SYLLABUS

Name: ***Microprocessors (EiTAu>SI6-Microp-17)***
Name in Polish:
Name in English: ***Microprocessors project***

Information on course:

Course offered by department: Faculty of Automatic Control, Electronics and Computer Science
Course for department: Silesian University of Technology

Default type of course examination report:

ZAL

Language:

English

Course homepage:

https://platforma.polsl.pl/rau3/course/view.php?id=30

Short description:

Project and practical implementation of custom microprocessor hardware device.

Description:

Project (30 hours):
- Implementation of mundane devices like advanced alarm clocks, timers, cycle computers etc.
Students are supposed to implement a software layer of the project that binds together a simple hardware devices like displays, keyboards and other sensors into fully functional system.
The attention is paid to simplicity of use and correct user interface simplicity.
- Implementation of custom hardware device that supports operation of main design problem.
Usually it is a specialized interface unit or arithmetic operation support device. Important part of the design concerns creating, modeling, synthesizing, implementing the device and linking it with a microprocessor. The hardware component is linked with software operating by preparing appropriate declaration and drivers. Finally, the component is used inside the design to prove its functionality.

ECTS:2
sum of hours: 60h (30h contact + 30h student's own work)
project: 30h

student's own work:30h (familiarization with the technical documentation of peripheral systems used in the laboratory, designing and assembling the device)

Bibliography:

1. M. Morris Mano: Computer System Architecture
2. M. Morris Mano, C.R. Kime: Logic and Computer Design Fundamentals.
3. W. Wolf: Computers as Components: Principles of Embedded Computing Systems Design
4. S. Furber ARM System-on-chip Architecture
5. N. Wirth: Algorithms + Data Structures = Programs
6. B.W. Kernighan, D.M. Ritchie: The C Programming Language

Learning outcomes:

Knowledge: knows and understands
1. Computer architecture issues, in particular the hardware layer (K1A_W06)
2. issues in the field of methodology and programming techniques (K1A_W07)
3. issues in the field of architecture and software of microprocessor systems (high and low level languages) (K1A_W08)
Skills: able
1. formulate a specification of simple electronic systems at the level of implemented functions, also using hardware description languages (K1A_U14)
2. design simple electronic circuits and systems intended for various applications, including simple digital signal processing systems (K1A_U16)
3. use catalog cards and application notes in order to select appropriate components of the designed electronic system or system (K1A_U17)
4. formulate an algorithm, uses high and low level programming languages and appropriate IT tools to develop computer programs that control the electronic system and to program microcontrollers or control microprocessors in the electronic system (K1A_U22)

Social Competence: is ready to
1. critical evaluation of knowledge and perceived content and recognition of the importance of knowledge in solving cognitive and practical problems as well as consulting experts in the event of difficulties in solving the problem on its own (K1A_K01)
2. submit to the rules of team work and take responsibility for jointly performed tasks (K1A_K04)

Assessment methods and assessment criteria:

Presentation of the project.

Project: construction of the device and preparation of the report - 100% of final grade

Final course grade (FCG) is calculated as follows:
FCG = 1.0 *Project grade,

The syllabus is valid from academic year 2024/25 and its content cannot be changed during the semester.

Course credits in various terms:

Electronics and Telecommunication, full-time first degree engineering studies 7 sem. (EiTAu-SI7)			
Type of credits	Number	First term	Last term
European Credit Transfer System (ECTS)	2	2020/2021-Z	