

DESCRIPTION OF STUDY MODULE*

Study programme Applied Informatics and Programming

Study module VIRTUALIZATION AND CLOUD COMPUTING **Credits in total** 5

Learning outcomes
<ul style="list-style-type: none"> – Understands standards and protocols used in Cloud Computing and Virtualization. – Is able to select and adopt appropriate algorithms developing Cloud Computing software products. – Lists main application domains of Cloud Computing products. – Is able to explain concept of Cloud Computing and virtualization. – Lists advantages and disadvantages, limitations of Cloud Computing and virtualization. – Using acquired knowledge students developing not complex but standard cloud computing IaaS, PaaS, SaaS products. – Install and administrates VMware vCenter virtualization management platform. – Installs Citrix Xen High Availability virtualized data center services.
Aims of study module
The purpose is to teach the students how to install, administer and maintain the technologies of virtualization and to create programming products, which are based on the IaaS, PaaS and SaaS paradigms of cloud computing.
Annotation of a study module
This class gives the students the basics of virtualization and cloud computing technologies. The main platforms of virtualization such as VMware vCenter, Citrix Xen, Microsoft Hyper-V are discussed and students practically find out how to install and administer these platforms. By using the cloud computing paradigms such as IaaS, PaaS and SaaS, students acquire knowledge and practical skills of creating programming products. The students are acquainted with the software architecture SOA, which is oriented towards services. During the class the students nurture their practical skills by carrying-out practical work and creating their own project based on cloud computing. Problematic cases when already existent programs are transferred onto the cloud, cases of utilization and best examples are discussed.
Topics of the subject
<ol style="list-style-type: none"> 1. Conception of cloud computing 2. Basics of cloud computing, virtualization and data storage networks 3. Hardware and software solutions of virtualization 4. Types of services of cloud computing – SaaS, IaaS, PaaS 5. Software as a service SaaS 6. Platform as a service PaaS 7. Infrastructure as a service IaaS 8. Service oriented architecture SOA 9. Analysis of business requirements and problems 10. Desktop virtualization infrastructure technologies VDI 11. Safety and privacy aspects of cloud computing services
Procedure for assessment of knowledge and competences
Ten grade and gathered evaluation system is applied: practical works (folder method) – 10%, control works – each 10%, project (virtualization system installation and configuration) – 20%, exam – 50% of final grade which is calculated by weighed average method. Final grade is evaluated only of all tasks and control works is cleared and evaluated positive. $G = K1*0.1+K2*0.1+P*0.1+S*0.2+E*0.5$
Main literature
<ol style="list-style-type: none"> 1. A. Brilingaitė, R. Kybartas (2011) <i>Programavimas debesų kompiuterijos (cloud computing) aplinkoje</i>. TEV, 226 p. <i>Prieiga per https://www.ebooks.ktu.lt/info/245/programavimas-debesu-kompiuterijos-cloud-computing-aplinkoje/</i> 2. T. Erl, et al. (2015) <i>Cloud Computing Design Patterns</i>. Prentice Hall, 592 p. 3. M. J. Kavis (2014) <i>Architecting the Cloud: Design Decisions for Cloud Computing Service Models (SaaS, PaaS, and IaaS)</i>. Wiley, 224 p.

* Short form