

# Fundamentals of Computer Network Security Specialization

Duration: 3 Days (8 Hours Per Day)

## **Module 1: Introduction to Computer Networks & Security**

- What is a Computer Network?
  - Types of Networks (LAN, WAN, Internet)
  - Why Security is Important
  - Common Threats & Attacks (in simple language)
  - Real-life examples: hacking, phishing, ransomware
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## **Module 2: Basics of Cryptography**

- What is Encryption & Decryption?
  - Symmetric vs Asymmetric Encryption
  - Hashing & Digital Signatures
  - Real-life application: Online Banking, WhatsApp encryption
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## **Module 3: Authentication & Access Control**

- What is Authentication? (Passwords, Biometrics, Tokens)
  - Multi-Factor Authentication (MFA)
  - Access Control: Who can access what?
  - Role-Based Access in organizations
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## **Module 4: Network Security Fundamentals**

- Firewalls (basic explanation)
- VPNs (Virtual Private Networks)
- IDS vs IPS (Intrusion Detection & Prevention Systems)

- Securing Wi-Fi & Cloud Access
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### **Module 5: Malware & Attack Techniques**

- Types of Malware (Viruses, Worms, Trojans, Ransomware, Spyware)
  - Social Engineering & Phishing
  - Denial-of-Service (DoS/DDoS) Attacks
  - Case studies: Famous cyberattacks
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### **Module 6: Secure Communication & Protocols**

- HTTPS vs HTTP
  - SSL/TLS Basics
  - Secure Email & Messaging
  - VPN Protocols (IPSec, PPTP, L2TP explained simply)
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### **Module 7: Security Policies & Best Practices**

- Importance of Policies in Organizations
  - Password Management
  - Data Backup & Recovery
  - Security Awareness Training for Employees
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### **Module 8: Hands-On Practice & Case Studies**

- Simulating a Phishing Attack & Prevention
  - Configuring a Firewall (basic demo)
  - Using Wireshark to see network packets
  - Reviewing Real-world Case Studies (e.g., WannaCry, Equifax breach)
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## **Module 9: Future of Network Security**

- AI & Machine Learning in Cybersecurity
- Cloud Security
- Zero Trust Architecture
- Careers in Cybersecurity