



## Subject card

Subject name and code	Software Defined Radio Technique - Laboratory, PG_00047490						
Field of study	Electronics and Telecommunications						
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			English		
Semester of study	3	ECTS credits			1.0		
Learning profile	general academic profile	Assessment form			assessment		
Conducting unit	Department of Radiocommunication Systems and Networks -> Faculty of Electronics, Telecommunications and Informatics						
Name and surname of lecturer (lecturers)	Subject supervisor		dr inż. Andrzej Marczak				
	Teachers		dr inż. Andrzej Marczak				
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	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	1.0		9.0	25	
Subject objectives	Students learn software defined radio technology.						
Learning outcomes	Course outcome		Subject outcome		Method of verification		
	[K7_U06] can analyse the operation of components, circuits and systems related to the field of study; measure their parameters; examine technical specifications; interpret obtained results and draw conclusions		The student analyzes the operation of elements of the radio transceiver made in the software defined radio technique.		[SU1] Assessment of task fulfilment		
	[K7_U03] can design, according to required specifications, and make a complex device, facility, system or carry out a process, specific to the field of study, using suitable methods, techniques, tools and materials, following engineering standards and norms, applying technologies specific to the field of study and experience gained in the professional engineering environment		The student is able to implement a radio transceiver in software-defined radio technology.		[SU1] Assessment of task fulfilment		
Subject contents	<ol style="list-style-type: none"> <li>Preparation and testing of DSP software on the SDR hardware platform.</li> <li>Preparation and testing of FPGA software on the SDR hardware platform.</li> <li>Starting and testing the transmitter application on the SDR hardware platform.</li> <li>Creating and testing the FM receiver applications in the GNU Radio environment.</li> <li>Creating and testing the digital transmission link application in the GNU Radio environment.</li> <li>Development and testing of the digital transmission modem software on the SDR hardware platform.</li> <li>Development and testing of the OFDM modem software on the SDR hardware platform.</li> </ol>						
Prerequisites and co-requisites							
Assessment methods and criteria	Subject passing criteria		Passing threshold		Percentage of the final grade		
	Practical exercises		50.0%		100.0%		

Recommended reading	Basic literature	Burns, Software Defined Radio for 3G, Artech House, 2003  Grayver, Implementing Software Defined Radio, Springer, 2013  Tuttlebee, Software Defined Radio Enabling Technologies, John Wiley & Sons Ltd, 2002
	Supplementary literature	Reed, Software Radio: A Modern Approach to Radio Engineering, Prentice Hall PTR, 2002
	eResources addresses	
Example issues/ example questions/ tasks being completed		
Work placement	Not applicable	