

Cyber-physical Systems Institute			Semester 7. of the curriculum 2025-26-1			
Name of the subject:	Code of the subject:	Credits:	Weekly hours:			
				lec	sem	lab
Advanced Computer Architectures II	NIXKA2EBNE	2	full-time	2	0	0
Responsible person for the subject: Prof. Dr. Dezső SIMA			Classification: professor emeritus			
Subject lecturer(s): Zsolt BRINGYE						
Prerequisites:	NIXKA1EBNE	Advanced Computer Architectures I				
Way of the assessment:	exam					
Course description						
Goal:	The lecture aims at the familiarization of students with key notions, cause-and-effect relationships and unfolding trends concerning processors. Case examples help to understand the curriculum.					
Course description:	Overview of the evolution of Intel’s Core 2-based client-, HEDT-, server- and mobile processors. Cornerstones of AMD’s Zen family, evolution of Zen-based processor lines. Key features of the evolution of ARM’s ISA, and Armv8/v9-based CPU-s. Basics of power management. Power management techniques at the circuit-, processor- and platform level. Turbo boost techniques. Evolution of the microarchitecture of mobile processors, symmetric, big, little and dynamIQ multicores. Evolution of 2-socket server processors, key issues of the implementation of server processors. Arm ISA-based client- and server processors.					

Lecture schedule	
Education week	Topic
1.	Overview of Intel's Core 2 family
2.	Overview of Intel's Core 2 family
3.	Overview of AMD's Zen family
4.	Overview of AMD's Zen family
5.	Evolution of the Arm ISA and Armv8/v9-based CPU-s
6.	Evolution of the Arm ISA and Armv8/v9-based CPU-s
7.	Mid-term test
8.	Power management
9.	Power mangement
10.	Evolution of mobil processors
11.	Evolution of mobil processors
12.	Evolution of 2S processors
13.	Evolution of 2S processors
14.	Arm ISA-based client- and server processors
Mid-term requirements	
Conditions for obtaining a mid-term grade/signature	Mid-term test, exam.

Assessment schedule													
Education week	Topic												
7.	Overview of Intel's Core 2 family, Overview of AMD's Zen family and Evolution of the Arm ISA and Armv8/v9-based CPU-s												
Method used to calculate the <i>mid-term grade</i> (to be filled out only for subjects with mid-term grades)													
-													
Type of the replacement													
Type of the replacement of written test/mid-term grade/signature	In the case if the mid-term test does not reach 50%, the student can replace the test in the form of re-take test in the 14th week. Replacement of the mid-term mark: once in the first 10 working days of the examination period.												
Type of the exam (to be filled out only for subjects with exams)													
Multiple-choice or explanatory written exam													
Calculation of the exam mark (to be filled only for subjects with exams)													
Final grade calculation methods:													
The final grade will be calculated using the following scale:													
	<table border="1"> <thead> <tr> <th>Achieved result</th> <th>Grade</th> </tr> </thead> <tbody> <tr> <td>87% - 100%</td> <td>excellent (5)</td> </tr> <tr> <td>75%- 86%</td> <td>good (4)</td> </tr> <tr> <td>64% -74%</td> <td>satisfactory (3)</td> </tr> <tr> <td>51% - 63%</td> <td>pass (2)</td> </tr> <tr> <td>0 - 50 %</td> <td>failed (1)</td> </tr> </tbody> </table>	Achieved result	Grade	87% - 100%	excellent (5)	75%- 86%	good (4)	64% -74%	satisfactory (3)	51% - 63%	pass (2)	0 - 50 %	failed (1)
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64% -74%	satisfactory (3)												
51% - 63%	pass (2)												
0 - 50 %	failed (1)												
References													
Obligatory:	Electronic textbook available in the Moodle.												
Recommended:													
Other references:													