



## Subject card

Subject name and code	Integrated Circuits in Wireless Communications, PG_00048665						
Field of study	Electronics and Telecommunications						
Date of commencement of studies	February 2025	Academic year of realisation of subject			2025/2026		
Education level	second-cycle studies	Subject group			Optional subject group Specialty 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	1	Language of instruction			Polish		
Semester of study	2	ECTS credits			1.0		
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. Krzysztof Nyka					
	Teachers	dr hab. inż. Krzysztof Nyka					
Lesson types and methods of instruction	Lesson type	Lecture	Tutorial	Laboratory	Project	Seminar	SUM
	Number of study hours	0.0	0.0	0.0	15.0	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		2.0		8.0	25
Subject objectives	Gaining practical knowledge and skills relating to the design of selected integrated RF circuits used in modern wireless communication systems.						

Learning outcomes	Course outcome	Subject outcome	Method of verification
	[K7_W04] knows and understands, to an increased extent, the principles, methods and techniques of programming and the principles of computer software development or programming devices or controllers using microprocessors or other elements or programmable devices specific to the field of study, and organization of work of systems using computers or such devices	Knows rules of configuration of an advanced CAD for microwave circuits	[SW3] Assessment of knowledge contained in written work and projects
	[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	Knows the properties of operation of selected linear and nonlinear semiconductor microwave circuits	[SW3] Assessment of knowledge contained in written work and projects
	[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	Can design selected microwave circuits using advanced CAD tools	[SU1] Assessment of task fulfilment
	[K7_U04] can apply knowledge of programming methods and techniques as well as select and apply appropriate programming methods and tools in computer software development or programming devices or controllers using microprocessors or programmable elements or systems specific to the field of study, making assessment and critical analysis of the prepared software as well as a synthesis and creative interpretation of information presented with it	Can prepare the scripts for simulation configuration and presentation of the results in an advanced CAD tool.	[SU4] Assessment of ability to use methods and tools
Subject contents	<p>Design of a simple diode detector in selected microwave bands</p> <p>Design of a microwave detector with bias compensation</p> <p>Design of an ultra wide band travelling wave amplifier</p>		
Prerequisites and co-requisites	Wireless Circuits Design, Integrated Active Circuits in Wireless Communication		
Assessment methods and criteria	Subject passing criteria	Passing threshold	Percentage of the final grade
	Project	50.0%	100.0%
Recommended reading	Basic literature	S.C. Cripps, Advanced Techniques in RF Power Amplifier Design, Artech House, 2002	
		C. W. Sayre, Complete Wireless Design (2 <sup>nd</sup> ed.), McGraw Hill, 2008	
	Supplementary literature	none	
	eResources addresses	Adresy na platformie eNauzanie:	

Example issues/ example questions/ tasks being completed	
Work placement	Not applicable

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