

Subject card

Subject name and code	Cloud Computing, PG_00178067						
Field of study	Informatics and Econometrics						
Date of commencement of studies	October 2025		Academic year of realisation of subject		2027/2028		
Education level	Bachelor's studies		Subject group		Obligatory subject group in the field of study 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	3		Language of instruction		Polish		
Semester of study	5		ECTS credits		7.0		
Learning profile	academic		Assessment form		credit		
Conducting unit							
Name and surname of lecturer (lecturers)	Subject supervisor		dr hab. Michał Kuciapski, prof. UG				
	Teachers						
Lesson types	Lesson type	Lecture	Tutorial	Laboratory	Project	Seminar	SUM
	Number of study hours	15.0	0.0	60.0	0.0	0.0	75
	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	75		4.0		96.0	175
Subject objectives	Learning back-end and front-end programming languages for web applications through cloud computing. Acquiring skills in programming and hosting dynamic sites in the cloud using data storage services. Using server-less services to create scalable applications. Using artificial intelligence in applications thanks to cloud computing services. Using Platform-as-a-Service and Infrastructure-as-a-Service solutions.						
Learning outcomes	Course outcome		Subject outcome		Method of verification		
	[liEL3_W06] To an advanced degree, the student knows and understands the processes and methods of creating, developing, and providing appropriate conditions for using informatics or statistics tools, particularly those that improve human and organizational functioning.		Knows and understands the principles and specifics of cloud programming. Programs dynamic web applications hosted in the cloud. Uses artificial intelligence to recognize data.		[SW2] presentation/project/paper/report		
	[liEL3_U02] Students can select or construct econometrics, informatics or statistics tools and apply them to describe and solve economic and social problems.		The student is able to solve the presented problem using cloud computing applications.		[SU2] presentation/project/paper/report		
	[liEL3_U12] The student can design and implement IT systems to enhance business operations and effectively utilize modern ICT technologies for management and business communication.		The student is able to develop dynamic, cloud-hosted web applications. The student is able to utilize artificial intelligence for data recognition.		[SU2] presentation/project/paper/report		

Subject contents	Lectures		
	1. Concept, role, and history of cloud computing technology. 2. Overview of cloud computing services. 3. Designing and deploying Infrastructure as a Service (IaaS). 4. Designing and deploying Software as a Service (SaaS). 5. Designing and deploying Database as a Service (DBaaS). 6. Designing and deploying the NoSQL Data layer. 7. Vertical and horizontal scaling of cloud services. 8. Designing and integrating distributed subsystems for asynchronous task execution. 9. Real-time communication.		
	Laboratory ClassesI. Azure:		
	1. Introduction to the Azure platform. 2. Deploying virtual machines as Infrastructure as a Service (IaaS). 3. Website design and deployment. 4. Cloud database services integration. 5. Vertical and horizontal scaling of web applications. 6. Tables and Blobs. 7. Queues and Worker Roles. 8. Redis Cache. 9. SignalR. 10. Notification Services. 11. Service Bus. 12. Cloud microservices. 13. Azure Machine Learning.		
	II. Amazon Web Services:		
	1. Introduction to Amazon Web Services (AWS). 2. Managing AWS solutions. 3. Utilizing AWS compute services. 4. Utilizing AWS storage services. 5. Working with AWS databases. 6. Utilizing AWS messaging services. 7. Creating CI/CD pipelines for application deployment in AWS. 8. Implementing AWS security practices using IAM, KMS, and MFA. 9. Configuring AWS services for optimal performance.		
Prerequisites and co-requisites	Non-relational database solutions, Front-end frameworks, Distributed application programming.		
Assessment methods and criteria	Subject passing criteria	Passing threshold	Percentage of the final grade
	final project	51.0%	100.0%
Recommended reading	Basic literature	1. Fryźlewicz Z., Nikończuk D., Windows Azure. Wprowadzenie do programowania w chmurze, Helion 2022	
	Supplementary literature	1. Sunilkumar Manvi Gopal Shyam, Cloud Computing. Concepts and Technologies, Taylor & Francis 2024	
	eResources addresses		
Example issues/ example questions/ tasks being completed	1. Develop a business application that uses a broad set of cloud computing services for data storage, processing, and visualization.		
Work placement	Not applicable		

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