



COURSE DESCRIPTION CARD - SYLLABUS

Course name

Microprocessors and signal circuits [N1EiT1>MiPS]

Course

Field of study

Electronics and Telecommunications

Year/Semester

3/5

Area of study (specialization)

–

Profile of study

general academic

Level of study

first-cycle

Course offered in

Polish

Form of study

part-time

Requirements

compulsory

Number of hours

Lecture

20

Laboratory classes

20

Other

0

Tutorials

0

Projects/seminars

0

Number of credit points

5,00

Coordinators

dr hab. inż. Maciej Krasicki

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Lecturers

Prerequisites

Basic knowledge on digital circuits Programming skills

Course objective

Lecture: Learning the architecture (hardware) and principles of programming selected microprocessors and microcontrollers. Laboratory: Acquiring practical knowledge of writing and running software for the Intel 8051/51 microcontroller.

Course-related learning outcomes

Methods for verifying learning outcomes and assessment criteria

Learning outcomes presented above are verified as follows:

The exam takes the form of a test with open and/or closed questions. It concerns both theoretical issues and programming skills.

Passing the laboratory requires the student to complete laboratory exercises. Commitment to exercises

and preparation at home for subsequent tasks are assessed.

Programme content

Fundamentals of microprocessors' and microcontrollers' operation

Architecture (hardware) and programming of selected microprocessors and microcontrollers

Course topics

Lecture:

1. Basic components of a microprocessor and its operations
2. 8051/52 microcontroller (components, data bus, assembler programming)
3. Differences between 8051/52 microcontroller and Intel microprocessors evolved from 8086
4. Digital signal processors (architecture, operations, applications)
5. ARM Cortex-M family (architecture, modes, threads, DSP instructions)

Lab classes:

Developing and executing 8051 code on dedicated development boards

Teaching methods

Traditional lecture and conversational lecture in the form of a discussion with listeners on the architecture (hardware) and program analysis (software) for the discussed microcontrollers and microprocessors

In the laboratory, students work individually or in groups to solve subsequent tasks.

Bibliography

Basic:

MCS 51 Microcontroller Family User's Manual

Piotr Gałka, Paweł Gałka, "Podstawy programowania mikrokontrolera 8051", Wydawnictwo Naukowe PWN, 2013

White paper ARM Cortex M for Beginners

Application Note 237, Migrating from 8051 to Cortex Microcontrollers

Cortex M3/4 instruction set

Publications distributed by the teacher

Further reading:

any publication related to microcontrollers and microprocessors in question

Breakdown of average student's workload

	Hours	ECTS
Total workload	120	5,00
Classes requiring direct contact with the teacher	50	2,00
Student's own work (literature studies, preparation for laboratory classes/ tutorials, preparation for tests/exam, project preparation)	70	3,00