

# MICROPROCESSOR TECHNOLOGY

## *(Lectures - Winter semester 2008)*

- 1. Architectures of programmable digital systems**
  - Computer, microcomputer, single chip microcontroller (MCU),
  - Basic building blocks of MCU – CPU, memory, input/output, system buses,
  - Internal registers (universal, special – A, PC, SP, DPTR, ...),
- 2. Single chip microcontroller Intel MCU51 (part I)**
  - Architecture,
  - Programming model,
  - Memory model,
  - Instructions
- 3. Single chip microcontroller Intel MCU51 (part II)**
  - Instructions,
  - Instruction timing
- 4. Single chip microcontroller Intel MCU51 (part III)**
  - Interrupts,
  - Peripherals,
  - External bus extensions
- 5. C Language in MCU development**
  - MCU specific extensions
- 6. ADuC microconverter with Intel MCU51 core**
  - New features,
  - AD, DA converters for processing of sensor signals,
  - New trends in MCU development
- 7. Memories**
  - Classification according to the technology (RAM, EPROM, EEPROM, ...),
  - Classification according to the organization (serial, parallel, ...),
  - Timing
- 8. Advanced MCU development tools**
  - Debuggers, programmers, RTOS

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## *(Lessons – Winter semester 2008)*

1. **Introductory lesson**  
Goal of the subject,  
credit requirements,  
demonstration of Keil uVision environment
2. **Intel MCU programming model (part I)**  
Instructions - testing of MCU instruction in Keil uVision environment
3. **Intel MCU programming model (part II)**  
Memory model - testing of memory access in Keil uVision environment
4. **Intel MCU programming model (part III)**  
Interrupts - testing of memory access in Keil uVision environment
5. **Intel MCU programming in C language**  
C programming in Keil uVision environment
6. **ADuC836EB1 board description**  
Work with ADuC836EB1 board  
Final project specification
7. **Work on the final project (part I)**  
Work with ADuC836EB1 board, uVision simulator
8. **Work on the final project (part II)**  
Work with ADuC836EB1 board, uVision simulator

Students will work with selected development tools in PC laboratory (V132). Tools (Keil uVision, ADuC836EB1) will be available as evaluation packages and can be installed also at home. Credits will be given after successful defense of the final project.

Remarks: final project report and defense (max. 40 points) points, written exam (max 60 points):

- A >90 points
- B 81-90 points
- C 71-80 points
- D 61-70 points
- E 51-60 points
- FX 1 < 51 points

Recommended references

web pages of the subject

uVision User's Guide, Keil - an Arm company, <http://www.keil.com/support/man/docs/uv3/>