



Subject card

Subject name and code	Embedded systems architecture, E:41041W0						
Field of study	Space and Satellite Technologies						
Date of commencement of studies	February 2024	Academic year of realisation of subject			2023/2024		
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 Marine Electronic Systems -> Faculty of Electronics, Telecommunications and Informatics						
Name and surname of lecturer (lecturers)	Subject supervisor		dr hab. inż. Iwona Kočańska				
	Teachers		dr hab. inż. Iwona Kočańska				
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_U09		Student is able to design an embedded system on the basis of a given specification.		[SU1] Assessment of task fulfilment		
	[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_W07		Student has the knowledge on embedded systems and their architecture.		[SW1] Assessment of factual knowledge			
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	-						
Assessment methods and criteria	Subject passing criteria		Passing threshold		Percentage of the final grade		
	Laboratory exercises		50.0%		50.0%		
	Lecture (exam)		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 eNauczenie: Embedded Systems Architekturę 2024 - Moodle ID: 38759 https://enauczanie.pg.edu.pl/moodle/course/view.php?id=38759
Example issues/ example questions/ tasks being completed		
Work placement	Not applicable	