

STUDY MODULE DESCRIPTION FORM		
Name of the module/subject Basics of microprocessor engineering		Code 1010331531010332695
Field of study Information Engineering	Profile of study (general academic, practical) (brak)	Year /Semester 2 / 3
Elective path/specialty -	Subject offered in: Polish	Course (compulsory, elective) obligatory
Cycle of study: First-cycle studies	Form of study (full-time, part-time) full-time	
No. of hours Lecture: 30 Classes: - Laboratory: 30 Project/seminars: -		No. of credits 4
Status of the course in the study program (Basic, major, other) (brak)		(university-wide, from another field) (brak)
Education areas and fields of science and art		ECTS distribution (number and %)
Responsible for subject / lecturer: dr inż. Dominik Belter email: dominik.belter@put.poznan.pl tel. 61 665 2809 Wydział Elektryczny ul. Piotrowo 3A 60-965 Poznań		Responsible for subject / lecturer: dr inż. Dominik Belter email: dominik.belter@put.poznan.pl tel. 61 665 2809 Wydział Elektryczny ul. Piotrowo 3A 60-965 Poznań
Prerequisites in terms of knowledge, skills and social competencies:		
1	Knowledge	Student has structured and theoretically founded knowledge of the basic algorithms and math for physics, electronic circuits.
2	Skills	Student is able to use programming environments and platforms to write, perform and test simple programs for microcontrollers.
3	Social competencies	Student is aware of and understands the importance and impact of non-technical aspects of engineering activity and the associated responsibility for decisions.
Assumptions and objectives of the course: Description of the concepts that underlie microcontrollers with examples that pertain to the most popular ones, including: STM32, ATmega, PIC, 8051.		
Study outcomes and reference to the educational results for a field of study		
Knowledge:		
1. Knowledge about architecture and most common modules of microcontrollers - [K_W02 ++, K_W03 +++]		
2. Knowledge about programming of microcontrollers and design of embedded systems - [K_W16 +++]		
Skills:		
1. Ability to apply the knowledge about structure and modules of microcontrollers - [K_U08 ++, K_U19 +]		
2. Skills and abilities to acquire new knowledge about microcontrollers - [K_U01 +, K_U03 +]		
Social competencies:		
1. Ability to commercialize solutions from embedded systems - [K-K01 ++, K_K02 +]		
Assessment methods of study outcomes		
Lectures: written tests, pass criterion of 50.1% points.		
Laboratory: tests, evaluation of completed projects and reports		
Course description		

Lecture: uC architectures, digital and analog input and outputs, USART, SPI, I2C, 1-wire, RS-232, RS-485, digital to analog converters, analog to digital converters, USB, SD cards		
Laboratory: digital and analog input and outputs, USART, SPI, I2C, 1-wire, RS-232, RS-485, digital to analog converters, analog to digital converters, USB, SD cards using STM32F407		
Basic bibliography:		
1. M. Galewski, STM32. Aplikacje i ćwiczenia w języku C, Wydawnictwo BTC, Legionowo 2011		
2. R. Pełka, Mikrokontrolery, Mikrokontrolery. Architektura, programowanie, zastosowania, Wydawnictwa Komunikacji i Łączności, Warszawa, 2001		
Additional bibliography:		
1. K. Paprocki, Mikrokontrolery STM32 w praktyce, Wydawnictwo BTC, Legionowo 2011		
2. P. Borkowski, AVR i ARM7. Programowanie mikrokontrolerów dla każdego, Helion, 2010		
Result of average student's workload		
Activity	Time (working hours)	
Student's workload		
Source of workload	hours	ECTS
Total workload	100	4
Contact hours	50	2
Practical activities	50	2