



## Subject card

Subject name and code	, PG_00053435						
Field of study	Electrical Engineering						
Date of commencement of studies	October 2020		Academic year of realisation of subject		2023/2024		
Education level	first-cycle studies		Subject group				
Mode of study	Part-time studies		Mode of delivery		at the university		
Year of study	4		Language of instruction		Polish		
Semester of study	7		ECTS credits		2.0		
Learning profile	general academic profile		Assessment form		assessment		
Conducting unit	Department of Controlled Electric Drives -> Faculty of Electrical and Control Engineering						
Name and surname of lecturer (lecturers)	Subject supervisor		prof. dr hab. inż. Marcin Morawiec				
	Teachers						
Lesson types and methods of instruction	Lesson type	Lecture	Tutorial	Laboratory	Project	Seminar	SUM
	Number of study hours	10.0	0.0	10.0	0.0	0.0	20
	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	20		3.0		27.0	50
Subject objectives	The aim of the course is to extend the students' knowledge on topics related to programming interfaces with a microcontroller with an ARM core						
Learning outcomes	Course outcome		Subject outcome		Method of verification		
	K6_K05		The student is able to act in health and life threatening situations		[SK5] Assessment of ability to solve problems that arise in practice		
	K6_K01		The student is aware of self-education, instruction analysis, learning programming languages		[SK3] Assessment of ability to organize work		
Subject contents	Lecture						
	Overview of microcontrollers available on the market. Overview of the most popular microcontrollers from ATMEL, Intel, Freescale Semiconductor, Infineon, Analog Devices, STMicroelectronics, Hitachi. Overview of the basic principles of programming in C ++. Overview of the basic functions provided by the manufacturers of microcontrollers. Overview of the principles of microcontroller programming.						
	Laboratory						
	Configuration and software of the ZLA3 interface with ARM microcontroller.						
Prerequisites and co-requisites	Knowledge of the basics of programming in C / C ++						
Assessment methods and criteria	Subject passing criteria		Passing threshold		Percentage of the final grade		
	Laboratory		60.0%		80.0%		
	Lecture		50.0%		20.0%		

Recommended reading	Basic literature	<p>1. Paprocki K.: Mikrokontrolery STM32 w praktyce. BTC, Legionowo 2009.</p> <p>2. Majewski J., Zbysiński P.: Układy FPGA w przykładach, BTC, Legionowo 2007.</p> <p>3. Galewski M., STM32: Aplikacje i ćwiczenia w języku C, BTC, s. 360, 2011.</p>
	Supplementary literature	<p>Pełka R.: "Mikrokontrolery - architektura, programowanie, zastosowania". Wydawnictwa Komunikacji i Łączności, Warszawa 2003.</p> <p>Baranowski R.: "Mikrokontrolery AVR ATmega w praktyce", BTC, Warszawa 2006.</p> <p>Doliński J.: "Mikrokontrolery AVR w praktyce". BTC, Warszawa, 2004.</p>
	eResources addresses	Adresy na platformie eNauczanie:
Example issues/ example questions/ tasks being completed	Input / Output Port SoftwareUART communicationCounters and interruptsADC converter	
Work placement	Not applicable	