

## Module card

I. GENERAL INFORMATION								
<b>WITELON COLLEGIUM STATE UNIVERSITY</b> <b>DEPARTMENT Faculty of Technical and Economic Sciences</b>								
<b>Field of study:</b>		Computer sciences						
<b>Form of study:</b>		Erasmus						
<b>Module title:</b>		<b>MI.5 Computer Networks II</b>						
<b>Module type:</b>		Compulsory field of study						
<b>Language of lecture:</b>		English						
<b>Year of study:</b>	2	<b>Forms of teaching including number of teaching hours:</b>						
<b>Semester (winter/summer):</b>	summer	Lectures	Classes	Laboratory	Project	Workshop	Seminar	Other
<b>Total number of ECTS credits:</b>	5	15	-	15	-	-	-	-
<b>Form of completion:</b>		Pass with grade						
<b>Prerequisites:</b>		-						
II. LEARNING OBJECTIVES								
<b>Learning objectives:</b>								
<b>Objective 1:</b> Provide knowledge on the construction and operation of selected computer network protocols (WAN, Routing). <b>Objective 2:</b> Familiarize students with network design issues and methods for determining routing paths (static and dynamic).								
IV. PROGRAMME CONTENT								
<b>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)</b>								
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Code	Course topics in theory							Number of hours
W1	Switched Networks. Structure of modern LANs, VLAN concepts, and trunking.							2
W2	Wide Area Networks (WAN). Architecture, node structure, and packet processing in WANs.							2
W3	Routing Concepts. Classification of routing methods, routing tables, and decision-making processes.							2
W4	Static Routing. Principles, configuration, and troubleshooting of static routes.							2
W5	Dynamic Routing Protocols. Distance vector vs. link-state protocols. Introduction to OSPF.							3
W6	ACL and Security. Access Control Lists (ACLs) for traffic filtering and network security.							2
W7	Network Services. DHCP operation, Network Address Translation (NAT) for IPv4.							2
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Code	Course topics in practice							Number of hours
L1	VLAN Configuration. Creating VLANs, assigning ports, and configuring trunk links.							2
L2	Inter-VLAN Routing. Configuring Router-on-a-Stick and Layer 3 switching.							2
L3	Static Routing Implementation. Configuring static and default routes in a multi-router topology.							2
L4	Dynamic Routing (OSPF). Single-area OSPF configuration and verification.							3
L5	Access Control Lists. Implementing Standard and Extended ACLs to secure the network.							2
L6	DHCP and NAT. Configuring a router as a DHCP server and implementing NAT/PAT for internet access.							2
L7	Network Troubleshooting. Diagnosing and resolving connectivity issues in switched and routed networks.							2
VIII. RECOMMENDED LITERATURE								

**Basic sources:**

1. Cisco Networking Academy, *Switching, Routing, and Wireless Essentials Companion Guide (CCNAv7)*, Cisco Press, 2020.
2. Wendell Odom, *CCNA 200-301 Official Cert Guide Library*, Cisco Press, 2024.

**Additional sources:**

1. Andrew S. Tanenbaum, *Computer Networks*, Pearson, 6th Edition, 2021.
2. Online documentation and simulation tools (e.g., Packet Tracer activities).