GDAŃSK UNIVERSITY OF TECHNOLOGY

Subject card

Subject name and code	Radio Network Laboratory, PG_00064029		
Field of study	Electronics and Telecommunications		
Date of commencement of studies	February 2027	Academic year of realisation of subject	2027/2028
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	2	Language of instruction	Polish
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 -> Faculties of Gdańsk University of Technology		
Name and surname of lecturer (lecturers)	Subject supervisor	dr inż. Piotr Rajchowski	
	Teachers	dr inż. Piotr Rajchowski	

Lesson types

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	2.0	8.0	25

Subject objectives

Gaining practical knowledge and skills related to realizing measurements of modern wireless networks (e.g. with cellular structure) and general purpose devices using a radio interface. Tasks realized during the course correspond to engineering and scientific practices used in the business environment.

Learning outcomes

Course outcome	Subject outcome	Method of verification
[K7_U12] is able, to an increased extent, to analyze the operation of components and systems related to the field of study, as well as to measure their parameters and study their technical characteristics, and to plan and carry out experiments related to the field of study, including computer simulations, interpret the obtained results and draw conclusions	Student is able to use laboratory and field measurement equipment to measure the parameters of wireless networks and radio communication devices. Student is able to prepare measurement scenarios using specialistic tools.	[SU3] Assessment of ability to use knowledge gained from the subject [SU4] Assessment of ability to use methods and tools
[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 has learned how to interpret measurement data, is able to assess the credibility of measurements basing on the analysis of results and environmental parameters. Student is able to formulate recommendations based on the obtained results.	[SU5] Assessment of ability to present the results of task [SU2] Assessment of ability to analyse information

<table>
<tr><td>Subject contents</td><td>Course content – laboratory
Learning of practical measurement methods.

Development of measurement scenarios for modern wireless networks (including 5G).

Measurements of parameters of modern wireless networks in laboratory and field conditions.

Measurements of radio components.

Analysis and interpretation of measurement results.

Preparation of a report basing on the performed measurements.</td></tr>
<tr><td>Prerequisites
and co-requisites</td><td>Basic knowledge related to usage of measurement equipment (e.g. spectrum analyzer), knowledge about environment for analyzing and presenting measurement data (e.g. Matlab.)</td></tr>
<tr><td>Assessment methods
and criteria</td><td><table>
<tr><th>Subject passing criteria</th><th>Passing threshold</th><th>Percentage of the final grade</th></tr>
<tr><td>Short report in middle of semester</td><td>50.0%</td><td>50.0%</td></tr>
<tr><td>Full report at the end of semester.</td><td>50.0%</td><td>50.0%</td></tr>
</table></td></tr>
<tr><td>Recommended reading</td><td><table>
<tr><td>Basic literature</td><td>Anritsu Corporation, 5G Measurements Knowledge Hub, 2024

Meik Kottkamp i inni, 5G New Radio, Rohde&Schwarz, 2019

Mathworks, Test and Measurement: 5G NR waveform generation, visualization, and transmitter performance analysis, 2024</td></tr>
<tr><td>Supplementary literature</td><td>not applicable</td></tr>
<tr><td>eResources addresses</td><td></td></tr>
</table></td></tr>
<tr><td>Example issues/
example questions/
tasks being completed</td><td>not applicable</td></tr>
<tr><td>Practical activites within
the subject</td><td>Not applicable</td></tr>
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