University of Gdańsk

Subject card

Subject name and code	Cloud Technologies, PG_00204176						
Field of study	Informatics						
Date of commencement of studies	October 2026		Academic year of realisation of subject		2027/2028		
Education level	Bachelor's studies		Subject group		Obligatory subject group in the field of study Subject group related to practical vocational preparation		
Mode of study	full-time studies		Mode of delivery		at the university		
Year of study	2		Language of instruction		Polish		
Semester of study	4		ECTS credits		3.0		
Learning profile	practical		Assessment form		credit		
Conducting unit	Institute of Informatics -> Faculty of Mathematics, Physics and Informatics -> Rector						
Name and surname of lecturer (lecturers)	Subject supervisor		dr Jakub Neumann				
	Teachers						
Lesson types	Lesson type	Lecture	Tutorial	Laboratory	Project	Seminar	SUM
	Number of study hours	15.0	0.0	30.0	0.0	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		0.0		30.0	75
Subject objectives	Familiarizing students with solutions, techniques and technologies for designing, producing and delivering IT systems using the cloud, with particular emphasis on containerization techniques and service orchestration						

Learning outcomes

Course outcome	Subject outcome	Method of verification
[INFPL3_W07] knows and understands facts and methods to an advanced degree in the field of designing, developing, testing, implementing and maintaining web applications and their security; applies this knowledge in practical projects, creating web applications and preparing their functional and performance tests	has knowledge of the possibilities offered by the use of cloud solutions, in particular knows the functionalities and purpose of containerization and service orchestration	[SW4] test/exam - oral or written [SW2] presentation/project/paper/ report
[INFPL3_U05] is able to perform tasks and solve complex and unusual problems in the area of advanced functionalities of operating systems, in particular related to network aspects, virtualization, containerization and other cloud technologies	can effectively build Docker containers, manage networks and volumes in containers, build a system using Docker Compose. Can create a simple cluster of services using the Kubernetes orchestrator	[SU2] presentation/project/paper/ report [SU4] test/exam - oral or written
[INFPL3_K02] is ready to recognize the importance of knowledge in solving cognitive problems and practical and seeking opinions experts in case of difficulties with independent problem solving	using professional vocabulary related to containerization and orchestration as well as concepts from operating systems, in particular in the field of network support, can solve problems in building service clusters (troubleshooting)	[SK2] presentation/project/paper/ report [SK4] test/exam - oral or written
[INFPL3_W08] knows and understands facts and methods to an advanced degree in the field of the use of software development, maintenance and test tools and environments; apply this knowledge to create efficient, scalable and secure applications	has knowledge of the use of the Docker containerization system and the Kubernetes orchestrator and tools accompanying these ecosystems	[SW4] test/exam - oral or written [SW2] presentation/project/paper/ report

Subject contents

- goals pursued by the Cloud Native Computing Foundation
- containerization of services of the Docker system, effective image building, network and volume support, container security
- building a service cluster using Docker Compose
- service orchestration on the example of the Kubernetes system, basic cluster components
- building a simple cluster of Kubernetes services, managing and developing components in the cluster

Prerequisites and co-requisites

Passed course "Protokoły sieci web"

Assessment methods and criteria

Subject passing criteria	Passing threshold	Percentage of the final grade
projects	51.0%	40.0%
tests	51.0%	60.0%

Recommended reading

Basic literature	Docker in Action, aut. Jeff Nickoloff, Stephen Kuenzli, ISBN 9781617294761
Supplementary literature	Kubernetes in Action, aut. Marko Lukša, ISBN 9781617293726
eResources addresses	

Example issues/ example questions/ tasks being completed

Work placement

Not applicable

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