GDAŃSK UNIVERSITY OF TECHNOLOGY

Subject card

Subject name and code	Radio Communication Equipment, PG_00048145		
Field of study	Electronics and Telecommunications		
Date of commencement of studies	October 2024	Academic year of realisation of subject	2027/2028
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 construction and operation of radio communication devices.

Learning outcomes

Course outcome	Subject outcome	Method of verification
[K6_W34] Knows the characteristics of telecommunications channels, methods of securing information, modulation systems, methods of access to the channel.	The student knows the construction of selected radio communication devices, solutions of selected functional units of the modern transmitter and receiver as well as development trends in the design of these devices.	[SW1] Assessment of factual knowledge
[K6_U06] can analyse the operation of components, circuits and systems related to the field of study, measure their parameters and examine technical specifications	The student knows the constructions, measuring techniques and parameters of transceivers used in radiocommunication.	[SU3] Assessment of ability to use knowledge gained from the subject

Subject contents

1. Radio emissions notation 2. Block diagram of a radiocommunication transmitter 3. Block diagram of a radiocommunication receiver 4. Frequency synthesizer (basic parameters, classification) 5. Basic synthesizer circuits 6. Digital frequency synthesizer 7. Receiver HF module, mixer 8. Intermediate frequency circuit and receivers selectivity 9. Transmitter structure and basic parameters 10. Digital baseband transmission: source and channel encoding 11. Interleaving and modulation techniques for digital radiocommunication transmitter 12. Transmitter HF module: power amplifier, classification, parameters and basic circuits. Matched circuits. Diplexers and duplexers 13. Examples of radiocommunication equipment: GSM mobile terminal, TETRA mobile terminal 14. Software defined radio (SDR) concept of a hardware platform 15. Software platform for SDR technique

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. Mitola J., Software Radio Architecture, Object-Oriented Approaches to Wireless Systems Engineering, John Wiley & Sons, Inc., 2000. 2. Bogdan T., Urządzenia radiowe, WSP, Warszawa 1991. 3. Lenkowski J., Technika odbioru radiowego, WNT, Warszawa 1970.

	Supplementary literature	No requirements
	eResources addresses	Adresy na platformie eNauczanie:
Example issues/ example questions/ tasks being completed	No issues / questions.	
Work placement	Not applicable	

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