



RTU Course "Mobile, Grid, and Ambient Networking "

12216 Datoru tīklu un sistēmu tehnoloģijas katedra

General data

Code	DST702
Course title	Mobile, Grid, and Ambient Networking
Course status in the programme	Compulsory/Courses of Limited Choice
Course level	Post-graduate Studies
Course type	Academic
Field of study	Computer Science
Responsible instructor	Valērijs Zagurskis
Volume of the course: parts and credits points	1 part, 2.0 Credit Points, 3.0 ECTS credits
Language of instruction	LV, EN, RU
Possibility of distance learning	Not planned
Abstract	The goal of the course is to give understanding about mobile, grid, and ambient networking (MGAN) for different business implementations (controlled processes). Various technologies and implementations of internet and intranet applications are discussed. Special attention is devoted to advanced innovative technologies and implementations (such as autonomous control, cognitive platforms, heterogeneous and cluster multilevel and mobile networks) and research and modelling techniques for architecture and infrastructure development. Basic topics on design methods and service oriented architecture are included in the course content. It includes also mobile, cognitive, and ambient network control and management techniques for business applications, which concern most popular methods and standards in this area. Students are introduced to mobile, ambient and cognitive network implementations.
Goals and objectives of the course in terms of competences and skills	To prepare specialists, who can implement, develop, and analyze mobile, grid, and ambient network technologies for real control and management processes.
Structure and tasks of independent studies	Individual assignments are given for each course topic. Requirements for preparing for seminars and lectures: before the seminars students have to prepare reports and data records; before the lectures it is recommended to recall the material of previous lecture to promote discussions in the class.
Recommended literature	Stefan Poslad, Ubiquitous Computing: Smart Devices, Environments and Interactions, Wiley, 2009. ACM Academic Initiative materiāli http://portal.acm.org/dl.cfm , IEEE Academic Initiative materiāls , http://www.computer.org/portal/web/csdl , DTSTK sagatavotie un izstrādātie mācību līdzekļi, V. Zagurskis, Bezvadu vides piekļuves vadības protokoli, 2005. g., 22. lpp., RTU, DITF, DADI, DTSTK, (elektr . vers.), V. Zagurskis, Pārklājums bezvadu speciālajos sensoru tīklos, 2006. g., 21. lpp., RTU, DITF, DADI, DTSTK, (elektr . vers.), V. Zagurskis, Bezvadu tehnoloģiju pielietošana sensoru tīklos, 2006. g., 99. lpp., RTU, DITF, DADI, DTSTK, (elektr . vers.), Visi faili atrodas RTU ORTUS E-Studijas : Datoru tīklu un sistēmas arhitektūra - DST 450; Datoru tīkli un sistēmas - DST477 V. Zagurskis: https://moodle.rtu.lv/moodle/files/index.php
Course prerequisites	Basic knowledge in Networking

Course outline

Theme	Hours
Introduction to MGAN	2
Cross-software architecture	2
Global access architecture	2
INTRANET: technologies, services, control and management	2
MGAN terminal and network architecture	2
Information infrastructure and multimedia communications	4
Main MGAN business applications	2
Mobile 3G,4G communication networks	2
MGAN technology models	2
Network technology modeling techniques	2
Wireless sensor networks an their elements	2
Cognitive platforms for service oriented architectures (SOA)	2
Multilevel MGAN and its business implementations	4
Standardization at the heterogeneous networks	2

Learning outcomes and assessment

Learning outcomes	Assessment methods
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Ability to discuss the basic principles of MGAN, their main advantages and limitations, acquired knowledge of infrastructure elements and technology life cycles.	Successfully passed examination, which contains theoretical and situational analysis with tasks of improving controlled processes by means of MGAN technology implementation.
Ability to discuss MGAN utilization (non utilization) necessity corresponding to particular industry (business) processes.	During situation analysis found solution for process improving, by means of use of MGAN technology components.
Ability to choose and integrate known models, methods, and techniques of MGAN into industrial and business processes.	Independently performed assignement.
Ability to monitor MGAN technology performance in controlled industrial processes.	Independently performed assignement.

Study subject structure

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