GDAŃSK UNIVERSITY OF TECHNOLOGY

Subject card

Subject name and code	, PG_00056084		
Field of study	Mechanical and Medical Engineering		
Date of commencement of studies	October 2021	Academic year of realisation of subject	2023/2024
Education level	first-cycle studies	Subject group	
Mode of study	Full-time studies	Mode of delivery	at the university
Year of study	3	Language of instruction	Polish
Semester of study	5	ECTS credits	1.0
Learning profile	general academic profile	Assessment form	assessment
Conducting unit	Institute of Mechanics and Machine Design -> Faculty of Mechanical Engineering and Ship Technology		
Name and surname of lecturer (lecturers)	Subject supervisor	dr hab. inż. Marek Galewski	
	Teachers		

Lesson types and methods of instruction

Lesson type	Lecture	Tutorial	Laboratory	Project	Seminar	SUM
Number of study hours	10.0	0.0	5.0	0.0	0.0	15

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	15	0.0	0.0	15

Subject objectives

Presenting students essential information about applications of microprocessors in medicine

Learning outcomes

Course outcome	Subject outcome	Method of verification
[K6_U08] he/she is able to assess whether proposed methods and tools can be used in practice to solve simple engineering task related to machine design, manufacturing and utilization	Student selects parameters and/or elements of a simple embedded system for medical applications	[SU5] Assessment of ability to present the results of task
[K6_U06] he/she has skills to work in industry and follow the rules of safety regulations, he/she is able to analyze basic economics problems to delineate the direction of solution by using engineering methods	Student understands requirements and constraints applied on medical electronic systems	[SU3] Assessment of ability to use knowledge gained from the subject
[K6_W13] he/she has knowledge related to application of engineering approaches in medicine or application of medical devices and rehabilitation devices	Student describes selected elements of the architecture of MCU based embedded systems	[SW1] Assessment of factual knowledge
[K6_W07] he/she is able to design, manufacture and utilize machine parts and technical devices, he/she can prepare a technical documentation	Student describes the process of design and menufacturing of embedded system	[SW1] Assessment of factual knowledge

Subject contents

Introduction
Applications and characterustucs os microprocessor systems
Computer system work principles (including: binary system; CPU work pronciples; memory)
System elements and data transmission (including: system elements cooperation; interrupts; GPIO; timers; basics of data transmission; SPI, I2C, UART (RS232), USB interfaces)
Signal processing (including: ADC, DAC, basics of DSP; PWM signals)
Developement and manufacturing of microprocessor systems

Prerequisites and co-requisites

Assessment methods and criteria	Subject passing criteria	Passing threshold	Percentage of the final grade
	Written test	53.0%	75.0%
	Performing exercises during laboratoty classes	53.0%	25.0%
Recommended reading	Basic literature	Lecture materials and laboratory instructions at eNauczanie	
	Supplementary literature	Galewski M. STM32. Aplikacje i ćwiczenia w języku C z biblioteką HAL, BTC, Legionowo, 2019 Kurczyk A. Mikrokontrolery STM32 dla początkujących. BTC, Legionowo 2019 Leśnicki A., Technika cyfrowego przetwarzania sygnałów, Wydawnictwo PG, Gdańsk, 2016 Smith S.W., Cyfrowe przetwarzanie sygnałów: praktyczny poradnik dla inżynierów i naukowców, BTC, Legionowo, 2007	
	eResources addresses	Adresy na platformie eNauczanie:	
Example issues/ example questions/ tasks being completed	List of examplary questions will be presente before the end of the semester - at least 4 weeks ahead of the final test		
Work placement	Not applicable		

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