

Subject card

Subject name and code	Data Visualization (PowerBI), PG_00123425						
Field of study	Economics						
Date of commencement of studies	October 2024	Academic year of realisation of subject			2025/2026		
Education level	Master's studies	Subject group			Obligatory subject group in the field of study Specialty subject group		
Mode of study	full-time studies	Mode of delivery			at the university		
Year of study	2	Language of instruction			Polish		
Semester of study	3	ECTS credits			5.0		
Learning profile	academic	Assessment form			credit		
Conducting unit							
Name and surname of lecturer (lecturers)	Subject supervisor		dr hab. Stanisław Umiński				
	Teachers		dr hab. Stanisław Umiński				
Lesson types	Lesson type	Lecture	Tutorial	Laboratory	Project	Seminar	SUM
	Number of study hours	0.0	0.0	45.0	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		0.0	45
Subject objectives	As part of the course " Data Visualization (PowerBI) ", students will learn methods of data transformation in order to use them in making tactical and strategic decisions in business processes . BI tools concern the methods of acquiring , integrating and analyzing data sets and their effective presentation in the form of tables , maps , graphics , charts and advanced reports . Effective data analysis allows you to optimize decision-making processes and improve the competitive position of the organization .						

Learning outcomes	Course outcome	Subject outcome	Method of verification
	[EKONMU2_U08] can independently analyse economic and social phenomena and processes, and can perform a theoretically deepened assessment of such phenomena, using appropriately selected research method	The student is able to independently analyze economic and social phenomena and processes, has the ability to assess these phenomena in a theoretical way, using an appropriately selected research method including quantitative and qualitative analyses with the use of automated techniques of visual representation of the results of the analysis	[SU1] oral statement/conversation/discussion [SU2] presentation/project/paper/report
	[EKONMU2_U04] can forecast and model complex economic and social processes using quantitative and qualitative methods and tools developed by economic sciences (including statistics and econometrics)	The student forecasts and models complex economic and social processes using data visualization methods	[SU1] oral statement/conversation/discussion [SU2] presentation/project/paper/report
	[EKONMU2_W06] knows in advanced stage statistical and econometric methods and tools for description and macro- and microeconomic modelling of economic structures and public institutions and processes occurring in them	The student knows statistical and econometric methods and tools of data visualization for macro- and microeconomic modeling, taking into account the conditions of an open economy subjected to increasing competitive pressure	[SW1] oral statement/conversation/discussion [SW2] presentation/project/paper/report
	[EKONMU2_K02] is aware of the level of their knowledge in the area of solving complex problems in economic,; understands the need to extend and update this knowledge throughout his/her life	The student is aware of the limitations of his/her knowledge in the field of data analysis and visualization, understands the need to deepen and update this knowledge throughout his/her life	[SK1] oral statement/conversation/discussion [SK2] presentation/project/paper/report

	Course outcome	Subject outcome	Method of verification
	<p>[EKONMU2_U15] can independently expand and improve acquired knowledge and skills in economics; is open to new ideas and techniques; tends to learn using any accessible method and to interact with other participants of the learning process</p>	<p>The student independently complements and improves the acquired knowledge and skills in the field of data analysis and visualization, is open to new techniques, is inclined to learn using any method and draws on interaction</p>	<p>[SU1] oral statement/conversation/discussion [SU2] presentation/project/paper/report</p>

	Course outcome	Subject outcome	Method of verification

	Course outcome	Subject outcome	Method of verification
		<p>The student independently complements and improves the acquired knowledge and skills in the field of data analysis and visualization, is open to new techniques, is inclined to learn using any method and draws on interaction</p> <p>The student independently complements and improves the acquired knowledge and skills in the field of data analysis and visualization, is open to new techniques, is inclined to learn using any method and draws on interaction</p>	
	[EKONMU2_U01] can creatively interpret and explain economic and social phenomena and relations between them, using acquired knowledge of economics, finance and management sciences	The student interprets and explains economic and social phenomena and the relationships between them, using advanced methods for data visualization	[SU1] oral statement/conversation/discussion [SU2] presentation/project/paper/report
	[EKONMU2_U03] can analyse causes and course of economic and social processes and phenomena, formulate his/her own opinions on the subject, construct research hypotheses, and select and apply methods of their verification	The student analyzes the causes and course of economic and social processes and phenomena, formulates opinions on the subject, formulates research hypotheses, and verifies them	[SU1] oral statement/conversation/discussion [SU2] presentation/project/paper/report
	[EKONMU2_K01] recognises the importance of knowledge in the field of economics in the process of identifying and solving economic problems and of consulting experts when having difficulties in solving them independently	The student appreciates the importance of knowledge and data visualization techniques in the process of identifying and solving economic problems and seeking expert opinions	[SK1] oral statement/conversation/discussion [SK2] presentation/project/paper/report

Subject contents	<p>1 . Introduction to databases (data acquisition , database integration , relationships in databases , retrieving data from databases , queries)</p> <p>2 . Introduction to PowerBI</p> <p>3 . Basic BI tools (pivot tables , mapping , visualization methods)</p> <p>4 . Basic functions of DAX 5 . Variables , VAR submission</p> <p>6 . Create interactive reports using MS Office tools</p>		
Prerequisites and co-requisites			
Assessment methods and criteria	Subject passing criteria	Passing threshold	Percentage of the final grade
Recommended reading	Basic literature	<p>1. Russo M., Ferrari A., (2019) Kompletny przewodnik po DAX. Analiza biznesowa przy użyciu Microsoft Power BI, SQL Server Analysis Services i Excel, wyd. 2, APN Promise, Warszawa</p> <p>2. Russo M., Ferrari A., (2020) DAX Patterns, 2nd edition, SQLBI Corp, Las Vegas, USA</p> <p>3. Michael A., Wehrbe B., Decker J., (2019) <i>Analizy Business Intelligence. Zaawansowane wykorzystywanie Excela</i>, Helion, ISBN 978-83-283-5808-9</p> <p>4. Kirk A., (2019) Data Visualisation. A Handbook for Data Driven Design, 2nd edition, Sage Publications, Los Angeles</p> <p>5. O. Wilke C., (2019) Fundamentals of Data Visualization: A Primer on Making Informative and Compelling Figures, O'Reilly, Beijing, Boston</p>	
	Supplementary literature	<p>ABSL (2024) Sektor nowoczesnych usług biznesowych w Polsce 2024, Warszawa (współautorzy raportu T. Brodzicki, S. Umiński)</p> <p>ABSL (2023) Strategic Foresight in the Business Services Sector 2023, Warszawa (współautorzy raportu T. Brodzicki, S. Umiński)</p>	
	eResources addresses		
Example issues/ example questions/ tasks being completed	<pre>body, .ms-Pivot, .ts-footer, .ms-Panel-main { background: #e6e6e6 }.ui.selection.dropdown .menu, .ts-textfield-container { background-color: #fdfdfd !important }.ui.selection.dropdown .menu>.message, .ui.dropdown .menu>.item:hover { color: #444444 }.ts-control-button, .ts-settings-button, .ts-back-button, .ts-settings-text, .ms-Checkbox-text { color: #444444 }.ts-translation-menu-label-text, .ms-Label, .ms-Pivot-text, .ms-TextField-field { color: #444444 !important }.ts-semantic-menu input, .ts-semantic-menu >.text, .ts-semantic-menu >.icon, .ts-SwitcherButton-colorful, .ts-iconButton-colorful .ms-Icon, .ts-translation-completion i, .ts-translation-completion .ms-Icon, .ts-translation-completion .ts-completion-label, .ts-translation-menu-contextual-menu button, .ms-Spinner-label, .ts-microfeedback-buttons, .ms-Link { color: #2b579a !important }.ts-SwitcherButton-colorful:hover, .ms-Link:hover { color: #3c65a4 !important }.ts-SwitcherButton-colorful:active, .ms-Link:active { color: #124078 !important }.ms-Spinner-circle { border-color: #3c65a4 #124078 #124078 }.ts-button-colorful, .ts-document-ok-button, .ts-document-cancel-button { background-color: #2b579a }.ts-button-colorful:hover, .ts-document-ok-button:hover, .ts-document-cancel-button:hover { background-color: #3c65a4 }.ts-button-colorful:active, .ts-document-ok-button:active, .ts-document-cancel-button:active { background-color: #124078 }.ts-button-colorful:focus, .ts-document-ok-button-link:focus, .ts-document-cancel-button:focus, .ms-Pivot-link:focus { outline: 1px dotted #2b579a !important }.ms-Pivot-link.is-selected::before { border-bottom: 2px solid #2b579a !important }.ts-settings-button:hover { color: #2b579a !important }.ms-Pivot, .ts-footer { color: #444444 }.ui.selection.dropdown .item, .ui.dropdown .menu .selected.item { color: #444444 }.ms-Checkbox-checkbox { border-color: #444444 }</pre> <p>PowerBI Configuration Basics Creating relationships in databases Create calendars in DAX Sales visualization , seasonality , structure Create charts in Power BI</p>		
Work placement	Not applicable		

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