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| **Institute of Cyberphysical Systems** | | | | | | 2023/24 academic year  I. 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 | | | | | | | |
|  | |  | | | | | | | |
| **Method used to calculate the *mid-term grade*** (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 | | |  | | | | | | |
| **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:​** | | | | | | | | | |
| 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: |  | | | | | | | | |