

Subject card

Subject name and code	Data Warehouses, PG_00156506						
Field of study	Informatics and Econometrics						
Date of commencement of studies	October 2024		Academic year of realisation of subject		2024/2025		
Education level	Master's studies		Subject group		Obligatory subject group in the field of study 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		1.0		
Learning profile	academic		Assessment form		credit		
Conducting unit	Department of Business Informatics -> Faculty of Management -> Rector						
Name and surname of lecturer (lecturers)	Subject supervisor		dr Jacek Maślankowski				
	Teachers		dr Jacek Maślankowski				
Lesson types	Lesson type	Lecture	Tutorial	Laboratory	Project	Seminar	SUM
	Number of study hours	15.0	0.0	0.0	0.0	0.0	15
	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	15		5.0		15.0	35
Subject objectives	Familiarizing students with a comprehensive approach to data warehouse design.Preparing students to write scripts that manage data collected in data warehouses.						

Learning outcomes	Course outcome	Subject outcome	Method of verification
	[liEMU2_W04] The student has an in-depth knowledge of advanced mathematical, statistical, econometric and IT methods that enable the acquisition, processing and analysis of data reflecting the functioning and growth of the national economy and its components, as well as the phenomena and processes occurring in their environment.	Understands the essence of creating and using a data warehouse. Critically evaluates the data warehouse schemas used.	[SW4] test/exam - oral or written
	[liEMU2_U04] The student is able to plan, design, and program information systems at an advanced level, supporting the operation of business entities.	Designs a data warehouse using multidimensional models. Creates queries for the ETL process that transform data transferred from source systems. Manages the data warehouse and automates processes occurring in them.	[SU4] test/exam - oral or written
	[liEMU2_K03] The student is able to communicate freely with the public inside and outside the workplace, transfer his knowledge and share his skills through various media.	Adheres to the principles of teamwork in the process of creating a data warehouse. Adheres to the principles of data integration by assessing the quality of data sources. Eagerly takes on the challenges of integrating data from multiple sources.	[SK4] test/exam - oral or written
	[liEMU2_W05] The student has an in-depth knowledge of socio-economic data sources, their databases and how to create them.	Understands the essence of creating and using a data warehouse. Critically evaluates the data warehouse schemas used.	[SW4] test/exam - oral or written
	[liEMU2_K02] The student can communicate freely with the public on specialised topics in the field of computer science and econometrics in and outside the workplace, communicate his knowledge and share his skills through various media. Culturally participates in discussions, is not afraid to ask questions and knows how to give constructive criticism.	Adheres to the principles of teamwork in the process of creating a data warehouse. Adheres to the principles of data integration by assessing the quality of data sources. Eagerly takes on the challenges of integrating data from multiple sources.	[SK4] test/exam - oral or written
	[liEMU2_U02] The student is able to proficiently acquire detailed information about economic processes and phenomena through direct observation, planned experimentation or database queries, as well as collect and process it using modern information technology tools.	Designs a data warehouse using multidimensional models. Creates queries for the ETL process that transform data transferred from source systems. Manages the data warehouse and automates processes occurring in them.	[SU4] test/exam - oral or written
	[liEMU2_K01] The student understands the need for continuous completion and deepening of acquired knowledge. The student inspires and organizes others' learning processes.	Adheres to the principles of teamwork in the process of creating a data warehouse. Adheres to the principles of data integration by assessing the quality of data sources. Eagerly takes on the challenges of integrating data from multiple sources.	[SK4] test/exam - oral or written
Subject contents	Place of data warehouses in Business Intelligence systems. Theoretical foundations and problem definition. Creation of multidimensional data cubes. MOLAP, ROLAP and HOLAP data storage and analysis technology. Design of the ETL process - extraction, transformation, loading. Feeding multidimensional cubes with data and browsing data. IT tools for creating, processing and managing data sets (types of available software, costs. Apache Hadoop ecosystem tools. Analytical tools supporting Apache Spark: Jupyter Notebooks, Zeppelin Notebooks, RStudio IDE. NoSQL databases. HDFS data set structure. MapReduce algorithms and regular expressions. Technical and hardware requirements for collecting large data sets (hardware, servers, connections, backup systems, planning and cost estimates). Market of IT services related to Big Data (types of services provided and costs).		

Prerequisites and co-requisites	Knowledge of the basics of database design		
Assessment methods and criteria	Subject passing criteria	Passing threshold	Percentage of the final grade
	Exam - test	51.0%	100.0%
Recommended reading	Basic literature	Kimball R., Ross M., The Data Warehouse Toolkit: The Definitive Guide to Dimensional Modeling, John Wiley & Sons, 2013 Inmon W., Building the Data Warehouse. Fourth edition., John Wiley & Sons, New York 2005 Glass, R., Callahan, S., The Big Data-Driven Business: How to Use Big Data to Win Customers, Beat Competitors, and Boost Profits, John Wiley & Sons 2015	
	Supplementary literature	Glass, R., Callahan, S., The Big Data-Driven Business: How to Use Big Data to Win Customers, Beat Competitors, and Boost Profits, John Wiley & Sons 2015 Documentation Apache Hadoop: http://hadoop.apache.org	
	eResources addresses		
	Example issues/ example questions/ tasks being completed	List the types of data warehousesWhat are the types of OLAP	
Work placement	Not applicable		

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