COURSE UNIT DESCRIPTION

Course unit title	Course unit code
Programming in cloud computing	**IPDA7114**

Lecturer(s)	Department where the course unit is delivered
Coordinator: Rimantas Kybartas	Department of Computer Science II Faculty of Mathematics and Informatics Vilnius University

Cycle	Type of the course unit
Second	Compulsory

Mode of delivery	Semester or period when the course unit is delivered	Language of instruction
Face-to-face	3th semester	Lithuanian, English

Prerequisites

Number of ECTS credits allocated	Student's workload	Contact hours	Individual work
5	130	48	82

Purpose of the course unit: programme competences to be developed

Generic competences to be developed

- ability to communicate professionally (MB3),
- ability to identify and resolve problems (MB5).

Subject-specific competences to be developed

- ability to design, build and specify IT services/systems having chosen the suitable infrastructure (MD2),
- ability to apply technologies in practice and ability to evaluate technologies, their evolution, and trends (MD3),
- ability to evaluate architectures of information systems (technologies and applied methods) (MD4).

Learning outcomes of the course unit	Teaching and learning methods	Assessment methods
Ability to understand and identify main principles, concepts, used technologies, risks and other cloud computing technological and management aspects.	Reading literature, lecturing, sample analysis	Questions during semi-semester estimation, exam, defense of practical exercises.
Ability to use cloud computing technologies.	Development of solution or exercises	Defense of developed solution or exercises.
Ability to analyze (distinguish and define) data, processes and services of on premise IT system architecture to be transferred to cloud computing infrastructure	Sample analysis, lecturing, practical exercises	Questions during exam, defense of exercises.

Course content: breakdown of the topics	Individual work: time and assignments

	Lectures	Tutorials	Seminars	Laboratory work	Internship/work placement	**Contact hours**	**Individual work**	**Assignments**
1. Cloud computing concept.	2			1			3	Theoretical and practical exercises
2. Architecture and infrastructure models. Web program design.	2			1			3	
3. Types of cloud computing.	2			1			3	
4. Types of services.	2			1			3	
5. Domains of cloud computing usage. Review of existing cloud computing solutions.	2			1			3	Programming task
6. Privacy. Data storage and management.	2			1			3	
7. Data and network security. Technological solutions.	2			1			3	
8. Management and monitoring of cloud computing .	2			1			3	
9. Risk and privacy.	2			1			3	
10. Virtualization. Samples of software, standards.	2			1			3	
11. Testing.	2			1			3	Programming task
12. Grind and cloud computing.	2			1			3	
13. SOA in context of cloud computing.	2			1			3	Theoretical and practical exercises
14. Buisiness principles. Legal and financial aspects.	2			1			3	
15. Guide to tranferre on premise solutions to cloud computing – allocation of data, services and processes.	4			2			6	
Total	32			16			48	

Assessment strategy	**Weight %**	**Deadline**	**Assessment criteria**
Practical exercises	40	During semester	Students may choose one of two possibilities: 1. Solution development – 100%. Formulation, development and defense of cloud computing technologies based solution, ability to answer questions related to it, make minor changes. 2. Exercises during semester – each exercise is estimated proportionally to devoted time for its completion. Correct solution of theoretical/practical exercise, ability to answer related questions and make minor changes.
Semi-semester estimation	20	In the middle of semester	Questions and analytical tasks requiring knowledge obtained during semester presented in written. Assessment criteria: • clearness of answer in written; • quality of answer content; • reasonability of solution; • correctness of answer/solution.
Exam	40	During session	

Author	**Publishing year**	**Title**	**Issue No or volume**	**Publishing house or Internet site**

Required reading				
Agnė Brilingaitė, Rimantas Kybartas	2011	Programavimas debesų kompiuterijos (Cloud Computing) aplinkoje		http://www.ebooks.ktu.lt/eb/245/programavimas_debesu_kompiuterijos_cloud_computing_aplinkoje/
Optional reading				
George Reese	2009	Cloud Application Architectures		O'Reilly Media, Inc.
David S. Linthicum	2009	Cloud Computing and SOA Convergence in Your Enterprise: A Step-by-Step Guide		Addison-Wesley Professional
Borko Furht	2010	Handbook of Cloud Computing		Springer