

Course title: Cloud Programming
Course code: 64046
ECTS credits: 6
Requirements: None.
Basic information
Level of studies: Master applied studies
Year of study: 2
Trimester: 5
Goal: Training students to install, monitor, and manage the cloud as a specific physical and logical network structure. Based on previously acquired knowledge in the field of programming as well as new knowledge in the field of cloud operation, the primary goal of the course is the implementation of existing APIs and web services, as well as the creation of students' own applications for working in the cloud.
Outcome: Students are trained to understand the way the cloud works, modify it according to their own needs, and be able to create and implement stand-alone applications and services designed to work in the cloud. Considering the popularity and widespread implementation of certain programming languages, student should understand apps written in C# and PHP.
Contents of the course
Theoretical instruction
1. Cloud system architecture
2. NIST model
3. Cloud cube model
4. Cloud types
5. Cloud system infrastructure
6. Cloud system features
7. Communication protocols
8. Types of applications
9. Types of services
10. Virtualization
11. Types of virtual machines
12. Load Balancing
13. Hypervisors
14. Google Cloud Services
15. Amazon Cloud Services

16. Microsoft Cloud Services
17. Cloud system administration
18. Cloud file storage
19. Cloud system security
Practical instruction (Problem solving sessions/Lab work/Practical training)
1. Ubuntu Cloud system, installation, setup
2. Administering Cloud elements
3. PHP application in the Cloud
4. PHP application for file manipulation in the Cloud system
5. Zend Cloud API
6. Communication with Amazon S3 Cloud system
7. Image processing Amazon S3 Cloud
8. WorkerManager
9. Authentication via Cloud system-OpenID
10. Google API
11. C# application in the cloud system
12. Microsoft Azure
Textbooks and References
1. B. Sosinsky, Cloud Computing Bible, Wiley Publishing Inc., 2011.
2. S. A. Ahson, M. Ilyas, Cloud Computing and Software Services:Theory and Techniques,CRC Press, 2011.
3. I. Jansch,V. Chin, PHP development in the Cloud, Php Architect, 2011.
Number of active classes (weekly)
Lectures: 3
Practical classes: 2
Other types of classes: 1
Grading (maximum number of points: 100)
Pre-exam obligations: Points
Activities during lectures:
Activities on practical exercises: 30
Seminary work:
Colloquium: 20
Final exam: Points
Written exam: 50

Oral exam:
Lecturer
Milorad Paskaš, PhD
Associate
Marko Spasojević, Milena Vesić