CYBERSECURITY FUNDAMENTALS

Syllabus – Module 1

**Prerequisites**

Basic computer skills. ECDL Core level.

**Learning objectives**

* To acquire basic knowledge of computer networks, network infrastructure.
* To learn about LAN, MAN, WAN network architecture.
* Getting familiar with the 7 layer ISO/OSI model.
* Getting familiar with the TCP/IP network value model. Knowledge of the basics of TCP and UDP protocols.
* Knowledge of the basics of VoIP communications.
* Understanding of network performance issues. To be familiar with network traffic mitigation methods.
* Use of computers, digital tools and computer networks, including knowledge of the principles of digital devices and computer networks and performing basic computer network tests.

**Learning outcomes for the course**

A student who has passed the subject knows/knows/can do:

**KNOWLEDGE**

* Knows characteristics of network/server services
* Has broad, structured knowledge of services and applications used in computer networks. He knows network operating systems
* Has knowledge of configuration of network devices
* Has knowledge of the threats present in computer networks. Understands the importance and role of selected network protocols with assignment to specific reference model layers
* Has knowledge of the design of computer networks and their components
* Describes and analyses IP address classes
* Is able to list the ISO/OSI layers
* Recognises local computer network topologies
* Understands TCP/UDP port addresses
* Knows the terms related to: administration and management of computer networks
* Is familiar with network services
* Knows the principles of operation of network devices

**SKILLS**

* Configures internet telephony devices
* Describes and analyses IP address classes
* Connects a local computer network to the Internet
* Is able to analyse traffic in computer networks. Is able to configure network addressing and selected security elements.
* Is able to configure basic network devices. Knows and can use a simulation tool in the analysis and design of computer networks.
* Is able to configure network service servers
* Is able to configure a workstation to work in a network
* Is able to test the performance of a network
* Is able to design a local computer network
* Is able to build a simple local area network using real network devices. Be able to prepare structured cabling independently.
* Is able to remotely manage workstations in a network
* Is able to design the IP address structure in a network
* Recognises and applies standards for structured cabling
* Recognises local area network protocols and wide area network access protocols
* Recognises network devices (description, symbol, appearance)
* Performs measurements and tests of the logical network

**SOCIAL COMPETENCES**

* Selects computer structural network elements, network devices and software
* Is aware of the impact of computer networks on society
* Describes the configuration of network interfaces
* Is able to prioritise activities
* Is able to work and cooperate in a group, in the scope covering configuration of addressing and selected network services.
* Is able to work in a team, to solve tasks together
* Understands the principles of computer network protocols

