



RTU Course "Mobile Telecommunications Systems"

13104 null

General data

Code	RAE602
Course title	Mobile Telecommunications Systems
Course status in the programme	Compulsory/Courses of Limited Choice
Responsible instructor	Vjačeslavs Bobrovs
Volume of the course: parts and credits points	1 part, 5.0 Credit Points, 7.5 ECTS credits
Language of instruction	LV, EN
Annotation	This course covers advanced mobile network architecture based on hybrid network technologies – voice, data, Voice over the Internet Protocol, and wireless networking. Particular emphasis will be placed on network analysis including network component testing, end-to-end testing, component isolation, network repair and design review.
Goals and objectives of the course in terms of competences and skills	1. This course constitutes an important background element for researchers planning to develop further competence in edge networking topics. 2. The course aims at fostering students' initiative, promoting their understanding of innovations and developing students' skills of self-criticism in the communications area, as well as developing their ability to carry out fundamental scientific research on an individual basis. 3. Students are enabled to promote their knowledge of multiservice networks; this course provides the students with appropriate theoretical and practical skills in the area. 4. Students are enabled to develop their understanding of mobile network technologies as the basis of c
Structure and tasks of independent studies	The teaching methodology will consist of three distinct parts. 1. Interactive lecture. This methodology aims to foster active learning by the students by inviting their involvement in the teaching activities where they can discuss specific issues related to the topics presented by the teacher. 2. Individual Research. Based on such research, the students will prepare presentations. 3. Discussion (seminars). Based on the individual presentation, the teacher and the students will discuss the corresponding research topics and ask questions to the classmates. Paper evaluations that demand critical reasoning will be a part of the grade.
Recommended literature	1. Steele & Hanzo. Mobile Radio Communications. 2nd ed. J.Wiley & Sons, 2005. 1090 p. 2. B.H.Walke. Mobile Radio Networks, Networking and Protocols. J.Wiley & Sons, 2007. 1176 p. 3. M. Bossert. Channel Coding for Telecommunications. J. Wiley & Sons, 2006. 4. Jonathan P., Castro . THE UMTS RADIO ACCESS. Orange Communications SA, World Trade Centre, Lausanne, Switzerland, 2001. 314 p. 5. Marvin K. Simon. Digital Communications over Fading Channels. 2nd ed. J. Wiley & Sons, 2005. 543 p.
Course prerequisites	Good knowledge of networking concepts and protocols

Course contents

Content	Full- and part-time intramural studies		Part time extramural studies	
	Contact Hours	Indep. work	Contact Hours	Indep. work
1.Introduction to mobile communications systems	4	0	0	0
2.Radio channels	8	0	0	0
3.Voice coding	8	0	0	0
4.Channel coding	8	0	0	0
5.Modulations	6	0	0	0
6.Radio spectra management	4	0	0	0
7.Wireless networks	6	0	0	0
8.Mobility management	8	0	0	0
9.Handover management	6	0	0	0
10.Handover between networks	6	0	0	0
11.Number portability problem	8	0	0	0
12.Wireless technologies	8	0	0	0
Total:	80	0	0	0

Learning outcomes and assessment

Learning outcomes	Assessment methods
Students should be able to identify and discuss the concepts underlying networks and their main characteristics, and functionality;	Oral exam, assessment of the research project
Students should be able to explain and exemplify current QoS architectures and mechanisms, and the QoS support challenges in future networks;	Oral exam, assessment of the research project

Students should be able to understand theoretical and practical concepts behind the design of multi-constrained applications and services;	Oral exam, assessment of the research project
Students should be able to discuss relevant management issues and devise adequate network management solutions;	Oral exam, assessment of the research project
Students should be able to identify and assess possible research opportunities and difficulties within the framework of the course;	Oral exam, assessment of the research project
Students should be able to engage in doctoral-level research in this field.	Oral exam, assessment of the research project

Study subject structure

Part	CP	Hours per Week			Tests		
		Lectures	Practical	Lab.	Test	Exam	Work
1.	5.0	5.0	0.0	0.0		*	