

Subject card

Subject name and code	Fundamentals of Business Intelligence, PG_00156425						
Field of study	Information Science and Econometrics						
Date of commencement of studies	October 2024		Academic year of realisation of subject		2024/2025		
Education level	postgraduate 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		English		
Semester of study	1		ECTS credits		5.0		
Learning profile	academic		Assessment form				
Conducting unit	Katedra Informatyki Ekonomicznej -> Faculty of Management						
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	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		20.0		60.0	125
Subject objectives	Familiarizing students with a comprehensive approach to designing data warehouses and Business Intelligence systems.						
	Preparing students to write scripts for querying the data collected in Business Intelligence systems						

Learning outcomes	Course outcome	Subject outcome	Method of verification
	[liEMU2_W05] The student has an in-depth knowledge of socio-economic data sources, their databases and how to create them.	Finds appropriate data sources to solve a specific problem and critically evaluates the quality of that data.	[SW4] 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.	Takes on challenges related to expanding reporting functionality.	[SK2] presentation/project/paper/report
	[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 tabular, graphical and map reports based on database queries, creates queries for reporting systems – in SQL and MDX languages, manages the reporting server and automates the processes occurring in them.	[SU2] presentation/project/paper/report
	[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 purpose of creating and using Business Intelligence systems and the mathematical, statistical and econometric methods used therein, e.g. data mining models.	[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.	Communicates with other members of the project group to complement the functionality of the presented solutions.	[SK2] presentation/project/paper/report
	[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 report creation process.	[SK2] presentation/project/paper/report
	[liEMU2_U04] The student is able to plan, design, and program information systems at an advanced level, supporting the operation of business entities.	Critically evaluates reports used in Business Intelligence.	[SU2] presentation/project/paper/report

Subject contents	Lecture		
	Introduction to data warehouse and decision support systems. Data warehouse architecture. Data mining methods and OLAP systems. Data warehouse modeling - data integration. Data warehouse implementation methodologies. Business Intelligence systems classification and its role. Creating data models. Building data models use cases. Data warehouse management. Exercises Creating a staging area: advanced forms of select statements, transferring data sets. Implementation of a multidimensional model: creating multidimensional cubes with dimensions. Transferring data to a multidimensional model: designing the ETL process. Analytical and reporting tools: MS Reporting Services - creating reports and multidimensional analyses. The essence of reporting services - SQL Server Reporting Services, PowerBI, Apache SuperSet, deployment scenarios, installation. Report preparation report design planning, data retrieval, layout design, interactions and features Data visualization - charts, gauges, indicators, maps. RDL (Report Definition Language) - syntax and description of XML tags. Report server - security and administration.		
Prerequisites and co-requisites	Knowledge of the SQL language and the basics of creating databases		
Assessment methods and criteria	Subject passing criteria	Passing threshold	Percentage of the final grade
	Project	51.0%	50.0%
	Exam - test	51.0%	50.0%

Recommended reading	Basic literature	Kimball R., Ross M., The Data Warehouse Toolkit: The Definitive Guide to Dimensional Modeling, John Wiley & Sons, 2013 Hughes S., Hands-On SQL Server 2019 Analysis Services: Design and query tabular and multi-dimensional models using Microsoft's SQL Server Analysis Services, 2020 Larson B., Microsoft SQL Server 2016 Reporting Services, Fifth Edition, McGraw-Hill Education, 2016 Documentation of MS SQL Server Analysis Services and Reporting Services
	Supplementary literature	Wrycza S., Maślankowski J., Informatyka ekonomiczna. Teoria i zastosowania., PWN, 2019 - rozdział 19. Systemy Business Intelligence; rozdział 15. Bazy Danych. Big Data. Inmon W., Building the Data Warehouse. Fourth edition., John Wiley & Sons, New York 2005 Collier K.W., Agile Analytics: A Value-Driven Approach to Business Intelligence and Data Warehousing, Addison Wesley, 2012
	eResources addresses	Adresy na platformie eNauczanie:
Example issues/ example questions/ tasks being completed	Data Warehouse ArchitectureTypes of Business Intelligence Systems	
Work placement	Not applicable	

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