GDAŃSK UNIVERSITY OF TECHNOLOGY

Subject card

Subject name and code	Safety and Reliability, PG_00048041
Field of study	Informatics, Biomedical Engineering, Biomedical Engineering, Biomedical Engineering

Date of commencement of studies	February 2024	Academic year of realisation of subject	2024/2025
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	2	ECTS credits	3.0
Learning profile	general academic profile	Assessment form	assessment

Conducting unit	Department of Computer Communications -> Faculty of Electronics, Telecommunications and Informatics

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	15.0	0.0	45
	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	45	6.0	24.0	75

Subject objectives	Lectures are designed to familiarize students with a process od designing, deploying and accessing cloud-based systems, with special attention devoted to aspects of their security and reliability. Practical project allows students to employ the theoretical knowledge in practice, by designing and deploying a functional element of a private cloud system. Laboratory exercises enables students to deploy and test such a cloud system element in a fully-controlled laboratory environment.

Learning outcomes	Course outcome	Subject outcome	Method of verification
	[K7_K02] is ready to provide critical evaluation of received content and to acknowledge the importance of knowledge in solving cognitive and practical problems	Student can interpret results of laboratory testing of a simple, private-cloud system and suggests design modifications as needed.	[SK5] Assessment of ability to solve problems that arise in practice
	[K7_U05] can plan and conduct experiments related to the field of study, including computer simulations and measurements; interpret obtained results and draw conclusions	Student can design and conduct a testing process of a simple private-cloud system, deployed in a fully controlled laboratory environment.	[SU4] Assessment of ability to use methods and tools
	[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	Students can design a basic, but functional private-cloud system, taking into account its security and reliability aspects.	[SU3] Assessment of ability to use knowledge gained from the subject
	[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 basic building blocks of cloud-based systems and their interactions. Additionally students knows general design steps related to such systems and most common risks to their security and reliability.	[SW1] Assessment of factual knowledge

Subject contents	
	1. Introduction to cloud systems. 2. Security aspects of datacenter installations.. 3. Types of cloud systems and their security specifics: public and private clouds. 4. Popular cloud system building blocks and relevant security mechanisms: storage, host virtualization, network connectivity, management, AAA. 5. Security aspects of cloud application design. 6. Trusted OS booting. 7. Application security in OS and network environments. 8. Security of remote access and management. 9. Resilience measures in networked systems. 10. Reliability mechanisms of networked systems.

Prerequisites and co-requisites	
	Theoretical knowledge and practical skills related to IP network configuration and management, as well as configuration and management of popular services deployed in their environment.

Assessment methods and criteria	Subject passing criteria	Passing threshold	Percentage of the final grade
	Laboratory experiments	50.0%	30.0%
	Practical project	50.0%	30.0%
	Written test	50.0%	40.0%

Recommended reading		
	Basic literature	• Lecture materials. • White papers and documentation of relevent private-cloud solutions and products.
	Supplementary literature	• Zaigham Mahmood, Thomas Erl, Ricardo Puttini, Cloud Computing: Concepts, Technology & Architecture, 2013
	eResources addresses	Adresy na platformie eNauczanie:

Example issues/ example questions/ tasks being completed	

Work placement	
	Not applicable