



## Subject card

Subject name and code	Visualization of economic data, PG_00053007						
Field of study	Data Engineering						
Date of commencement of studies	October 2022	Academic year of realisation of subject			2024/2025		
Education level	first-cycle 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	3	Language of instruction			English		
Semester of study	5	ECTS credits			3.0		
Learning profile	general academic profile	Assessment form			assessment		
Conducting unit	Department of Economic Sciences -> Faculty of Management and Economics						
Name and surname of lecturer (lecturers)	Subject supervisor		dr Marta Kuc-Czarnecka				
	Teachers		dr Marta Kuc-Czarnecka				
Lesson types and methods of instruction	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	2.0	28.0	75		
Subject objectives	The aim of the course is to acquire the skills needed to construct effective communication in the visual business communication with the help of IT tools and solutions.						
Learning outcomes	Course outcome	Subject outcome			Method of verification		
	[K6_K01] is aware of quickly changing trends and the resulting need for further education and self-improvement in the area of the performed profession of an engineer with IT and economic-financial skills.	Student understands the need to keep up with the development of technology for information presentation and visualization			[SK1] Assessment of group work skills [SK5] Assessment of ability to solve problems that arise in practice		
	[K6_W12] Knows the methods and tools for acquiring, collecting and processing data, in order to make business decisions using information systems and engineering technologies	The student has an extended knowledge of obtaining, processing and visualization methods of economic information and various forms of its presentation.			[SW1] Assessment of factual knowledge		
	[K6_U06] Independently solves complex engineering tasks using literature, materials and devices, prepares extensive documentation of the developed solution using appropriate description techniques.	Student has the ability to use various methods and tools for visualization of economic information			[SU1] Assessment of task fulfilment		

Subject contents	<p>History of statistical graphic</p> <p>Visualization of information in business and engineering communications. The role of visual information in the decision-making process</p> <p>Ergonomics of visual communication. Perceptual characteristics of the users. Perceptual and cognitive limitations of the user</p> <p>Basic forms of presentation of visual information: diagrams, charts, diagrams</p> <p>Visualization of quantitative data</p> <p>Visualization of qualitative data</p> <p>Exploration of statistical interactions</p> <p>Exploration of time series</p> <p>Cluster analysis (Ward's method, k-means method)</p> <p>Fundamentals of GIS</p> <p>Analysis and visualization of geospatial data</p> <p>Visualization of symbolic data</p>											
Prerequisites and co-requisites	No requirements											
Assessment methods and criteria	<table border="1" data-bbox="448 1151 1477 1256"> <thead> <tr> <th data-bbox="448 1151 794 1182">Subject passing criteria</th> <th data-bbox="794 1151 1141 1182">Passing threshold</th> <th data-bbox="1141 1151 1477 1182">Percentage of the final grade</th> </tr> </thead> <tbody> <tr> <td data-bbox="448 1182 794 1214">laboratory exercises</td> <td data-bbox="794 1182 1141 1214">60.0%</td> <td data-bbox="1141 1182 1477 1214">50.0%</td> </tr> <tr> <td data-bbox="448 1214 794 1256">written cologium</td> <td data-bbox="794 1214 1141 1256">60.0%</td> <td data-bbox="1141 1214 1477 1256">50.0%</td> </tr> </tbody> </table>			Subject passing criteria	Passing threshold	Percentage of the final grade	laboratory exercises	60.0%	50.0%	written cologium	60.0%	50.0%
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Recommended reading	Basic literature	<p>Biecek P. „Odkrywać! Ujawniać! Objasniać! Zbiór esejuw o sztuce pokazywania danych”, 2014.</p> <p>Tufte E.R., „The visual display of quantitative information”, 2001</p> <p>Wilkinson L., „The Grammar of Graphics”, 2005.</p>										
	Supplementary literature	<p>Clarke K.C., „Getting started with geographic Information Systems”, 2001.</p> <p>Murray S.: Interaktywna wizualizacja danych. Wyd. Helion Warszawa 2013.</p> <p>Tufte E.: Envisioning Information. Graphic Press, Cheshire, CY, USA, 1996.</p>										
	eResources addresses											
Example issues/ example questions/ tasks being completed	<ul style="list-style-type: none"> <li>- developing the presentation of data related to a selected phenomenon</li> <li>- evaluation of usability and clarity of the visual transmission</li> <li>- principles of the data presentation for business analytics</li> </ul>											

