RTU Course "Computer Networks"

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General data

Code	TRL244
Course title	Computer Networks
Course status in the programme	Compulsory/Courses of Limited Choice
Responsible instructor	Ernests Pētersons
Volume of the course: parts and credits points	1 part, 2.0 Credit Points, 3.0 ECTS credits
Language of instruction	LV, EN
Annotation	The modern world is unimaginable without computer networks. The study course provides basic knowledge about computer networks architecture and design. The study course consists of both theoretical material on computer networks topologies, protocols and standards, and also practical tasks related to installation, configuration and testing of computer networks – the skills demanded from modern telecommunications engineers. The study course describes the complete OSI model of computer networks and each layer, thus providing a full understanding of the design and operation of computer networks.
Goals and objectives of the course in terms of competences and skills	The main goal of the study course is to provide knowledge on the design and processes of computer networks, as well as develop practical skills enabling students to work with computer networks hardware and set up computer networks. The main tasks of the study course: to provide basic knowledge on computer networks, models and protocols; to teach computer network topology design techniques; to develop practical skills in setting up, configuring and testing computer networks.
Structure and tasks of independent studies	The independent work will be organized in form of a technical literature study. The important role in independent work will be for the development of practical skills, where students will individually design and install a computer network at home or work, will configure it and conduct tests.
Recommended literature	Obligātā/Obligatory: 1. A.Tannenbaum, D. Wetherall. Computer Networks, 5-th edition, Pearson, 2011. 2. W.Stallings. Data and Computer Communications. 10-th edition, Pearson, 2014. Papildu/Additional: 3. J.Kurose, K.Rose. Computer Networking: A Top-Down Approach, 7-th edition, Pearson, 2017. 4. D.Comer. Internetworking with TCP/IP Volume One, 6-th edition, Pearson, 2013.
Course prerequisites	Mathematics. Signal theory. Data communication fundamentals.

Course contents

Content	Full- and part-time intramural studies		Part time extramural studies	
	Contact Hours	Indep. work	Contact Hours	Indep. work
Network design requirements. Protocol hierarchies.	8	0	0	0
Network physical structure.	8	6	0	0
Cables, switches and typical network structures.	8	4	0	0
IP networking, addressing and subnetworking.	10	6	0	0
FDDI interface, Fast Ethernet and Gigabit networks.	10	6	0	0
Routing and congestion control.	8	6	0	0
Total:	52	28	0	0

Learning outcomes and assessment

Learning outcomes	Assessment methods
Is able to summarize principles of computer network design, protocols and topologies.	Seminar presentations and tests. Exam.
Is able to design and install the local network.	Report and practically designed network.
Is able to configure a designed network.	Report and practically designed network.
Is able to test designed network.	Report and practically designed network.
Is able to use software for capturing and recovering computer network packets.	Report and practically designed network.
Is able to install a wireless local network.	Report and practically designed network.

Evaluation criteria of study results

Criterion	%
Seminars	15
Tests	15
Laboratory/practical works	30

Exam	40
Total:	100

Study subject structure

Part	CP	Hours per Week			Tests		
		Lectures	Practical	Lab.	Test	Exam	Work
1.	2.0	1.0	0.0	1.0		*	