

<b>Obuda University</b> John von Neumann Faculty of Informatics		<i>Institute of Biomimetics and Applied Artificial Intelligence</i>		
<b>Name and code: Cloud services and security in theory</b> <i>NBWCS1HBNE</i>		<b>Credits: 3</b>		
<i>Computer Science Engineering BSc</i>		<i>2022/23 year II. semester</i>		
Responsible person of subject: György Kálmán, Ph.D.				
Subject lecturers: György Kálmán, Ph.D.				
Prerequisites (with code):		Comprehensive examination (NIXSS1EBNE)		
Weekly hours:	Lecture: 2	Seminar.: 0	Lab. hours: 0	Consultation: 0
Way of assessment (exam or midterm grade):	4 homeworks			
<b>Course description:</b>				
<p><i>Goal:</i> The objective of the course is to get the students acquainted with cloud technologies. The course focuses on security and services supporting a secure cloud environment such as monitoring, compliance, and Infrastructure as Code (IaC). The students will be able to assume an associate architect role where they will be able to evaluate existing designs and help the lead architect.</p> <p>The first section of the course gives a broad introduction into cloud services in general and as the semester progresses the topics are narrowed towards security.</p> <p>In addition to lectures the course also offers labs, where the students can use the environment of their choice (either Microsoft Azure or AWS).</p> <p>The demonstrations aim to give a basic, but usable knowledge, so that the students will be able to further develop their skills or to assume an entry-level cloud engineer job.</p> <p>In the cloud provider of their choice, the course covers a large part of the curriculum required for the AZ-900, Azure Fundamentals or AWS Cloud Practitioner certifications.</p> <p><i>Course description:</i> Supported with the theoretical introduction, the course presents the two selected cloud providers and gives a broad overview of the services available. The lectures in the latter part of the course focus on security-related topics through real-world examples and supported by labs. The demos cover topics from creation of a virtual machine to compliance policies in AWS.</p>				

<b>Lecture schedule</b>	
<i>Education week</i>	<i>Topic</i>
1.	Lecture: Cloud services basics Demo: get known with the administrative interface of the cloud providers.
2.	Lecture: User and resource management. Demo: creation of a virtual machine, following events
3.	Lecture: Compute services Demo: virtual machines, containers, serverless solutions. Comparison of compute using IaaS and PaaS
4.	Lecture: Networking Demo: network zoning, public internet access, gateways, firewall solutions
5.	Lecture: Storage
6.	Lecture: Authentication and authorization
7.	Lecture: Security services
8.	Lecture: Compliance features
9.	Lecture: Pricing

10.	Lecture: Least privilege
11.	Lecture: Role-based access control
12.	Lecture: Monitoring
13.	Lecture: Infrastructure as Code
14.	Lecture: Summary

**Midterm requirements**

4 homeworks, if the student passes AZ-900 or AWS Cloud Practitioner exam, grade 5 is granted.

**Assessments schedule**

<i>Education week</i>	<i>Topic</i>

**Final grade calculation methods**

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

25-25-25-25% of the homework results.

**Type of exam**

Grading based on the 4 homeworks.

**Type of replacement**

One homework might be left out, but then max. 75% can be reached in the grading (3), the students are granted the possibility to hand in missing homeworks in the exam period.

**References**

Obligatory: lecture handouts

Recommended:

AWS Certified Cloud Practitioner Study Guide: CLF-C01 Exam 1st Edition

ISBN-10 1119490707

ISBN-13 978-1119490708

<https://www.amazon.com/Certified-Cloud-Practitioner-Study-Guide/dp/1119490707/>

Microsoft Certified Azure Fundamentals Study Guide: Exam AZ-900

<https://www.amazon.com/Microsoft-Certified-Azure-Fundamentals-Study/dp/1119770920/>

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