GDAŃSK UNIVERSITY OF TECHNOLOGY

Subject card

Subject name and code	Introduction to low level programming, PG_00037349					
Field of study	Technical Physics					
Date of commencement of studies	October 2021		Academic year of realisation of subject		2023/2024	
Education level	first-cycle studies		Subject group		Optional subject group Subject group related to scientific research in the field of study	
Mode of study	Full-time studies		Mode of delivery		at the university	
Year of study	3		Language of instruction		Polish	
Semester of study	6		ECTS credits		7.0	
Learning profile	general academic profile		Assessment form		exam	
Conducting unit	Zakład Elektrochemii i Fizykochemii Powierzchni -> Instytut Nanotechnologii i Inżynierii Materiałowej -> Faculty of Applied Physics and Mathematics					
Name and surname of lecturer (lecturers)	Subject supervisor	dr hab. inż. Ryszard Barczyński				
	Teachers	dr inż. Marek Chmielewski dr hab. inż. Ryszard Barczyński				

Lesson types and methods of instruction	Lesson type	Lecture	Tutorial	Laboratory	Project	Seminar	SUM
	Number of study hours	30.0	0.0	45.0	0.0	0.0	75
	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	75	15.0	85.0	175

Subject objectives	The aim is to learn architecture and applications of microcontrollers.		

Learning outcomes	Course outcome	Subject outcome	Method of verification
	K6_U03	Creates programs in MCS51 assembler.	[SU1] Assessment of task fulfilment
	K6_K01	The student is able to discuss with others the structure of the designed systems. He takes into account dissenting opinions and completes the missing knowledge.	[SK5] Assessment of ability to solve problems that arise in practice
	K6_W05	The student is able to design, program and implement a measurement and control system using a microcontroller.	[SW1] Assessment of factual knowledge

Subject contents	* Architecture and applications of microcontrollers. * Hardware of 8051 series microcontrollers. * Structure of assembly languages. Macrodefinitions. * 8051 assembly language. * Architecture and programming of Cypress PSoC I microcontrollers. * Local microcontroller interfaces: SPI, I2C, 1-wire. * Standard I/O expansion circuits. A/D and D/A conversions.

Prerequisites and co-requisites	

Assessment methods and criteria	Subject passing criteria	Passing threshold	Percentage of the final grade
	Midterm colloquium	51.0%	50.0%
	Practical exercise	51.0%	50.0%

Recommended reading	Basic literature	* Piotr Gałka, Paweł Gałka, Podstawy programowania mikrokontrolera 8051. * Jacek Bogusz, Lokalne interfejsy szeregowe w systemach cyfrowych, btc, Warszawa 2004. * Jacek Bogusz, Programowanie mikrokontrolerów 8051 w języku C w praktyce, btc, Warszawa, 2005. * Materiały do wykładów na stronie WWW http://www.mif.pg.gda.pl/homepages/jasiu/stud/PNP/ * Materiały dotyczące mikrokontrolera PSoC na stronie WWW firmy Cypress www.cypress.com.
	Supplementary literature	No requirements

	eResources addresses	Podstawowe
		https://enauczanie.pg.edu.pl/moodle/course/view.php?id=35898 - Prezentations and informations
		Adresy na platformie eNauczanie:
		PNP - 2024 - Moodle ID: 35898 https://enauczanie.pg.edu.pl/moodle/course/view.php?id=35898
Example issues/ example questions/ tasks being completed	Desing circuit of a matrix keyboard.	
Work placement	Not applicable	