



## COURSE UNIT DESCRIPTION

Course unit title	Course unit code
Computer Networks	ITKT

Lecturer(s)	Department where the course unit is delivered
Coordinator: Eduardas Kutka	Department of Computer Science II Institute of Computer Science Faculty of Mathematics and Informatics Vilnius University

Cycle	Type of the course unit
First	Compulsory

Mode of delivery	Semester or period when the course unit is delivered	Language of instruction
Face-to-face	5th semester	Lithuanian and English

Prerequisites

Number of ECTS credits allocated	Student's workload	Contact hours	Individual work
15	400	128	272

Purpose of the course unit: programme competences to be developed		
<p><b>Generic competences to be developed</b></p> <ul style="list-style-type: none"> <li>Ability to apply knowledge in practice (BK1)</li> <li>Ability to resolve problems (BK4)</li> <li>Ability to use information and communication technologies (BK5)</li> </ul> <p><b>Subject-specific competences to be developed</b></p> <ul style="list-style-type: none"> <li>Ability to do program and IT service testing and debugging (DK4)</li> <li>Ability to evaluate the need of the organization for hardware based on working principles of different computer architectures and various devices (DK7)</li> <li>Ability to ensure information security using management and security mechanisms of operating systems and software (DK8)</li> </ul>		
Learning outcomes of the course unit	Teaching and learning methods	Assessment methods
Ability to use terminology of existing theoretical models, recommended designs, systems management principles and computer networks (CN) tools of CN in various application areas or daily activities	Lectures, literature reading, analysis of examples in lectures and practical sessions, practical tasks, consulting	Practical exercises, self-tests and self-assignments, chapter exams, Final exam.
Ability to distinguish modern computer network hardware and software components and their operating principles		
Ability to distinguish positive and negative aspects of product support, installation, compatibility with other equipment, know components of the hardware		
Ability to manage computer network and evaluate organization's needs for new techniques		
Ability to test and debug computer network equipment, write requirements specification; to solve user problems: connectivity, IP addressing, usage degradation, etc.		
Ability to implement infrastructural information security		

measures: ACL's, monitoring and reacting, updates, etc.

Course content: breakdown of the topics	Individual work: time and assignments							Assignments
	L e c t u r e s	T u t o r i a l s	S e m i n a r s	L a b o r a t o r y w o r k ( L W )	C o n s u l t a t i o n s  d u r i n g  L W	C o n t a c t h o u r s	I n d i v i d u a l w o r k	
Introduction, Networking Today	2			2	4	4	4	Reading literature, self-tests and self-assignments, Chapter tests, Skills exams, Interim Final exams Final exam
Basic Switch and End Device Configuration, Protocol Models	4			4		8	15	
Physical Layer, Number Systems, Data Link Layer	2			2		4	8	
Ethernet Switching, Network Layer	2			2		4	8	
ARP, Basic Router Configuration	2			2		4	8	
IPv4 and IPv6 Addressing, ICMP	4			4		8	15	
Transport Layer, Application Layer	2			2		4	8	
Network Security Fundamentals, Build a Small Network	4			4		8	15	
Basic Device Configuration, Switching Concept	4			4	4	8	15	
VLANs, Inter-VLAN Routing	3			3		6	12	
STP, Etherchannel	3			3		6	12	
DHCPv4, SLAAC and DHCPv6, FHRP Concepts	3			3		6	12	
LAN Security Concepts, Switch Security Configuration	2			2		4	10	
WLAN Concepts, WLAN Configuration	3			3		6	12	
Routing Concepts, IP Static Routing	2			2		4	8	
Troubleshoot Static and Default Routes	2			2	4	4	8	
Single and Multi Area OSPF	4			4		8	15	
Network Security Concepts, ACLs Concepts	2			2		4	10	
ACLS for IPv4 Configuration, NAT for IPv4	4			4		8	15	
WAN Concepts, VPN and IPsec Concepts	2			2		4	8	
QoS Concepts, Network Management	2			2		4	8	
Network Design, Network Troubleshooting	2			2		4	10	
Network Virtualization, Network Automation	2			2	4	4	8	
EIGRP, BGP	2			2		4	8	
Preparation for Final exam and taking Final exam							8	
<b>Total</b>	<b>64</b>			<b>64</b>	<b>12</b>	<b>128</b>	<b>272</b>	

Assessment strategy	Weight %	Deadline	Assessment criteria
Chapter exams	10%	during the semester, two weeks after topic is	Tests in virtual learning environment. Closed type questions, complete or partial correctness of responses.

		presented	
<b>Skills exams</b>	40%	during the semester	Compliance with the requirements, the ability to argue decisions, answering questions, make minor changes
<b>Interim Final exam, Final exam</b>	50%	during the semester and session	Tests in virtual learning environment. Closed type questions, complete or partial correctness of responses

<b>Author</b>	<b>Publis hing year</b>	<b>Title</b>	<b>Issue No or volume</b>	<b>Publishing house or Internet site</b>
<b>Required reading</b>				
Cisco	2019	CCNAv7 material		<a href="http://netacad.com">http://netacad.com</a>
Wendell Odom	2019	CCNA 200-301 Official Cert Guide Library		Cisco Press
Brad Edgeworth, Kevin Wallace, David Hucaby, Jason Gooley, Ramiro Garza Rios	2019	CCNP and CCIE Enterprise Core ENCOR 350-401 Official Cert Guide		Cisco Press
<b>Optional reading</b>				
Shaun Hummel	2020	CCNA 200-301 Lab Guide		
Todd Lammle	2020	Cisco CCNA Certification: Exam 200-301		Sybex
Andrew S. Tanenbaum, David J. Wetherall.	2021	Computer networks	6th ed.	Pearson
Wendell Odom	2010	CCNP ROUTE 642-902 Official Certification Guide		Cisco Press
Wendell Odom	2010	CCNP SWITCH 642-813 Official Certification Guide		Cisco Press
Wendell Odom	2010	CCNP TSHOOT 642-832 Official Certification Guide		Cisco Press