

Subject card

Subject name and code	Cloud technologies, PG_00143997						
Field of study	Informatics						
Date of commencement of studies	October 2025		Academic year of realisation of subject		2026/2027		
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		
	[INFL3_U05] uses 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		
	[INFL3_W07] has knowledge of designing, developing, testing, implementing and maintaining web applications and their security		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		
	[INFL3_W08] has knowledge of the use of software development, maintenance and test tools and environments		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		
	[INFL3_K02] can precisely formulate questions to deepen his/her own understanding of a given topic or to find missing elements of reasoning		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		

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
		51.0%	60.0%
		51.0%	40.0%
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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