

## RTU Course "Computer Technologies in Telecommunications"

13104 null

**General data**

Code	RAE202
Course title	Computer Technologies in Telecommunications
Course status in the programme	Compulsory/Courses of Limited Choice
Responsible instructor	Jurģis Poriņš
Academic staff	Toms Salgals
Volume of the course: parts and credits points	1 part, 3.0 Credit Points, 4.5 ECTS credits
Language of instruction	LV, EN
Annotation	Computer technologies are the main part of modern high-speed telecommunication systems. Modern telecommunications systems are increasingly dependent on computers for data transmission, reception, and processing. Thus, it has become important for various specialists in the telecommunications industry to receive training and education in the basics of various computer technologies. In the study course we integrate the in-depth study of computer systems with the latest technologies in both modelling and practical operation. Students gain knowledge and improve skills by studying computer models and real high-speed data communication systems. Students learn data preparation, transmission, retrieval, and data processing techniques including secure data transmission policies in telecommunications systems.
Goals and objectives of the course in terms of competences and skills	The study course aims to provide knowledge about computer technologies and their application in telecommunications. The tasks of the study course: - to acquaint with the terminology related to the study course; - to provide knowledge about international standard organizations; - to provide knowledge about the types of telecommunication systems management and operating principles; - to provide knowledge about the principle of data transmission used in telecommunication systems by performing in-depth analysis; - to acquaint with different types of technologies used in telecommunication systems; - to provide knowledge for work in MatLab (Mathematical Computing software), as a result, study course participants are able to create models of the artificial transmission system, as well as to perform data transmission analysis.
Structure and tasks of independent studies	The study course participants independently analyse the lecture materials and study course literature, preparing for practical work and examination. Study course participants complete individual course work in MatLab software developing a telecommunication data transmission system model.
Recommended literature	Obligātā/Obligatory: 1. DTT materiāli portālā ORTUS. 2. Subhas C. Mukhopadhyay, "Internet of Things: Challenges and Opportunities", January 25, 2014. 3. Mehmet R. Yuce, Jamil Y. Khan, "Internet of Things (IoT): Systems and Applications", September 17, 2019. Papildu/Additional: 1. Zinātniskās grāmatas un monogrāfijas (opens access datubāze)/Scientific books (opens access database) <a href="https://www.intechopen.com">https://www.intechopen.com</a> Citi informācijas resursi/ Other information resources: 1. Zinātniskā literatūra (autorizēta pieeja IEEE datubāzei caur ORTUS sistēmu) / Scientific literature (authorized access to IEEE database via ORTUS system) <a href="https://ieeexplore.ieee.org">https://ieeexplore.ieee.org</a> 2. Programmatūra un apraksti / Software and its descriptions. • <a href="https://www.mathworks.com/academia.html?s_tid=gn_acad#learn-basics">https://www.mathworks.com/academia.html?s_tid=gn_acad#learn-basics</a> • <a href="https://www.anydesk.com">https://www.anydesk.com</a>
Course prerequisites	Basics of programming. Background knowledge of MatLab software basics.

**Course contents**

Content	Full- and part-time intramural studies		Part time extramural studies	
	Contact Hours	Indep. work	Contact Hours	Indep. work
International Standardization Organizations.	5	0	0	0
Types of telecommunication system management and operating principles.	20	20	0	0
Telecommunication system management elements, data transmission principle.	20	20	0	0
Computer elements. Periphery.	5	0	0	0
MatLab language. Software.	10	20	0	0
<b>Total:</b>	<b>60</b>	<b>60</b>	<b>0</b>	<b>0</b>

**Learning outcomes and assessment**

Learning outcomes	Assessment methods
Is able to use subject-related terminology.	Practical classes, exam,
Is able to demonstrate their knowledge about international standardization organizations (ISO).	Practical classes.
Is able to understand the telecommunications management systems types.	Test, exam.
Is able to understand of microprocessor applications.	Test, exam.
Is able to understand the language of MatLab software.	Practical classes with software.
Is able to understand the principle of data transmission used in telecommunication systems.	Practical classes, course work.

***Evaluation criteria of study results***

Criterion	%
Practical classes	30
Tests	30
Course work	30
Exam	10
Total:	100

***Study subject structure***

Part	CP	Hours per Week			Tests		
		Lectures	Practical	Lab.	Test	Exam	Work
1.	3.0	2.0	1.0	0.0		*	