



Subject card

Subject name and code	Compatibility of Radio Communication Systems, PG_00048367						
Field of study	Electronics and Telecommunications						
Date of commencement of studies	February 2024	Academic year of realisation of subject			2023/2024		
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	1	Language of instruction			Polish		
Semester of study	1	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 hab. inż. Jarosław Sadowski					
	Teachers	dr hab. inż. Jarosław Sadowski					
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	Presentation and training of rules of intra- and intersystem electromagnetic compatibility analysis for radiocommunication.						

Learning outcomes	Course outcome	Subject outcome	Method of verification
	[K7_U09] can carry out a critical analysis of the functioning of existing technical solutions and assess these solutions, as well as apply experience related to the maintenance of advanced technical systems, devices and facilities typical for the field of studies, gained in the professional engineering environment	Student can explain the relation between parameters of real radio communication equipment and its behaviour in electromagnetic environment.	[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	Student can analyse the impact of interferences on radio communication range in cellular network.	[SU1] Assessment of task fulfilment
	[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	Student is able to evaluate the conditions of radio communication equipment functioning taking into account parameters from equipment data sheets and standards.	[SU1] Assessment of task fulfilment
	[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.	Student knows the rules of electromagnetic compatibility analysis important for the modern radio communication networks design.	[SW3] Assessment of knowledge contained in written work and projects

Subject contents	<ol style="list-style-type: none"> <li>1. Radio system range limitations – design principles for radio station</li> <li>2. Design principles for radio network</li> <li>3. Compatibility analysis of a radio transmitter</li> <li>4. Compatibility analysis of a radio receiver</li> <li>5. Compatibility analysis of an antenna equipment</li> <li>6. Radio wave propagation aspects in the compatibility analysis</li> <li>7. Compatibility statistical analysis by use ITU-R Recommendation</li> <li>8. Design analysis of a single cellular network, compatibility aspects</li> <li>9. Design analysis of a multi cellular network, compatibility aspects</li> <li>10. Propagation - range analysis of a single cellular network project</li> <li>11. Propagation - range analysis of a multi cellular network project</li> <li>12. Radio equipments properties analysis</li> <li>13. Radio accessories properties analysis</li> <li>14. Formal documentation of the design proposals</li> <li>15. Summary of the design works</li> </ol>		
Prerequisites and co-requisites			
Assessment methods and criteria	Subject passing criteria	Passing threshold	Percentage of the final grade
	Project	50.0%	100.0%
Recommended reading	Basic literature	Sadowski J.: Kompatybilność systemów radiokomunikacyjnych - script for lecture (pdf).  Rotkiewicz W.: Kompatybilność elektromagnetyczna w radiotechnice	
	Supplementary literature	No requirements	
	eResources addresses	Adresy na platformie eNauczanie: Kompatybilność systemów radiokomunikacyjnych (2024) - Moodle ID: 32625 <a href="https://enauczanie.pg.edu.pl/moodle/course/view.php?id=32625">https://enauczanie.pg.edu.pl/moodle/course/view.php?id=32625</a>	
Example issues/ example questions/ tasks being completed			
Work placement	Not applicable		