



Subject card

Subject name and code	Application of Wireless Technologies, PG_00048669						
Field of study	Electronics and Telecommunications, Biomedical Engineering, Biomedical Engineering, Biomedical Engineering						
Date of commencement of studies	February 2022	Academic year of realisation of subject			2022/2023		
Education level	second-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	2	Language of instruction			Polish		
Semester of study	3	ECTS credits			2.0		
Learning profile	general academic profile	Assessment form			assessment		
Conducting unit	Department of Microwave and Antenna Engineering -> Faculty of Electronics, Telecommunications and Informatics						
Name and surname of lecturer (lecturers)	Subject supervisor		dr hab. inż. Łukasz Kulas				
	Teachers		dr hab. inż. Łukasz Kulas				
Lesson types and methods of instruction	Lesson type	Lecture	Tutorial	Laboratory	Project	Seminar	SUM
	Number of study hours	0.0	0.0	15.0	0.0	15.0	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		2.0		18.0	50
Subject objectives	The aim of this course is introduction to development of wireless embedded systems relying on wireless technologies for communication of environment monitoring.						
Learning outcomes	Course outcome		Subject outcome		Method of verification		
	[K7_W03] Knows and understands, to an increased extent, the construction and operating principles of components and systems related to the field of study, including theories, methods and complex relationships between them and selected specific issues - appropriate for the curriculum.		Knowledge of embedded system development relying on wireless technologies for communication of environment monitoring.		[SW2] Assessment of knowledge contained in presentation		
	[K7_W04] Knows and understands, to an advanced extent, the principles, methods and techniques of programming and the principles of computer software development or programming devices or controllers using microprocessors or programmable elements or systems specific to the field of study, and organisation of systems using computers or such devices		Knowledge of embedded software development in Embedded Linux environment.		[SW1] Assessment of factual knowledge		

Subject contents	<p>Introduction to Linux OS for embedded devices</p> <p>Communication with peripheral devices via UART interphase</p> <p>Development of network applications</p> <p>HTTP server deployment</p> <p>A single device or network of devices control via WWW</p> <p>Development of own wireless embedded system</p>											
Prerequisites and co-requisites	Knowledge of C/C++ programming languages.											
Assessment methods and criteria	<table border="1"> <thead> <tr> <th data-bbox="456 622 794 651">Subject passing criteria</th> <th data-bbox="799 622 1137 651">Passing threshold</th> <th data-bbox="1142 622 1481 651">Percentage of the final grade</th> </tr> </thead> <tbody> <tr> <td data-bbox="456 658 794 687">Tasks during laboratory class</td> <td data-bbox="799 658 1137 687">50.0%</td> <td data-bbox="1142 658 1481 687">50.0%</td> </tr> <tr> <td data-bbox="456 694 794 741">Project realized during seminar classes</td> <td data-bbox="799 694 1137 741">50.0%</td> <td data-bbox="1142 694 1481 741">50.0%</td> </tr> </tbody> </table>			Subject passing criteria	Passing threshold	Percentage of the final grade	Tasks during laboratory class	50.0%	50.0%	Project realized during seminar classes	50.0%	50.0%
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Project realized during seminar classes	50.0%	50.0%										
Recommended reading	Basic literature	Karim Yaghmour, Jon Masters, Gilad Ben-Yossef, Philippe Gerum "Building Embedded Linux Systems: Concepts, Techniques, Tricks, and Traps"										
	Supplementary literature	Christopher Hallinan "Embedded Linux Primer"										
	eResources addresses											
Example issues/ example questions/ tasks being completed	<p>Wireless system for lighting control</p> <p>Indoor localization system</p> <p>System for plants monitoring</p>											
Work placement	Not applicable											