Module card

I. GENERAL INFORMATION								
WITELON COLLEGIUM STATE UNIVERSITY **DEPARTMENT Faculty of Technical and Economic Sciences**								
Field of study:		Computer sciences						
Form of study:		Erasmus						
Module title:		**MI.4 Computer Networks I**						
Module type:		Compulsory field of study						
Language of lecture:		English						
Year of study:	2	**Forms of teaching including number of teaching hours:**						
Semester (winter/summer):	winter	Lectures	Classes	Laboratory	Project	Workshop	Seminar	Other
Total number of ECTS credits:	5	15	-	15	-	-	-	-
Form of completion:		Pass with grade						
Prerequisites:		-						

II. LEARNING OBJECTIVES
Learning objectives:
Objective 1: Acquire knowledge of network applications, the importance of networks in the modern world, computer network technologies, and network protocols. **Objective 2:** Acquire practical skills in building and configuring computer networks, designing IP addressing, and analyzing network traffic. **Objective 3:** Familiarize students with network devices and transmission media.

IV. PROGRAMME CONTENT		
Content of the programme (topics of classes, presented with a breakdown into individual forms of classes with the indication of the number of hours needed for their realization)		
**		
Code	Course topics in theory	Number of hours
W1	Introduction to Computer Networks. Network types, history, and impact on the modern world.	2
W2	ISO/OSI and TCP/IP Models. Layered architecture, encapsulation, and data flow.	2
W3	Ethernet Technologies. MAC addressing, frame structure, and media access control.	2
W4	Network Media and Devices. Copper cabling, fiber optics, switches, and routers.	2
W5	IP Protocol and Addressing. IPv4 addressing, subnetting basics, and introduction to IPv6.	3
W6	Introduction to Wireless Networks. Wi-Fi standards, frequencies, and basic operation.	2
W7	Network Security Basics. Threats, vulnerabilities, and basic defense mechanisms.	2
**		
Code	Course topics in practice	Number of hours
L1	Network Tools and Safety. Introduction to lab equipment, safety procedures, and network simulation software.	2
L2	Basic Network Configuration. Connecting devices, cabling, and basic device settings.	2
L3	Application Layer Services. Configuration of HTTP, DNS, and Email services in a simulated environment.	2
L4	Protocol Analysis. Analyzing Transport and Network layer headers using network sniffers (e.g., Wireshark).	3
L5	Ethernet Switching. Switch configuration, ARP protocol analysis, and MAC table inspection.	2
L6	IP Addressing and Routing Basics. Designing IP schemes and configuring basic static routing.	2
L7	Final Project/Assessment. Building and configuring a small network (LAN) and verifying connectivity.	2

VIII. RECOMMENDED LITERATURE

Basic sources:

1.James F. Kurose, Keith W. Ross, *Computer Networking: A Top-Down Approach*, Pearson, 8th Edition, 2025.
2.Cisco Networking Academy, *Introduction to Networks Companion Guide (CCNAv7)*, Cisco Press, 2020.

Additional sources:

1.Andrew S. Tanenbaum, Nick Feamster, David J. Wetherall, *Computer Networks*, Pearson, 6th Edition, 2021.
2.RFC Standards available at IETF website. https://datatracker.ietf.org/stream/iab/