GDAŃSK UNIVERSITY OF TECHNOLOGY

Subject card

Subject name and code	Embedded systems architecture, E:41041W0		
Field of study	Space and Satellite Technologies		
Date of commencement of studies	February 2025	Academic year of realisation of subject	2024/2025
Education level	second-cycle studies	Subject group	
Mode of study	Full-time studies	Mode of delivery	at the university
Year of study	1	Language of instruction	English
Semester of study	1	ECTS credits	2.0
Learning profile		Assessment form	assessment
Conducting unit	Department Of Signals And Systems -> Faculty Of Electronics Telecommunications And Informatics -> Wydziały Politechniki Gdańskiej		
Name and surname of lecturer (lecturers)	Subject supervisor	dr hab. inż. Iwona Kochańska	
	Teachers	dr hab. inż. Iwona Kochańska	

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

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	0.0	0.0	30

Subject objectives

To familiarise students theoretically and practically with embedded systems.

Learning outcomes

Course outcome	Subject outcome	Method of verification
K7_W07	Student has the knowledge on embedded systems and their architecture.	[SW1] Assessment of factual knowledge
[K7_K03] Can analyse and implement assigned tasks while maintaining high technical standards. Is able to work and interact in a group, taking on different roles. Adheres to the principles of professional ethics and respects the diversity of views and cultures.	He maintains high technical standards when implementing tasks related to embedded systems.	[SK2] Assessment of progress of work
K7_U09	Student is able to design an embedded system on the basis of a given specification.	[SU1] Assessment of task fulfilment

Subject contents

Construction of an embedded system; Basic concepts related to the construction of embedded systems (architecture, interfaces, computing modules); Embedded system model (layers: hardware, system, application); Hardware platforms in embedded systems, microcontrollers in embedded systems; Signal processors in embedded systems; PC class computers in embedded systems; Industrial PC standards; DAC and ADC converters; Systems with PWM output, voltage-frequency converters; Prototyping: single board computers, Multiprocessor systems architecture; Buses of multiprocessor systems; Consequences of the existence of shared resources; Operating systems for embedded systems; POSIX standard; Linux operating system; Real-time operating systems; Kernel and its environment in RT operating systems / embedded systems; Process manager, namespace management, memory management; Threads and processes, thread scheduling algorithms, thread synchronization methods, inter-process communication; Hardware interrupt handling concepts; File systems; Bootloaders; GNU Toolchain; Drivers programming; Techniques of efficient use of hardware resources; MISRA C programming standard.

Prerequisites and co-requisites

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Assessment methods and criteria

Subject passing criteria	Passing threshold	Percentage of the final grade
Lecture (exam)	50.0%	50.0%
Laboratory exercises	50.0%	50.0%

Recommended reading

Basic literature: Students will receive a reading list at the beginning of the semester.

	Supplementary literature	-
	eResources addresses	Adresy na platformie eNauczanie:
Example issues/ example questions/ tasks being completed		
Work placement	Not applicable	

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