

Module 3. Network Security

Module Learning Objectives

This module introduces students to cybersecurity techniques and methods in the context of networking. Students will gain knowledge on high level network security architecture and management. They will also have opportunities to acquire understanding skills of effective network administration and defense.

Module Student Learning Outcomes

Upon completion of this module, students will be able to:

- Describe in details of the OSI model.
- Describe in details of the TCP/IP model.
- Enumerate typical network protocols.
- Discuss typical network services.
- Use basic network administration tools.
- Explain in details the working mechanisms of firewall.
- Provide an overview of network security issues.
- Use typical network administration tools.

Module design:

Submodule 1: Networking basics
<ul style="list-style-type: none">• OSI and TCP/IP models
<ul style="list-style-type: none">• Network architectures and topologies <i>PAN, LAN/WAN, DMZ, Enclaves, VLAN, NAT, subnetting, supernetting</i>
<ul style="list-style-type: none">• Common network devices <i>Routers, Switches, Hosts, VPNs, Firewalls</i>
Submodule 2: Network Security Basics
<ul style="list-style-type: none">• Network security issues
<ul style="list-style-type: none">• Network attacks
Submodule 3: Network Defense Basics
<ul style="list-style-type: none">• Firewall basics
<ul style="list-style-type: none">• IDS & IPS basics
Submodule 4: Wireless Security
<ul style="list-style-type: none">• Wireless networking basics
<ul style="list-style-type: none">• Wireless security protocols