GDAŃSK UNIVERSITY OF TECHNOLOGY

Subject card

Subject name and code	Wireless Local Networks, PG_00047896		
Field of study	Informatics		
Date of commencement of studies	October 2024	Academic year of realisation of subject	2026/2027
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	3	Language of instruction	Polish
Semester of study	6	ECTS credits	2.0
Learning profile	general academic profile	Assessment form	assessment
Conducting unit	Department Of Computer Communications -> Faculty Of Electronics Telecommunications And Informatics -> Wydziały Politechniki Gdańskiej		
Name and surname of lecturer (lecturers)	Subject supervisor	dr inż. Krzysztof Gierłowski	
	Teachers	dr inż. Krzysztof Gierłowski	

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	1.0	19.0	50

Subject objectives

The aim of the course is to acquaint students with the basic principles of operation of standard wireless networks, as well as elements of the evaluation of the quality of these networks.

Learning outcomes

Course outcome	Subject outcome	Method of verification
[K6_W01] knows and understands, to an advanced extent, mathematics necessary to formulate and solve simple issues related to the field of study	1. The student is able to solve simple problems that increase the level of network security. 2. The student has knowledge of real hardware solutions.	[SW1] Assessment of factual knowledge
[K6_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	1. Student examines the working efficiency of the IEEE 802.11 and IEEE 802.15.1 series wireless technology. 2. Student assesses the level of security of the above technologies	[SU4] Assessment of ability to use methods and tools [SU1] Assessment of task fulfilment
[K6_W03] knows and understands, to an advanced 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	1. Student identifies characteristics of wireless technologies described by IEEE 802 standards. 2. Student describes mechanisms of IEEE 802-based wireless networks. 3. Student evaluates security level of systems based on these technologies.	[SW1] Assessment of factual knowledge

<table>
<tr><td>Subject contents</td><td colspan="3">1. Classification of wireless networks: Overview of wireless systems 2. Basic features and applications of wireless networks 3. Features and parameters of transmission media, characteristics of radio and optical systems 4. Multiple access techniques (FDMA, TDMA, CDMA, SDMA) 5. Classification of channel access protocols: Evaluation of effectiveness of multiple access techniques 6. Characteristics of contention type algorithms (ALOHA, S-ALOHA, CSMA) 7. WLAN solutions principles of organization and operational modes 8. Standard WLAN solution - IEEE 802.11 9. Evaluation of DCF mode effectiveness CSMA/CA. PCF analysis 10. MAC QoS architecture traffic service differentiation in IEEE 802.11e 11. Selected WLAN design issues implementation and testing of WLANs. Operational modes of WiFi devices 12. Security of IEEE 802.11 - WEP protocol 13. Security of IEEE 802.11 WLANs - WEP and IEEE 802.11i protocols 14. PAN networks: Bluetooth and its profiles 15. Mobility support offered by MIP</td></tr>
<tr><td>Prerequisites and co-requisites</td><td colspan="3">Computer Networks</td></tr>
<tr><td>Assessment methods and criteria</td><td colspan="3"><table>
<tr><th>Subject passing criteria</th><th>Passing threshold</th><th>Percentage of the final grade</th></tr>
<tr><td>Practical exercise</td><td>50.0%</td><td>50.0%</td></tr>
<tr><td>Midterm colloquium</td><td>50.0%</td><td>50.0%</td></tr>
</table></td></tr>
<tr><td rowspan="3">Recommended reading</td><td>Basic literature</td><td colspan="2">Nowicki K., Woźniak J.: Przewodowe i bezprzewodowe sieci LAN, OW PW 2002

Yu-Kwong Ricky Kwok, Vincent K.N. Lau: Wireless Internet and mobile computing, Wiley 2007</td></tr>
<tr><td>Supplementary literature</td><td colspan="2">Hać A.: Mobile telecommunications protocols for data networks, Wiley 2007

Zheng J., Jamalipour A.:Wireless sensor networks. J. Wiley, 2012</td></tr>
<tr><td>eResources addresses</td><td colspan="2">Adresy na platformie eNauczanie:</td></tr>
<tr><td>Example issues/ example questions/ tasks being completed</td><td colspan="3">Wireless networks efficiency, standard algorithms for WLAN operation,access point modes of operation, WLAN security</td></tr>
<tr><td>Work placement</td><td colspan="3">Not applicable</td></tr>
</table>

Document generated electronically. Does not require a seal or signature.