Institute of Cyber-p	2024/25/2								
Name of the subject:		Code of the	Credita	Weekly hours:					
		subject:	Credits.		lec	sem	lab		
Cloud based IoT and Big		NKXCB1EMNF	4	full-time	2	0	2		
Data platforms									
Responsible person f	or the subje	ect: Róbert Lovas Ph.D. habil.		Classification: associate professor					
Subject lecturer(s): Róbert Lovas Ph.D. habil., Márk Emődi									
Prerequisites:									
Way of the assessment:		Midterm grade							
Course description									
Goal:	The course will introduce students to the main BigData and IoT (Internet of Things)								
	platforms. The course presents distributed/parallel architectures, operational								
	mechanisms, technologies used and cloud services for different IT platforms with the						vith the		
	main objective of serving Big Data and IoT application areas.								
Course description:	The first part of the course will discuss the evolution and characteristics of Big Data								
	solutions, including Hadoop, SPARK, Hana and noSQL databases, and some related								
	Platform-as-a-Service (PaaS) services.								
	The course will also cover the theoretical and practical background of management and orchestration solutions (Ambari / CloudBreak / Occopus / Terraform / Kubernetes) in								
	the cloud Big Data application domains. In addition to learning about IoT and related								
	frameworks, the course will also introduce students to the various applications of data								
	collection, including in the medical and agricultural fields. Expanding the theoretical								
	background, students will be exposed to Lambda, Kappa and other architectural								
	approaches, as well as practical solutions from Azure, AWS, Cloudera.								

Lecture schedule								
Education week	Торіс							
1.	The basics of Big Data and Hadoop							
2.	Database scaling and noSQL basics							
3.	Document and graph databases							
4.	Column-oriented and in-memory databases							
5.	Hadoop orchestration on cloud computing							
6.	Hadoop orchestration on cloud computing II							
7.	Cloud-based IoT in healthcare							
8.	IoT and Big Data processing on Azure							
9.	AWS IoT							
10.	HOLIDAY - EASTER MONDAY Guest Lecturer							
11.	Cloud-based IoT back-end							
12.	Midterm exam							
13.	Midterm assignment presentation							
14.	Midterm exam retake, midterm assignment presentation							
Mid-term requirements								
Conditions for obtain	ing a Successful completion of the midterm and documentation and presentation of							
mid-term grade/signa	the midterm assignment.							
Assessment schedule								
Education week	Торіс							
12.	Midterm exam							
13.	Midterm assignment							

14.	Midterm exam/assignment retake							
Method used to calculate the <i>mid-term grade</i> (to be filled out only for subjects with mid-term grades)								
The completed project work will modify the final result with -1/0/+1 grade.								
	_	Achieved result	excellent (5)					
-		76%-88<%	$rac{1}{rac}{1}{rac}}}}}}}}}}}}}}}}}}}}}}}}}}}}}}}}}}}$	$\operatorname{rent}(5)$				
-		63%-75<%	satisfactory (3)	-				
-		51%-62<%	pass (2)					
-		0%-50<%	fail (1)					
Type of the replacement								
Type of the replace	ment of In week 14 it is possible to retake the midterm exam or present the mid-term							
written test/mid-ter	m assignment.							
grade/signature								
Type of the exam (to be filled out only for subjects with exams)								
Calculation of the exam mark (to be filled only for subjects with exams)								
Final grade calcula	ation met	hods:						
References								
Obligatory:	Materials published on the Moodle site of the subject.							
Recommended:	Guy Harrison: Next Generation Databases - NoSQL, NewSQL, and Big Data, Apress,							
	2015 ISBN 978-1-4842-1330-8							
	Zoiner Tejada: Mastering Azure Analytics, O'Reilly, 2017							
	ISBN 978-1491956656							
Other references:								