

Empowerment Program in Cybersecurity By IIT Kanpur

MODULES

Module 1: Network Security

- Introduction
 - Introduction to Networking: Fundamental of Network Security, Features of Network Security
- Threat, Vulnerabilities, and attacks
 - Network Security Threats, Network Security Vulnerability and attacks,
- Network Security Management
 - Data Privacy
- Network Management
 - Security Monitoring and Control, Security Best Practices

Module 2: Security Threats and Trends

- Malware and their types
- Botnet/ Trojan / Rootkit
- Cyber Warfare
 - Introductions to APT and Information Warfare
- Social Engineering
 - Introduction to Social Engineering
 - Countermeasure to address Social Engineering
- IoT Security

Module 3: Cryptography

- **Introduction to Cryptography**

- Cryptography Fundamentals, Classical Encryption Techniques

- **Types of Algorithms**

- Cryptographic Encryption Algorithms, Cryptographic Data Integrity Algorithm

- **Key Management**

- Entity Authentication and Key Management
- Key Distribution

- **Application of Cryptography**

- Authentication Services
- Infrastructural requirement for Security

Module 4: Application Security

- **Introduction**

- Application Security Introduction, Application Security Goals
- WebGoat /DVWA Demo

- **Introduction to OWASP**

- OWASP top 10
- Threat actor and more definitions (different attackers that threaten software and systems)
- Défense in depth, Proxy tools, API Security

- **Defenses and Tools**

- **Session Management**

- **Security Scanning and Testing**

Module 5: OS Security

- **OS protection Fundamentals**
- **Understanding User accounts (Linux and Windows)**
- **File and Directory Permissions**
 - Importance of File and Directory Permissions
 - Basic NT File System Permissions (Demo)
 - Understanding Linux Permissions
- **File and Disk Encryption**
 - Windows Encrypted File System (Demo)
 - Tools for encryption (*BitLocker / VeraCrypt etc.)
- **Data Storage and Backups**
 - Importance of Data Storage and Backups
 - Understanding of RAID (redundant array of independent disks)
 - Demo: Exploring Windows Backup, Linux Backup
 - Local vs. Cloud Storage and Backups
- **Host Based Firewall**
 - Introductions
 - Demo: Windows/Linux Firewall
 - 3rd Party Firewall
- **Antivirus**
 - Introduction to Antivirus
 - Demo: Windows Defender Antivirus
- **Application and Execution Control**
 - Fundamental of User Account Control (UAC)
 - Windows UAC
 - Demo: UAC setting in Windows, Windows App and Browser Control
 - Demo: Controlled Folder Access
- **Update and Patching**
 - Relevance of Patching, Demo: Windows and Linux updates
 - Why Software updates is important?
- **OS Hardening**
 - Securing the Boot Process
 - Demo: Checking Secure Boot Status in Windows
 - Demo: Disabling Unnecessary Services and Processes