

。 GDAŃSK UNIVERSITY OF TECHNOLOGY

Subject card

Subject name and code	Cloud Environment Management, PG_00048061							
Field of study	Informatics							
Date of commencement of studies	February 2024		Academic year of realisation of subject		2023/2024			
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	1		ECTS credits		4.0			
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					
			dr inż. Michał Hoeft					
Lesson types and methods of instruction	Lesson type	Lecture	Tutorial	Laboratory	Projec	t	Seminar	SUM
	Number of study hours	15.0	0.0	0.0	15.0		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		8.0		62.0		100
Subject objectives	Public and private clouds are a very specific type of network computing systems, both in terms of offered functionality and involved mechanisms. Such type of system requires a specific knowledge and skills from its designer and administrator. The course aims to provide students with characteristics of cloud systems, their elements, architectures and services commonly provided, complete with their deployment modes. Additionally, management and maintenance and orchestration methods appropriate for a cloud environment will be addressed.							

Learning outcomes	Course outcome	Subject outcome	Method of verification				
	[K7_W41] Knows and understands, to an increased extent, the standards, production methods, life cycle and development trends of software as well as information systems and applications.	1. Student describes characteristics of cloud management solutions.	[SW1] Assessment of factual knowledge				
	[K7_W04] Knows and understands, to an advanced extent, the principles, methods and techniques of programming and the principles of computer software development or programming devices or controllers using microprocessors or programmable elements or systems specific to the field of study, and organisation of systems using computers or such devices	 Student identifies characteristics of cloud systems including its advantages, drawbacks, and requirements it poses to devices and operating systems. Student identifies basic building blocks of a cloud system. Student describes interfaces between elements of a cloud system. 	[SW1] Assessment of factual knowledge				
	[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	1. Student implements simple management mechanisms for a cloud system providing a specific service.	[SU4] Assessment of ability to use methods and tools				
	[K7_U42] can solve engineering and research problems including design, assessment and maintenance of information systems and applications, using experimental methods and management techniques	 Student evaluates implementation requirements of a cloud system in a specific deployment case. Student designs management mechanisms for a specific cloud system deployment scenario. 	[SU3] Assessment of ability to use knowledge gained from the subject				
	[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 evaluates the utility of cloud system in specific business cases. Student evaluates the utility of specific management mechanisms in a specific cloud environment. 	[SK5] Assessment of ability to solve problems that arise in practice				
Subject contents	 Introduction to cloud environment Definition of common terms, Basic characteristics, Deployment models, 						
	 Service models, Enabling technologies, Infrastructure elements, Specialized cloud mechanisms, Basic architectures. 						
	Virtualization techniques 1. Overview of virtualization types 2. Containers and related mechanisms						
	Management tools and mechanisms						
	 Vagrant – dynamic management of virtual machines, Docker – dynamic management of containers, Popular management and orchestration solutions: Puppet, Chef, Saltstack, Ansible OpenStack and its architectural elements Employment of SDN and OpenFlow in cloud environment. 						
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	Subject passing criteria	Passing threshold	Percentage of the final grade				
and criteria	Practical project	50.0%	50.0%				
	Written test	50.0%	50.0%				
Recommended reading	Basic literature	Lecture presentations.					

	Supplementary literature	Zaigham Mahmood, Thomas Erl, Ricardo Puttini, Cloud Computing: Concepts, Technology & Architecture, 2013
	eResources addresses	Adresy na platformie eNauczanie:
		Zarządzanie środowiskiem chmurowym (2024L) - Moodle ID: 37077 https://enauczanie.pg.edu.pl/moodle/course/view.php?id=37077
Example issues/ example questions/ tasks being completed		
Work placement	Not applicable	

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