federated access (e.g.Open Authorization 2 (OAuth2),(SAML))

#### 8. Support internetwork trust architectures

•Trust relationships (e.g., 1-way, 2-way, transitive, zero)

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- Internet, intranet and extranet
- Third-party connections

#### 9. Participate in the identity management lifecycle

- Authorization
- Proofing
- Provisioning/De-provisioning
- Maintenance
- Entitlement
- •Identity and access management (IAM) systems

#### 10. Understand and apply access controls

- Mandatory
- Discretionary
- Role-based (e.g., attribute-, subject-, object-based)
- Rule-based

#### Risk Identification, Monitoring and Analysis

#### 11. Understand the risk management process

- •Risk visibility & reporting (e.g.risk register, sharg threat intelligt)
- Risk mngmt concepts (e.g., impact assessments, threat modelg)
- Risk management frameworks
- Risk tolerance (e.g., appetite)
- •Risk treatment (e.g., accept, transfer, mitigate, avoid)

#### Legal and regulatory concerns (e.g., jurisdiction, limitations)

#### 12. Participate in security assessment & vulnerability mngmt

- Security testing
- •Risk review (e.g., internal, supplier, architecture)
- Vulnerability management lifecycle

#### 13. Operate and monitor security platforms

- Source systems (e.g., apps, security appliances, network devices)
- •Events of interest (e.g.anomalies, intrusions, unauthrized chngs)
- Log management
- Event aggregation and correlation

#### 14. Analyze monitoring results

- Security baselines and anomalies
- Visualizations, metrics, & trends (e.g., notis, dashboards, timlns)
- Event data analysis
- Document and communicate findings (e.g., escalation)

#### **Incident Response and Recovery**

# 15. Support incident lifecycle e.g., National Institute of Standards and Technology (NIST), International Organization for Standardization (ISO)

- Preparation
- Detection, analysis and escalation
- Containment
- Eradication
- Recovery
- Lessons learned/implementation of new countermeasure

#### 16. Understand and support forensic investigations

- Legal (e.g., civil, criminal, administrative) and ethical principles
- Evidence handling (e.g., first responder, triage, chain of custody)
- Reporting of analysis

#### 17. Business continuity plan (BCP) & disastr recvry plan (DRP)

- Emergency response plans and procedures
- Interim or alternate processing strategies
- Restoration planning
- Backup and redundancy implementation
- Testing and drills

#### Cryptography

# 18. Understand cryptography

- Confidentiality
- Integrity and authenticity
- Data sensitivity (e.g., (PII),(IP), protected health informatn (PHI))
- Regulatory & industry best practice (e.g., (PCI-DSS), (ISO))

#### 19. Apply cryptography concepts

- Hashing
- Salting
- Symmetric/Asymmtrc encryptn/Elliptic curve cryptography(ECC)
- Non-repudiation(e.g., digital signatures/certificates, (HMAC))
- •Strength of encryption algorithms and keys (e.g., (AES), etc.)
- Cryptographic attacks, cryptanalysis, and countermeasures

#### 20. Understand and implement secure protocols

- Services and protocols
- Common use cases
- Limitations and vulnerabilities

#### 21. Understand public key infrastructure (PKI)

- •Fundamental key management concepts (e.g., storage, rotation)
- Web of Trust (WOT)

#### **Network and Communications Security**

#### 22. Understand & apply fundamental concepts of networking

- Open Systems Interconnection (OSI) and (TCP/IP) models
- Network topologies
- Network relationships (e.g., peer-to-peer (P2P), client server)
- •Transmission media types (e.g., wired, wireless)
- Software-defined networking (SDN)
- Commonly used ports and protocols

#### Network attacks (e.g., (DDoS), (MITM), (DNS) poisoning)

#### 23. Manage network access controls

- Network access controls, standards and protocols
- •Remote access operation and configuration

#### 24. Manage network security

- Logical and physical placement of network devices
- Segmentation (e.g., physical/logical,data/control plane(VLAN))
- Secure device management

#### 25. Operate and configure network-based security devices

- •Firewalls & proxies (e.g., filtering methods, (WAF), (IDS) & (IPS)
- Network intrusion detection/prevention systems
- Routers and switches
- •Traffic-shaping devices (e.g., wide area network (WAN) )

#### 26. Secure wireless communications

- •Technologies (e.g., cellular network, Wi-Fi, Bluetooth, (NFC))
- Authentication & encryption protocols (e.g.(WEP), (WPA), (EAP))
- Internet of Things (IoT)

#### **Systems and Application Security**

#### 27. Identify and analyze malicious code and activity

- Malware (e.g.,rootkits, spyware, scareware, ransomware, trojans)
- •Malware countermeasures (e.g., scanners, anti-malware)
- Malicious activity (e.g.insider threat, data theft)
- Malicious activity countermeasures (e.g., user awareness, systm)
- sandboxing, isolation, data loss prevention (DLP))

#### 28. Implement and operate endpoint device security

- Host-based intrusion prevention system (HIPS)
- Host-based firewalls
- Application white listing
- Endpoint encryption (e.g., whole disk encryption)
- Trusted Platform Module (TPM)
- Secure browsing
- Endpoint Detection and Response (EDR)

#### 29. Administer Mobile Device Management (MDM)

- Provisbg technques (e.g., (COPE), Bring Your Own Device(BYOD)
- Containerization
- Encryption
- Mobile application management (MAM)

#### 30. Understand and configure cloud security

- Deployment models (e.g., public, private, hybrid, community)
- •Servce models (e.g.,(IaaS), (PaaS) & Software as a Service (SaaS))
- Virtualization (e.g., hypervisor)
- •Legal & regulatory concerns (e.g., privacy, surveillance)
- Data storage, processing, & transmission (e.g., archiving)
- Third-party/outsourcing requirements
- Shared responsibility model

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#### 31. Operate and maintain secure virtual environments

- Hypervisor
- Virtual appliances
- Containers
- Continuity and resilience
- Attacks and countermeasures
- Shared storage

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