VIDZEMES AUGSTSKOLA

FACULTY OF ENGINEERING
STUDY COURSE DESCRIPTION

Course Title:	**DATA TRANSMISSION NETWORKS III**				
Course code (VAIS):	**InfT2002**				
Study programme:	**Information Technologies**				
Level of Study programme:	☒ 1st level professional higher education				
	☒ Professional Bachelor				
	☐ Professional Master				
	☐ PhD level				
Type of Study programme:	☒ Compulsory course (Part A)				
	☐ Professional specialization courses (Part B, compulsory)				
	☐ Professional specialization optional courses (Part B, optional)				
	☐ Elective courses (Part C)				
Course Workload:	**Credits**	**ECTS**	**Academic hours**	**Contact hours**	**Independent work hours**
	2	3	80	32	48
Course Author/ Tutor:	**Arnis Cirulis**				
	Assoc. Prof., Dr.sc.ing.				
	arnis@va.lv				
	Consultation: according to the schedule for each semester				
Course Form:	Full time				
Study year, semester:	2nd year, 1st semester				
Language:	Latvian, English				
Prerequisites for the Course:	-				
Course Summary:	The aim of this course is to give practical and theoretical knowledge in nowadays computer networks, to introduce the fundamentals of local and global networks, technologies, concepts, use cases, protocols and standards. During practical workshops students get practical skills in designing and configuring networks.				
Assessment:	Examination				
Requirements for Credits:	1. Passed each lecture's practical activity 2. Passed online tests for each chapter 3. Passed workshops and uploaded protocols 4. Final examination consists of oral questions and practical activity. If all requirements are not met on time, student is not allowed to pass exam. For delayed exam requirements, max score is decreased.				
Abiding by the Academic Ethics	Students must abide by the academic and research ethics, Vidzeme University of Applied Sciences Ethics Regulations, incl.: – study papers must be independently developed; – the study work should reference all statements, ideas and data used that have been authored by someone else; – appropriate data acquisition methods should be used in the acquisition of data, the research ethics must be respected, empirical data must be collected independently and cannot be distorted or falsified; – the examination must be carried out by the student independently, without the use of supporting materials and/or consultations with other students, unless the lecturer states otherwise. In the event of non-compliance with the academic and research ethics, punishment is imposed in accordance with the ViA Ethics Regulations and the study course must be re-taken, unless the punishment is extramarital.				
Learning Outcomes; the	**Learning Outcomes**			**The evaluation methods and criteria**	

evaluation methods and criteria	**Knowledge**	
	Knowledge on nowadays network services and data transmission approaches.	Development of network simulation and passed online test.
	Knowledge on data transmission devices, monitoring and control.	Development of network simulation and passed online test.
	Knowledge on routing protocols and use in wide area networks.	Development of network simulation and passed online test.
	Knowledge on switched communication in local are networks.	Development of network simulation and passed online test.
	Skills	
	Skills to configure routing protocols and configure static routes.	Filled and uploaded workshop protocol.
	Skills to configure virtual local area networks.	Filled and uploaded workshop protocol.
	Skills to plan and configure address translation among private and public networks. Configure packet access lists for traffic filtering.	Filled and uploaded workshop protocol.
	Skills to use services and protocols for network monitoring.	Filled and uploaded workshop protocol.
	Competency	
	Planning and correct use of network monitoring tools and protocols to administer and solve ICT infrastructure problems in average size enterprises.	Individual exam with oral questions and practical assessment.
	Nowadays network solution design and implementation average size enterprises.	Individual exam with oral questions and practical assessment.
	Design politics for data filtering and provision of firewall functionality.	Individual exam with oral questions and practical assessment.
Course Compulsory literature:	1. Cisco Networking Academy, CCNA Routing and Switching course Introduction to Networks and Routing & Switching Essentials, Interactive online tutorial, version 6, 2016.	
Course additional literature:	1. MikroTik Certified Network Associate (MTCNA) certification study material, 2015. 2. Andrew S. Tanenbaum, David J. Wetherall. Computer Networks (5th Edition). 960 pages. 2010.	
Course confirmation date:	22.05.2018	
Date of course description update:		

Study Course Plan:

Date	Theme	Academic hours		Study Form
		Contact hours	Independent work hours	
	Routing Concepts. Router Initial Configuration. Routing Decisions. Router Operation.	4	6	Theoretical lecture. Practical activity. Online test. Skills challenging workshop.

	Static Routing. Implement Static Routes. Configure Static and Default Routes. Troubleshoot Static and Default Routes.	4	6	Theoretical lecture. Practical activity. Online test. Skills challenging workshop.
	Dynamic Routing. Dynamic Routing. RIPv2. The Routing Table.	4	6	Theoretical lecture. Practical activity. Online test. Skills challenging workshop.
	Switched Networks. LAN Design. The Switched Environment. Basic Switch Configuration. Switch Security.	4	6	Theoretical lecture. Practical activity. Online test. Skills challenging workshop.
	VLANs. VLAN Segmentation. VLAN Implementations. Inter-VLAN Routing Using Routers.	4	6	Theoretical lecture. Practical activity. Online test. Skills challenging workshop.
	Access Control Lists. ACL Operation. Standard IPv4 ACLs. Troubleshoot ACLs. DHCP. DHCPv4. DHCPv6.	4	6	Theoretical lecture. Practical activity. Online test. Skills challenging workshop.
	NAT for IPv4. NAT Operation. Configure NAT. Troubleshoot NAT. Device Discovery, Management, and Maintenance.	4	6	Theoretical lecture. Practical activity. Online test. Skills challenging workshop.
	Final examination	4	6	Final examination with oral questions and practical activity.
	Hours total:	***32***	***48***	