GDAŃSK UNIVERSITY OF TECHNOLOGY

Subject card

Subject name and code	Cloud Environment Management, PG_00063906
Field of study	Informatics

Date of commencement of studies	February 2026	Academic year of realisation of subject	2025/2026
Education level	second-cycle studies	Subject group	Optional subject group Specialty 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	5.0
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 dr inż. Michał Hoeft

Lesson types and methods of instruction	Lesson type	Lecture	Tutorial	Laboratory	Project	Seminar	SUM
	Number of study hours	15.0	0.0	0.0	30.0	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	10.0	70.0	125

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_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_W04] knows and understands, to an increased extent, the principles, methods and techniques of programming and the principles of computer software development or programming devices or controllers using microprocessors or other elements or programmable devices specific to the field of study, and organization of work of systems using computers or such devices	1. Student identifies characteristics of cloud systems including its advantages, drawbacks, and requirements it poses to devices and operating systems. 2. Student identifies basic building blocks of a cloud system. 3. Student describes interfaces between elements of a cloud system.	[SW1] Assessment of factual knowledge
	[K7_U12] is able, to an increased extent, to analyze the operation of components and systems related to the field of study, as well as to measure their parameters and study their technical characteristics, and to plan and carry out experiments related to the field of study, including computer simulations, interpret the obtained results and draw conclusions	1. Student evaluates implementation requirements of a cloud system in a specific deployment case. 2. Student designs management mechanisms for a specific cloud system deployment scenario.	[SU3] Assessment of ability to use knowledge gained from the subject
	[K7_W10] knows and understands, to an increased extent, the basic processes occurring in the life cycle of equipment, objects and technical systems, as well as methods of supporting processes and functions, specific to the field of study	1. Student describes characteristics of cloud management solutions.	[SW1] Assessment of factual knowledge

Subject contents	Introduction to cloud environment 1. Definition of common terms, 2. Basic characteristics, 3. Deployment models, 4. Service models, 5. Enabling technologies, 6. Infrastructure elements, 7. Specialized cloud mechanisms, 8. Basic architectures. Virtualization techniques 1. Overview of virtualization types 2. Containers and related mechanisms Management tools and mechanisms 1. Vagrant dynamic management of virtual machines, 2. Docker dynamic management of containers, 3. Popular management and orchestration solutions: Puppet, Chef, Saltstack, Ansible 4. 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 and criteria	Subject passing criteria	Passing threshold	Percentage of the final grade
	Written test	50.0%	50.0%
	Practical project	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:
Example issues/ example questions/ tasks being completed		
Work placement	Not applicable	

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