



Subject card

Subject name and code	Embedded Systems and Microprocessors, PG_00058917						
Field of study	Informatics						
Date of commencement of studies	October 2026	Academic year of realisation of subject			2027/2028		
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 -> Faculties of Gdańsk University of Technology						
Name and surname of lecturer (lecturers)	Subject supervisor		dr inż. Maciej Kokot				
	Teachers		dr inż. Maciej Kokot				
Lesson types	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						
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 familiar 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_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.			[SU1] Assessment of task fulfilment [SU4] Assessment of ability to use methods and tools		
[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.			[SU1] Assessment of task fulfilment [SU4] Assessment of ability to use methods and tools			

Subject contents	Course content – lecture 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 family. 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
	Practical exercise	50.0%	67.0%
	Midterm colloquium	50.0%	33.0%
Recommended reading	Basic literature	1. J. Crisp: Introduction to Microprocessors and Microcontrollers. Newnes 2004 2. Pietraszek S.: Mikrokprocesory jednokładowe PIC. Wyd. Helion, Gliwice 2002. 3. J. Bogusz: Lokalne interfejsy szeregowo. BTC, Warszawa, 2004.	
	Supplementary literature	1. www.microchip.com	
	eResources addresses		
Example issues/ example questions/ tasks being completed			
Practical activities within the subject	Not applicable		

Document generated electronically. Does not require a seal or signature.