



Syllabus

Term: 2025/26/1 **Subject name:** Computer Architectures **Subject code:** PTIA1901

Unit (Unit code) (MATINFO)

Lecturer responsible for the course: Dr. ALMÁSI Gábor

Requirement: Exam

Classes per week : 2/0/0

Classes per term: 26/0/0

Purpose of education:

The aim of the course is for students to acquire basic knowledge of the architectural elements that determine the basic properties of computers:

they know the physical structure of the operation of the main operating units that make up the computer, and the resulting operating limitations; those subsystems located near the hardware that transform physical devices into abstract functional devices

they can understand the advantages and disadvantages of a given architecture compared to other architectures;

Contents:

Week 1: Development of the structure of computers, the process of the development of modern computers

Week 2: Structure of processors, classification of instructions by type, CISC & RISC processors

Week 3: Microarchitecture of processors, pipeline, superscalar architecture, comparison of von Neumann and Harvard architectures

Week 4: Possibilities of parallel execution, branch prediction, dependency of micro-instructions

Week 5: Instruction and processor-level parallelization, multiprocessor systems.

Week 6: Physical implementations of semiconductor-based storage memory types (physical classification: RAM, ROM, EPROM, EEPROM)



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Week 7: Memory management (bus system traffic, data, address and control bus, DMA)

Week 8: Ways of organizing caches (direct, group associative and associative mapping)

Week 9: Methods of virtual storage management: segmented and paged storage management

Week 10: Concept of interrupt, characterization of interrupt systems

Week 11: I/O subsystems and their implementations

Week 12: Physical principles of magnetic and optical storage, structure and properties of storage devices

Week 13: Printers; screen management (video cards and monitors), special peripherals and their management (keyboard, mouse, scanner)

System of examining and valuation:

The assessment takes place in an oral exam, with the explanation of a randomly given item. This is 85% weighted in the grade. A Moodle test with a weight of 15% completes the grade.

The rating is as follows:

0 - 49% - inadequate (1)

50 - 64% - sufficient (2)

65 - 79% - medium (3)

80 - 89% - good (4)



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**Subject
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System of examining and valuation:

90 - 100% - excellent (5)

Bibliography:

Stallings, W.: Computer organization and architecture, Prentice Hall, ISBN: 978-0-13-607373-4, (2010)

Bibliography: