GDAŃSK UNIVERSITY OF TECHNOLOGY

Subject card

Subject name and code	Radio Communication Metrology, PG_00048143		
Field of study	Electronics and Telecommunications		
Date of commencement of studies	October 2022	Academic year of realisation of subject	2025/2026
Education level	first-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	4	Language of instruction	Polish
Semester of study	7	ECTS credits	2.0
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	prof. dr hab. inż. Jacek Stefański	
	Teachers	prof. dr hab. inż. Jacek Stefański	

Lesson types and methods of instruction

Lesson type	Lecture	Tutorial	Laboratory	Project	Seminar	SUM
Number of study hours	15.0	0.0	15.0	0.0	0.0	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

To familiarize students with basic methods of measurement of radio communication devices.

Learning outcomes

Course outcome	Subject outcome	Method of verification
[K6_U05] can plan and conduct experiments related to the field of study, including computer simulations and measurements; interpret obtained results and draw conclusions	The student knows how to operate and select the appropriate parameters of the equipment used during radiocommunication measurements	[SU4] Assessment of ability to use methods and tools
[K6_W31] Knows the definitions of measurement error and uncertainty, measurement methods, including digital methods of time, frequency and phase measurements, transducer properties and knows digital signal processing systems.	The student knows the construction and operation of basic measuring equipment and basic measurement methods in radiocommunication systems.	[SW1] Assessment of factual knowledge

Subject contents

1. Basic concepts 2. Measuring methods in radio communication 2. Measuring equipments 3. "TRUE RMS" meter 4. RF signal power meter 5. Signal generators 6. Digital oscilloscopes 7. Signal spectrum analyzers 8. Frequency meters 9. Vector circuit analyzer 10. Logic analyzer 11. Passive elements 12. Measurement station 13. Measurements of base and mobile stations 14. Automation of measurements of radio communication equipments 15. Automation of measurements in network maintenance and management

Prerequisites and co-requisites

No requirements

Assessment methods and criteria

Subject passing criteria	Passing threshold	Percentage of the final grade
Midterm colloquium	50.0%	70.0%
Practical exercise	50.0%	30.0%

Recommended reading

Basic literature	1. Catalogs, application notes and training materials of companies, e.g. R&S, Maxim, TI, Motorola 2. Steer M., Microwave and RF Design: A Systems Approach, SciTech Publishing, 2010 3. Carvalho NB, Schreurs D., Microwave and Wireless Measurement Techniques, Cambridge University Press, 2013 3. Polish Committee for Standardization, Methods of measurement in radio communication (general) 4. www.etsi.org 5. www.3gpp.org 6. Kreher R., UMTS Performance Measurement a Practical Guide to KPIs for the UTRAN Environment, Wiley & Sons, 2006
Supplementary literature	No requirements

	eResources addresses	
Example issues/ example questions/ tasks being completed	No issues / questions.	
Work placement	Not applicable	