GDAŃSK UNIVERSITY OF TECHNOLOGY

Subject card

Subject name and code	Safety and Reliability, PG_00048041		
Field of study	Bezpieczeństwo i niezawodność systemów chmurowych		
Date of commencement of studies	February 2025	Academic year of realisation of subject	2025/2026
Education level	second-cycle studies	Subject group	
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 -> Wydziały Politechniki Gdańskiej		
Name and surname of lecturer (lecturers)	Subject supervisor	dr inż. Krzysztof Gierłowski	
	Teachers	dr inż. Krzysztof Gierłowski	

Lesson types

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

eNauczanie source addresses:

Moodle ID: 1705 Bezpieczeństwo i niezawodność systemów chmurowych
https://enauczanie.pg.edu.pl/2025/course/view.php?id=1705

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_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] Ocena wiedzy faktograficznej
[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] Ocena umiejętności wykorzystania wiedzy uzyskanej w ramach przedmiotu
[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] Ocena umiejętności rozwiązywania problemów występujących w praktyce

<table>
<tr><td>Subject contents</td><td>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.</td></tr>
<tr><td>Prerequisites and co-requisites</td><td>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.</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>Written test</td><td>50.0%</td><td>40.0%</td></tr>
<tr><td>Practical project</td><td>50.0%</td><td>30.0%</td></tr>
<tr><td>Laboratory experiments</td><td>50.0%</td><td>30.0%</td></tr>
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<tr><td>Recommended reading</td><td><table>
<tr><td>Basic literature</td><td>• Lecture materials.
• White papers and documentation of relevent private-cloud solutions and products.</td></tr>
<tr><td>Supplementary literature</td><td>• Zaigham Mahmood, Thomas Erl, Ricardo Puttini, Cloud Computing: Concepts, Technology & Architecture, 2013</td></tr>
<tr><td>eResources addresses</td><td></td></tr>
</table></td></tr>
<tr><td>Example issues/ example questions/ tasks being completed</td><td></td></tr>
<tr><td>Practical activites within the subject</td><td>Not applicable</td></tr>
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