



COURSE UNIT DESCRIPTION

Course unit title	Course unit code
Computer Networks	ITKT

Lecturer	Department where the course unit is delivered
Coordinator: lector Eduardas Kutka	Department of Computer Science II 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
10	253	128	125

Purpose of the course unit: programme competences to be developed		
<p>Generic competences to be developed</p> <ul style="list-style-type: none"> • Ability to apply knowledge in practice (<i>BK1</i>) • Ability to use information and communication technologies (<i>BK5</i>) <p>Subject-specific competences to be developed</p> <ul style="list-style-type: none"> • Ability to do program and IT service testing and debugging (<i>DK4</i>) • Ability to evaluate the need of the organization for hardware based on working principles of different computer architectures and various devices (<i>DK7</i>) • Ability to ensure information security using management and security mechanisms of operating systems and software (<i>DK8</i>) 		
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	Literature reading and analysis of examples	Practical exercises, self-tests and self-assignments, partial exams (tests), 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	Analysis of examples in lectures and practical sessions, practical tasks, consulting	
Ability to manage computer network and evaluate organization's needs for new techniques	Analysis of examples, practical tasks	
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
	Lectures	Tutorials	Seminars	Laboratory work (LW)	Consultations during LW	Contact hours	Individual work	
Introduction, Communicating over the Network	3			2	3	5	3	Reading literature, self-tests and self-assignments practical exercise I and II partial exam I
Application and OSI transport Layers	3			3		6	5	
OSI Network Layer, Addressing the Network	4			4		8	7	
Data Link and OSI Physical Layers	3			3		6	6	
Ethernet, Planning and Cabling Networks	4			4		8	7	
Configuring and testing small Networks	2			3		5	4	
Preparation for partial exam I							2	
Introduction to Routing and Packet Forwarding, Static Routing	3			3	3	6	5	Reading literature, self-tests and self-assignments practical exercise III and IV partial exam II
Introduction to Dynamic Routing Protocols, Distance Vector Routing Protocols	3			3		6	5	
RIP version 1, VLSM and CIDR	3			3		6	6	
RIPv2, The Routing Table: A Closer Look	3			3		6	6	
EIGRP	2			2		4	4	
Link-State Routing Protocols, OSPF	4			4		8	8	
Preparation for partial exam II							2	
LAN Design, Basic Switch Concepts and Configuration	3			3	3	6	5	Reading literature, self-tests and self-assignments practical exercise V partial exam III
VLANs, VTP, STP, Inter-VLAN Routing	6			6		12	10	
Basic Wireless Concepts and Configuration	2			2		4	3	
Preparation for partial exam III							2	
Introduction to WANs	3			3	3	6	5	Reading literature, self-tests and self-assignments practical exercise IV Final exam
PPP, Frame Relay	3			3		6	6	
Network Security , ACLs	4			4		8	8	
Teleworker Services	2			2		4	4	
IP Addressing Services	2			2		4	4	
Network Troubleshooting	2			2		4	3	
Preparation for Final exam and taking Final exam							5	
Total	64			64		128	125	

Assessment strategy	Weight %	Deadline	Assessment criteria
Self-tests Self-assignments	20%	during the semester, two weeks after theme is presented	Tests in virtual learning environment. Closed type questions, complete or partial correctness of responses.
Practical exercises (6 exercises)	30%	during the semester	Compliance with the requirements, the ability to argue decisions, answering questions, make minor changes
Final exam, Partial exams (tests)	50%	during the semester and session	Tests in virtual learning environment. Closed type questions, complete or partial correctness of responses

Author	Publis hing year	Title	Issue No or volume	Publishing house or Internet site
Required reading				
Cisco	2009	CCNA Exploration material: <ul style="list-style-type: none"> • Network Fundamentals, • Routing Protocols and Concepts, • LAN Switching and Wireless, • Accessing the WAN 		http://netacad.com https://k007.mif.vu.lt/eduardas/CCNA/
Wendell Odom	2007	CCNA Official Exam Certification Library (CCNA Exam 640-802)	3rd ed.	Cisco Press
Optional reading				
N. Olifer, V. Olifer	2007	Computer Networks: Principles, Technologies and Protocols for Network Design,		Wiley Publishing, Inc.
Duglas E. Comer.	2009	Computer networks and internet	5th ed.	Pearson Prentice Hall
Andrew S. Tanenbaum, David J. Wetherall.	2011	Computer networks	5th ed.	Pearson, 2011