PARTE 1 – COMPTIA SECURITY + (45 ORE)

MODULO 1 – LE BASI

- Assessment test
- Introduzione alle Reti informatiche, Pacchetti, Indirizzi IP, Routing
- Indirizzamento, ARP, TCP, UDP, Firewall
- Topologie di rete
- La pila di OSI (Open Systems Interconnection Model)
- TCP/IP Suite
- IP Subnetting
- Le basi del protocollo: il modello TCP/IP
- TCP/IP Ports
- Comprendere i dispositivi di rete
- Il MAC Address
- Elementi di crittografia e metodi per creare password sicure
- Vulnerability Assessment
- Strumenti open source per analizzare le reti (sniffer)
- Open Vas: Vulnerability Scanner analisi di rete
- Wireshark
- Configurazione e uso di analizzatori di rete open source
- Studiare le comunicazioni con Wireshark
- Applicazioni Web-analisi dei Cookie
- Same Origin Policy (Politica della stessa origine)
- Studiare le Applicazioni Web e HTTP con Burp Suite
- Analisi Cloud sicuri e multicloud. Hexadecimal vs. Binary
- Intrusion Prevention e Intrusion Detection Systems
- Network Security
- Sistemi operativi
- Backup e Archiviazione

MODULO 2 MISURARE E STIMARE IL RISCHIO

- Risk Assessment
    - Computing Risk Assessment
    - Agire sul Risk Assessment
    - Rischi associati al cloud computing
    - Rischi associati con la virtualizzazione
- Sviluppare Policies, Standards, e Guidelines
    - Implementare Policie aziendali
    - Risk Management e Best Practices

- Disaster Recovery
- Business continuity

MODULO 3 ANALISI E DIAGNOSTICA DELLE RETI

- Monitoraggio delle reti
- Comprendere l'Hardening e metodologie di gestione dei sistemi informativi aziendali
  - Lavorare con i servizi
  - Patches
  - User Account Control
  - File systems
- Mettere in sicurezza una rete
- Security Posture
  - Monitoraggio continuo della sicurezza
  - Impostare una Remediation Policy
- Evidenziare le falle nella Sicurezza
  - Alarm
  - Alerts
  - Trends
- Differenziare Detection Controls e Prevention Controls

MODULO 4 DISPOSITIVI ED INFRASTRUTTURE

- Analisi sistemi TCP/IP
  - Studio della pila di OSI
  - Lavorare con la TCP/IP Suite
  - IPv4 and IPv6
  - Capire l'incapsulamento
  - Lavorare con protocolli e servizi
- Progettare una rete sicura:
  - DZ e Subnetting
  - Virtual Local Area Networks
  - Remote Access
  - Network Address Translation
  - Telephony
  - Network Access Control
- Dispositivi di rete
  - Firewall
  - Router
  - Switch
  - Load Balancers

- Proxy
- Web Security Gateway
- Concentratori VPNs e VPN
- Intrusion Detection Systems
- Comprendere Intrusion Detection Systems
- IDS vs. IPS 110
- Lavorare con una Network-Based IDS
- Lavorare con una Host-Based IDS
- Lavorare con NIPSs
- Protocol Analyzers
- Spam Filter
- UTM Security Appliance

MODULO 5 ACCESS CONTROL, AUTENTICAZIONE E AUTORIZZAZIONE

- Comprendere le basi dell'Access Control
  - Identificazione vs. Autenticazione
  - Autenticazione (Single Factor) e Autorizzazione
  - Sicurezza e difesa
  - Network Access Control
  - Token
  - Potenziali problemi di autenticazione e accesso
  - Protocolli di autenticazione
  - Policy aziendale
  - Utenti con account ruoli Multipli
- Remote Access Connectivity
  - Utilizzare il protocollo the Point-to-Point
  - Lavorare con i protocolli di Tunneling
  - Lavorare con RADIUS
  - TACACS/TACACS+/XTACACS
  - VLAN Management
  - SAML
- Authentication Services
  - LDAP
  - Kerberos
- Access Control
  - Mandatory Access Control
  - Discretionary Access Control
  - Role-Based Access Control
  - Rule-Based Access Control
- Principali pratiche di Access Control
  - Lista dei Privilegi
  - Separation of Duties
  - Time of Day Restrictions

- User Access Review
- Smart Cards
- Access Control List
- Port Security
- Working with 802.1X
- Flood Guards and Loop Protection
- Preventing Network Bridging
- Log Analysis
- Configurazione sicura del Router

MODULO 6 SICUREZZA DELLE RETI WIRELESS

- Lavorare con i sistemi Wireless
  - IEEE 802.11x Wireless Protocols
  - WEP/WAP/WPA/WPA2
  - Wireless Transport Layer Security
- Dispositivi Wireless
- Wireless Access Points
  - Extensible Authentication Protocol
  - Lightweight Extensible Authentication Protocol
  - Protected Extensible Authentication Protocol
- Reti Wireless: principali vulnerabilità
  - Wireless Attack Analogy

MODULO 7 SICUREZZA NEL CLOUD

- Lavorare con il Cloud Computing
  - Software as a Service (SaaS)
  - Platform as a Service (PaaS)
  - Infrastructure as a Service (IaaS)
  - Private Cloud
  - Public Cloud
  - Community Cloud
  - Hybrid Cloud
- Utilizzare la virtualizzazione
  - Snapshots
  - Patch Compatibility
  - Host Availability/Elasticity
  - Security Control Testing
  - Sandboxing
- Sicurezza nel Cloud
  - Cloud Storage

MODULO 8 HOST, DATA, E APPLICATION SECURITY

- Application Hardening
  - Databases and Technologies
  - Application Configuration Baselining
  - Operating System Patch Management
  - Application Patch Management
- Host Security
  - Permissions
  - Access Control List
  - Antimalware
  - Host Software Baselining
  - Hardening Web Servers
  - Hardening Email Servers
  - Hardening FTP Servers
  - Hardening DNS Servers
  - Hardening DHCP Services
- Application Security
- Best Practices for Security
  - Data Loss Prevention

MODULO 9 CRITTOGRAFIA

- Crittografia: cenni storici
- Crittografia: prime applicazioni ed esempi
- Crittografia moderna
  - Symmetric Algorithms
  - Asymmetric Algorithms
  - Quale crittografia utilizzare?
  - comprendere l'Hashing
  - Algoritmi di Hashing
  - Rainbow Tables e Salt
  - Key Stretching
  - Quantum Cryptography
  - Cryptanalysis Methods
  - Wi-Fi Encryption
- Sistemi di crittografia
  - Confidentiality e Strength
  - Integrità
  - Digital Signatures
  - Authentication
  - Nonrepudiation

    - Key Features
- Crittografia standard e Protocolli
    - Le origini dello standard di crittografia
    - Public-Key Infrastructure X.509
    - Public-Key Cryptography Standards
    - X.509
    - SSL and TLS
    - Certificate Management Protocols
    - Secure Multipurpose Internet Mail Extensions
    - Secure Electronic Transaction
    - Secure Shell
    - HTTP Secure
    - Secure HTTP
    - IP Security
    - Tunneling Protocols
    - Federal Information Processing Standard
- Utilizzo delle Public-Key Infrastructure
    - Certificate Authority
    - Registration Authorities e Local Registration Authorities
    - Implementazione di Certificati
    - Comprendere la Certificate Revocation
    - Implementazione dei giusti Modelli
- crittografia in Pratica
- problemi di crittografia
- Applicazioni di crittografia
    -

MODULO 10 MALWARE, VULNERABILITÀ E MINACCE

- Malware
- Virus
    - Sintomi di infezione da virus
    - come funziona un virus
    - tipi di virus
    - Gestire lo Spam per evitare i Virus
    - Antivirus Software
- Comprendere le diverse tipologie di attacco
    - Identifying Denial-of-Service e Distributed Denial-of-Service
    - Spoofing Attacks
    - Pharming Attacks
    - Phishing, Spear Phishing, e Vishing Attacks
    - Xmas Attack
    - Man-in-the-Middle Attacks
    - Replay Attacks
    - Smurf Attacks

  - Password Attacks
  - Privilege Escalation
  - Malicious Insider Threats
  - Transitive Access
  - Client-Side Attacks
  - Typo Squatting e URL Hijacking
  - Watering Hole Attack
- Identificare le tipologie di Application Attacks
  - Cross-Site Scripting e Forgery
  - SQL Injection
  - LDAP Injection
  - XML Injection
  - Directory Traversal/Command Injection
  - Buffer Overflow
  - Integer Overflow
  - Zero-Day Exploits
  - Cookies e Attachments
  - Locally Shared Objects e Flash Cookies
  - Malicious Add-Ons
  - Session Hijacking
  - Header Manipulation
  - Arbitrary Code e Remote Code Execution
- Tools per identificare le minacce
- Interpretare i risultati del test
  - Tools da conoscere
  - Risk Calculations e Assessment Types

MODULO 11 SOCIAL ENGINEERING E ALTRI NEMICI

- Comprendere il significato di Social Engineering
  - Tipologie di Social Engineering Attacks
  - Motivazioni di un Attacco
  - I principi alla base del Social Engineering
  - Esempi di attacco di tipo Social Engineering
- Comprendere la sicurezza fisica
  - Mantraps
  - Video sorveglianza
  - Fencing
  - Access List
  - Proper Lighting
  - Signs
  - Guards
  - Barricades
  - Biometrics
  - Protected Distribution

  - Alarms
  - Motion Detection
- Environmental Controls
  - HVAC
  - Environmental Monitoring
- Data Policies
  - Distruzione di una Flash Drive
  - Considerazioni
  - Dischi ottici

MODULO 12 SECURITY ADMINISTRATION

- Third-Party Integration
  - Transitioning
  - Ongoing Operations
- Consapevolezza e formazione sulla sicurezza
  - Somministrare una opportuna formazione
  - Tematiche di sicurezza
  - Argomenti di formazione
- Classificare le informazioni
  - Informazione pubblica
  - Informazione privata
- Controlli di accesso all'informazione
  - Concetti di Security
- Rispetto delle normative sulla Privacy e sulla sicurezza note storiche
  - Gramm-Leach-Bliley Act
  - The Computer Fraud and Abuse Act
  - The Family Educational Rights and Privacy Act
  - The Computer Security Act of 1987
  - The Cyberspace Electronic Security Act
  - The Cyber Security Enhancement Act
  - The Patriot Act
- Dispositivi mobili
  - Problematiche legate al BYOD
- Metodi alternativi per limitare i rischi di sicurezza

MODULO 13 DISASTER RECOVERY E INCIDENT RESPONSE

- Problemi connessi alla Business Continuity
  - Tipologie di Storage
  - Lavorare ad un piano di Disaster-Recovery
  - Incident Response Policies
  - Incident Response
  - Succession Planning

- Reinforcing Vendor Support
    - Accordi a livello di servizio
    - Accordi Code Escrow
- Penetration Testing
    - Cosa testare?
    - Vulnerability Scanning

PARTE 2° - ETHICAL HACKING (45 ORE)

MODULO 1: INTRODUZIONE ALL'ETHICAL HACKING

- Information Security Overview
- Cyber Kill Chain Concepts
- Hacking Concepts
- Ethical Hacking Concepts
- Information Security Controls
- Information Security Laws and Standards

MODULO 2: FOOTPRINTING AND RECONNAISSANCE

- Footprinting Concepts
- Footprinting Through Search Engines
- Footprinting Through Web Services
- Footprinting Through Social Networking Sites
- Website Footprinting
- Eamil Footprinting
- Whois Footprinting
- DNS Footprinting
- Network Footprinting
- Footprinting Through Social Engineering
- Footprinting Tools
- Footprinting Countermeasures

MODULO 3: SCANNING NETWORKS

- Network Scanning Concepts
- Scanning Tools
- Host Discovery
- Port and Service Discovery
- OS Discovery (Banner Grabbing/OS Fingerprinting)
- Scanning Beyond IDS and Firewall
- Draw Network Diagrams

MODULO 4: ENUMERATION

- Enumeration Concepts
- NetBIOS Enumeration
- SNMP Enumeration
- LDAP Enumeration
- SMTP and DNS Enumeration
- Other Enumeration Techniques

- Enumeration Countermeasures

MODULO 5: VULNERABILITY ANALYSIS

- Vulnerability Assessment Concepts
- Vulnerability Classification and Assessment Types
- Vulnerability Assessment Solutions and Tools
- Vulnerability Assessment Reports

MODULO 6: SYSTEM HACKING

- System Hacking Concepts
- Gaining Access
- Escalating Privileges
- Maintaining Access
- Clearing Logs

MODULO 7: MALWARE THREATS

- Malware Concepts
- APT Concepts
- Trojan Concepts
- Virus and Worm Concepts
- Fileless Malware Concepts
- Malware Analysis
- Countermeasures
- Anti-Malware Software

MODULO 8: SNIFFING

- Sniffing Concepts
- Sniffing Technique: MAC Attacks
- Sniffing Technique: DHCP Attacks
- Sniffing Technique: ARP Poisoning
- Sniffing Technique: Spoofing Attacks
- Sniffing Technique: DNS Poisoning
- Sniffing Tools
- Countermeasures
- Sniffing Detection Techniques

MODULE 09: SOCIAL ENGINEERING

- Social Engineering Concepts

- Social Engineering Techniques
- Insider Threats
- Impersonation on Social Networking Sites
- Identity Theft
- Countermeasures

MODULE 10: DENIAL-OF-SERVICE

- Dos/DDos Concepts
- Dos/DDos Attack Techniques
- Botnets
- DDos Case Study
- Dos/DDos Attack Tools
- Countermeasures
- Dos/DDos Protection Tools

MODULE 11: SESSION HIJACKING

- Session Hijacking Concepts
- Application Level Session Hijacking
- Network Level Session Hijacking
- Session Hijacking Tools
- Countermeasures

MODULE 12: EVADING IDS, FIREWALLS AND HONEYPOTS

- IDS, IPS, Firewall and Honeypot Concepts
- IDS, IPS, Firewall and Honeypot Solutions
- Evading IDS
- Evading Firewalls
- IDS/Firewall Evading Tools
- Detecting Honeypots
- IDS/Firewall Evasion Countermeasures

MODULE 13: HACKING WEB SERVERS

- Web Server Concepts
- Web Server Attacks
- Web Server Attack Methodology
- Web Server Attack Tools
- Countermeasures
- Patch Management
- Web Server Security Tools

MODULE 14: HACKING WEB APPLICATIONS

- Web Application Concepts
- Web Application Threats
- Web Application Hacking Methodology
- Web API, Webhooks and Web Shell
- Web Application Security

MODULE 15: SQL INJECTION

- SQL Injection Concepts
- Types of SQL Injection
- SQL Injection Methodology
- SQL Injection Tools
- Evasion Techniques
- Countermeasures

MODULE 16: HACKING WIRELESS NETWORKS

- Wireless Concepts
- Wireless Encryption
- Wireless Threats
- Wireless Hacking Methodology
- Wireless Hacking Tools
- Bluetooth Hacking
- Countermeasures
- Wireless Security Tools

MODULE 17: HACKING MOBILE PLATFORMS

- Mobile Platform Attack Vectors
- Hacking Android OS
- Hacking iOS
- Mobile Device Management
- Mobile Security Guidelines and Tools

MODULE 18: IOT AND OT HACKING

- IoT Concepts
- IoT Attacks
- IoT Hacking Methodology
- IoT Hacking Tools
- Countermeasures
- OT Concepts
- OT Attacks
- OT Hacking Methodology
- OT Hacking Tools

- Countermeasures

MODULE 19: CLOUD COMPUTING

- Cloud Computing Concepts
- Container Technology
- Serverless Computing
- Cloud Computing Threats
- Cloud Hacking
- Cloud Security

MODULE 20: CRYPTOGRAPHY

- Cryptography Concepts
- Encryption Algorithms
- Cryptography Tools
- Public Key Infrastructure (PKI)
- Email Encryption
- Disk Encryption
- Cryptanalysis
- Countermeasures