GDAŃSK UNIVERSITY OF TECHNOLOGY

Subject card

Subject name and code	Microprocessor Technology, PG_00047830		
Field of study	Informatics		
Date of commencement of studies	October 2020	Academic year of realisation of subject	2021/2022
Education level	first-cycle studies	Subject group	Obligatory subject group in the field of study Subject group related to scientific research in the field of study
Mode of study	Part-time studies	Mode of delivery	at the university
Year of study	2	Language of instruction	Polish
Semester of study	4	ECTS credits	4.0
Learning profile	general academic profile	Assessment form	assessment
Conducting unit	Department of Microelectronic Systems -> Faculty of Electronics, Telecommunications and Informatics		
Name and surname of lecturer (lecturers)	Subject supervisor	dr inż. Maciej Kokot	
	Teachers	dr inż. Maciej Kokot	

Lesson types and methods of instruction							
	Lesson type	Lecture	Tutorial	Laboratory	Project	Seminar	SUM
	Number of study hours	15.0	0.0	15.0	0.0	0.0	30
	E-learning hours included: 0.0						
	Adresy na platformie eNauczanie:						

Learning activity and number of study hours					
	Learning activity	Participation in didactic classes included in study plan	Participation in consultation hours	Self-study	SUM
	Number of study hours	30	4.0	66.0	100

Subject objectives	Getting familar with architectures, construction and examples of nowadays microprocessors and microcontrollers Acquire skills programming PIC microcontrollers.

Learning outcomes	Course outcome	Subject outcome	Method of verification
	[K6_W02] Knows and understands, to an advanced extent, selected laws of physics and physical phenomena as well as methods and theories explaining the complex relationships between them, constituting the basic general knowledge in the field of technical sciences related to the field of study	Student knows development trends and specific character of microprocessors, microcontrollers and embedded systems. Student s familiar with programming of PIC 10F202, 16F877A.	[SW1] Assessment of factual knowledge
	[K6_U04] can apply knowledge of programming methods and techniques as well as select and apply appropriate programming methods and tools in computer software development or programming devices or controllers using microprocessors or programmable elements or systems specific to the field of study	Student programs the PIC family of microcontrollers in assembler code.	[SU4] Assessment of ability to use methods and tools [SU1] Assessment of task fulfilment
	[K6_W05] Knows and understands, to an advanced extent, methods of supporting processes and functions, specific to the field of study	Student knows development trends and specific character of microprocessors, microcontrollers and embedded systems. Student s familiar with programming of PIC 10F202, 16F877A.	[SW1] Assessment of factual knowledge
	[K6_W04] Knows and understands, to an advanced extent, the principles, methods and techniques of programming and the principles of computer software development or programming devices or controllers using microprocessors or programmable elements or systems specific to the field of study, and organisation of systems using computers or such devices	Student knows development trends and specific character of microprocessors, microcontrollers and embedded systems. Student s familiar with programming of PIC 10F202, 16F877A.	[SW1] Assessment of factual knowledge
	[K6_U03] can design, according to required specifications, and make a simple device, facility, system or carry out a process, specific to the field of study, using suitable methods, techniques, tools and materials, following engineering standards and norms, applying technologies specific to the field of study and experience gained in the professional engineering environment	Student programs the PIC family of microcontrollers in assembler code.	[SU4] Assessment of ability to use methods and tools [SU1] Assessment of task fulfilment
Subject contents	Microprocessor. History and development of microprocessors. Basic functional components of microprocessor. Programming model of microprocessor. Von Neumann and Harvard architectures. CISC and RISC processors, assembler programming. Intel/AMD, IA-32, AMD64 (x86-64), IA-64, Itanium microprocessors family. Explicitly Parallel Instruction Computing. Branch Predication. ARM, POWER, SPARC microprocessors family. Performance improvement techniques: pipeline processing, cache memory, multithreading, multicore, parallel processing of instructions and data Microcontrollers. Architecture and usage. Microcontrollers families. Microchip"s PIC microcontrollers familly. Instruction set, examples of code, memory architecture, special registers. Serial communication ports, SPI, I2C, RS232, CAN, USB. Program and EEPROM memory. A/D and D/A converters, interrupts, timers and counters.		
Prerequisites and co-requisites			
Assessment methods and criteria	Subject passing criteria	Passing threshold	Percentage of the final grade
	Midterm colloquium	50.0%	33.0%
	Practical exercise	50.0%	67.0%
Recommended reading	Basic literature	1. J. Crisp: Introduction to Microprocessors and Microcontrollers. Newnes 2004 2. Pietraszek S.: Mikrokprocesory jednoukładowe PIC. Wyd. Helion, Gliwice 2002. 3. J. Bogusz: Lokalne interfejsy szeregowe. BTC, Warszawa, 2004.	
	Supplementary literature	1. www.microchip.com	
	eResources addresses		
Example issues/ example questions/ tasks being completed			

Work placement	Not applicable