Óbuda University John von Neumann Faculty of Informatics			Institute for Cyber-Physical Systems	
Name and code: Cloud computing services II (NIEFS2CBNE) **Credits*: 2*** *Computer Science and Engineering BSc* *2022/23 year II. semester*				
Subject lecturers: Márk Emődi				
Prerequisites (with code):				
Weekly hours:	Lecture: 0	Seminar.: 0	Lab. hours: 2	Consultation: 0
Way of assessment:	mid-term mark			

Course description:

Goal: The main aim of the subject is to get practical skills on cloud computing systems. Besides the public cloud computing services (e.g. Amazon Web Services), there is a special focus on setting up of platform services (e.g. Microsoft Azure) and their access through various interfaces. The students get familiar with the step-by-step deployment and operation of private Infrastructure-as-a-Service clouds particularly based on open-source solutions (e.g. OpenNebula and OpenStack). For demonstration purposes Big Data and IoT (Internet of Things) applications will be presented during the practices.

Course description: Build, operate, and deploy OpenNebula private cloud solution. Build and use of S3 data storage. Cloud orchestration and reference architectures. Deploying and using Docker container technology and Docker Swarm cluster. Creating a distributed NoSQL database on Docker basis.

Lecture schedule

Education week	*Topic*
1.	Introduction
2.	OpenNebula installation
3.	Holiday
4.	OpenNebula administration
5.	Docker basics
6.	Docker basics #2
7.	Holiday
8.	Docker Swarm basics
9.	Distributed NoSQL database
10.	Cloud orchestration and reference architectures
11.	MinIO – S3 object storage
12.	Midterm test
13.	Midterm project presentation
14.	Replacement of midterm test or the presentation

Midterm requirements

The midterm test has to be passed, and the project work has to be documented and presented.

Midterm tests

Education week	Topic
12	Midterm test
13	Presentation of project work
14	Replacement of midterm test or project work presentation

Final grade calculation methods

Written, practical midterm test.

In both cases, the completed project work will modify the final result with -1/0/+1 grade.

Achieved result	Grade
89%-100%	excellent (5)
76%-88<%	good (4)
63%-75<%	average (3)
51%-62<%	satisfactory (2)
0%-50<%	failed (1)

Type of replacement

In the 14th week for the written midterm test or project presentation.

Type of exam

Signature retake exam

Exam grade calculation method

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References

Mandatory:

The published student material in the Moodle page of the subject

Recommended:

Barrie Sosinsky, Cloud Computing Bible, Wiley, ISBN: 9780470903568
Adrian Mouat, Using Docker, O'Reilly Media, ISBN: 9781491915912
Eben Hewitt, Jeff Carpenter, Cassandra: The Definitive Guide, O'Reilly Media, ISBN: 9781491933664