"GHEORGHE ASACHI" TECHNICAL UNIVERSITY OF IAŞI, ROMANIA
Faculty of Automatic Control and Computer Engineering
Department of Computer Science and Engineering
Competition for the position of Associate Professor, position no. 15
Courses for the position: Computer Organization and Architecture, Embedded computers, Networks of embedded systems

Thematic area
related to the the lecture from the thematic area
for the competition for the academic position of associate professor no. 15
from the posts of the staff of the Department of Computer Engineering
for the academic year 2024-2025

Computer Organization and Architecture

- Configuration and architecture of a computing system
- RISC / CISC architectures, Flynn's classification, debugging, emulation
- Memory systems, memory hierarchy, memory types. memory organization, associative memory, cache memory, virtual memory
- Interruption system, topologies, controllers, mechanisms
- Stack, organization, implementation
- Overview of ARM architecture
- ARMv4 / ARMv7 / ARMv8-M architectures

Embedded computers

- Embedded computers - EB, classification, characteristics
- Reactive and real-time systems
- The hardware model of an integrated system.
- Operating systems for EBs
- Application specific processors (ASIP), microcontrollers, DSP
- System-on-a-Chip (SoC) architectures

Networks of embedded systems

- Networks of embedded systems, topologies, architectures
- Centralized, decentralized, distributed embedded systems
- Bus types I2C, SPI, CAN, LIN, MODBUS, etc.
- Communication protocols
- Types of embedded networks, wired, wireless, software implementation levels
- Embedded IoT network
- Network embedded systems in industrial, automotive, smart home, etc.

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