University of Gdańsk

Subject card

Subject name and code	Analysis of Business Models and Data, PG_00156756						
Field of study	Informatics and Econometrics						
Date of commencement of studies	October 2024		Academic year of realisation of subject	2026/2027			
Education level	Bachelor's studies		Subject group	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	exam			
Conducting unit	Department of Econometrics -> Faculty of Management -> Rector						
Name and surname of lecturer (lecturers)	Subject supervisor	dr hab. Anna Zamojska, prof. UG					
	Teachers	dr inż. Dominika Zawadzka					
Lesson types	Lesson type	Lecture	Tutorial	Laboratory	Project	Seminar	SUM
	Number of study hours	30.0	30.0	15.0	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		30.0	70.0	175	
Subject objectives	Gain practical skills in analyzing data sets and modeling their interrelationships, as well as visualizing data and results.						

Learning outcomes	Course outcome	Subject outcome	Method of verification
	[IiEL3_U09] The student can prepare a typical written work, oral speech and multimedia presentation on the functioning and development of the national economy and its elements, the course of simple economic phenomena and processes, obtaining data about them, collecting, processing and analyzing them. and economic processes, obtaining data about them, their collection, processing and analysis using modern mathematical, statistical, econometric and IT techniques, econometric and information technology, as well as their use in modeling, forecasting and optimization.	The student is able to prepare a credit project, based on the acquired business data, on the analysis of demand/sales of products/services in the enterprise, using modern data visualization tools, such as Power BI or Tableau.	[SU2] presentation/project/paper/ report
	[IiEL3_K02] The student can communicate with the public on computer science and econometrics topics in and outside the workplace, communicate his knowledge and share his skills through various media.	The student is able to perform and present in an understandable, accessible manner to the group a presentation of a credit work on modeling based on business data.	[SK2] presentation/project/paper/ report
	[IiEL3_U07] The student can build formal models of complex economic phenomena and processes, estimate them, carry out their verification, and apply them to modelling, forecasting and optimization of the resources of low-complexity economic institutions, their structure and the course of processes in them.	The student is able to specify and estimate different types of econometric models describing regularities in the enterprise, verify them and check their predictive properties.	[SU2] presentation/project/paper/ report
	[IiEL3_U03] The student is able to identify institutional-legal and social constraints on the functioning of economic structures and institutions and reflect them in modelling, forecasting and optimization.	The student is able to build and estimate an econometric model from business data and verify and interpret it.	[SU4] test/exam - oral or written
	[IiEL3_W05] The student has advanced knowledge of the sources of socio-economic data, their databases and ways of creating them.	The student has knowledge of obtaining business data from diverse sources.	[SW4] test/exam - oral or written
	[IiEL3_K01] The student understands the need to constantly supplement and deepen acquired knowledge; is open to new ideas and teaching methods.	The student understands the need to deepen knowledge and acquire skills in business models and data.	[SK4] test/exam - oral or written
	[IiEL3_W04] The student has advanced knowledge of mathematical, statistical, econometric and computer methods of obtaining, processing and analysing data depicting the functioning and development of the national economy and its elements, as well as the phenomena and processes occurring in their environment.	The student knows advanced methods for analyzing business data sets and modeling their interdependencies.	[SW4] test/exam - oral or written

Subject contents	1. Data mining: data sources, business data acquisition methods, data compilation, time series vs. cross-sectional series, absolute vs. relative capture. 2. Data visualization: presentation of analysis results (temporal, hierarchical, network, multidimensional visualizations), examples of data visualization tools (e.g., Power BI, Tableau); potential errors in communicating information. 3. Survey data analysis: specifics of survey research, problems of cross-sectional data sets, sample specifics, its homogeneity and heterogeneity, influential and outlier observations, missing data, non-random samples. 4. Sales data analysis: calculating the optimal offer, determining the value of the customer, economic order size model. 5. Demand analysis: estimating the demand curve, pricing related products, predicting customer behavior, product/customer segmentation, modeling inventory levels under uncertain demand. 6. Analysis of qualitative phenomena: binary variable models, among others. 7. Scoring: credit, marketing, debt collection.
Prerequisites and co-requisites	A. Prerequisites Students should be familiar with the principles of market behavior of businesses and households. Elementary knowledge of linear algebra, differential and integral calculus, descriptive and mathematical statistics and practical data mining skills are essential. B. Formal requirements Prior passing of economics I, economics II, mathematics I, financial and insurance mathematics, descriptive and economic statistics, mathematical statistics with elements of probability calculus.

Assessment methods and criteria

Subject passing criteria	Passing threshold	Percentage of the final grade
Project	51.0%	25.0%
Written exam	51.0%	75.0%

Recommended reading	Basic literature	A.1. *used during classes*: 1. Gruszczyński M. (2012), Mikroekonometria, Wolters Kluwer. 2. Gruszczyński M. (2014), Zbiór zadań z mikroekonometrii, Wolters Kluwer. 3. Koop G. (2011), Wprowadzenie do ekonometrii, Wolters Kluwer. A.2. *studied independently by the student*: 1. Cameron A.C., Trivedi P.K. (2005), Microeconometrics, Cambridge University Press, http://cameron.econ.ucdavis.edu/mmabook/mma.html.
	Supplementary literature	1. Borooah K.V. (2002), Logit and Probit: Ordered and Multinominal Models. SAGE Publications Inc. 2. Adkins L.C., Using *gretl* for Principles of Econometrics, 5th Edition, Version 1.0, 2018. Dostępny online https://www.learneconometrics.com/gretl/poe5/using_gretl_for_POE5.pdf 3. Wooldridge J.C., Introductory Econometrics. A modern approach. 5th edition. South-Western Cengage Learning 2013.
	eResources addresses	Basic https://bg.ug.edu.pl/e-biblioteka/e-ksiazki - Library of the University of Gdansk
Example issues/ example questions/ tasks being completed		
Work placement	Not applicable	