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| **Institute of Cyberphysical Systems**  | 2023/24 academic yearI. semester |
| Name of the subject:  | Code of the subject:  | Credits:  | Weekly hours:  |
|   | lec  | sem  | lab  |
| Modern computer architectures | NIXKA2HBNE  | 2 | full-time  | 2 **online** | 0  | 0  |
| Responsible person for the subject: Prof. Dr. Dezső SIMA  | Classification: professor emeritus  |
| Subject lecturer(s):  Prof. Dr. Dezső SIMA |
| Prerequisites:  | NBXSS1EBNF  | Introduction to Computer Architectures     |
| Way of the assessment:  | exam  |   |   |
| **Course description**  |
| Goal:  | The lecture aims at the familiarization of students with key notions, main 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 micro-architecture of mobile processors, symmetric, big.little and dynamIQ multicores.  |
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| **Lecture schedule**  |
| Education week  | Topic  |
| 1.  | Overview of Intel’s Core 2 family  |
| 2.  | Overview of Intel’s Core 2 family  |
| 3.  | Overview of Intel’s Core 2 family |
| 4.  | Overview of AMD’s Zen family  |
| 5.  | Overview of AMD’s Zen family |
| 6.  | Overview of AMD’s Zen family, Mid-term test |
| 7.  | Evolution of the Arm ISA and Armv8/v9-based CPU-s |
| 8.  | Evolution of the Arm ISA and Armv8/v9-based CPU-s |
| 9.  | Evolution of the Arm ISA and Armv8/v9-based CPU-s |
| 10.  | Power management  |
| 11.  | Power management |
| 12.  | Evolution of mobile processors |
| 13. | Online consultation opportunity |
| **Mid-term requirements**  |
| Conditions for obtaining a mid-term grade/signature  |   |
| **Assessment schedule**  |
| **Education week**  | Topic  |
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| **Method used to calculate the *mid-term grade*** (to be filled out only for subjects with mid-term grades)  |
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| **Type of the replacement**  |
| Type of the replacement of written test/mid-term grade/signature  |   |
| **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)  |
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| **​​Final grade calculation methods:​**  |
| 0%-49% 1 (failed) 50%-62% 2 (satisfactory) 63%-74% 3 (average) 75%-84% 4 (good) 85%-100% 5 (excellent)  |
| **References**  |
| Obligatory:  | Electronic textbook available in the Moodle.  |
| Recommended:  |  |
| Other references:  |   |