University of Gdańsk

Subject card

Subject name and code	Master Seminar 1, PG_00177505						
Field of study	Informatics and Econometrics						
Date of commencement of studies	October 2026		Academic year of realisation of subject		2026/2027		
Education level	Master's studies		Subject group		Obligatory subject group in the field of study 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	1		Language of instruction		Polish		
Semester of study	2		ECTS credits		2.0		
Learning profile	academic		Assessment form		credit		
Conducting unit	Department of Statistics -> Faculty of Management -> Rector						
Name and surname of lecturer (lecturers)	Subject supervisor		dr hab. Ewa Wycinka				
	Teachers						
Lesson types	Lesson type	Lecture	Tutorial	Laboratory	Project	Seminar	SUM
	Number of study hours	0.0	0.0	0.0	0.0	30.0	30
	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	30		4.0		16.0	50
Subject objectives	Selection of the master's thesis topic. Formulation of the thesis objective and research problems. Analysis of the subject literature in the chosen field.						

Learning outcomes	Course outcome	Subject outcome	Method of verification
	[IiEMU2_U02] Can use conventional or innovative statistics, econometrics or informatics tools to analyze economic and social phenomena	The student is able to select research tools and techniques, including data analysis software and statistical packages, to examine research problems	[SU3] text preparation/written work
	[IiEMU2_W06] Possesses a structured understanding of the processes, methods, and tools necessary for the design, creation, development, and provision of suitable conditions for informatics, econometrics or statistics tools	The student has knowledge on planning the study and proper advanced analytical methods that will be used to examine the formulated research problems.	[SW3] text preparation/written work
	[IiEMU2_K01] Is ready to acquire and deepen the knowledge needed to solve cognitive and practical problems, in particular in the field of econometrics, informatics or statistics, as well as to evaluate the knowledge and the received content critically and to consult experts in the event of difficulties with solving the problem on their own	The student is prepared to dentify research problems and formulate research hypotheses whose verification requires in-depth knowledge of econometrics, computer science, or statistics. They are aware of their own cognitive limitations and the need for continuous learning	[SK3] text preparation/written work
	[IiEMU2_U01] Can creatively and profoundly analyze complex social and economic processes using structured knowledge, econometrics, informatics, or statistics tools	The student is able to select a socio-economic issue and design a study using data analysis methods.	[SU3] text preparation/written work
	[IiEMU2_U07] Can prepare detailed written papers, presentations, and oral speeches on econometrics, informatics, or statistics issues	The student is able to formulate the research problem and objective, prepare the master's thesis plan, and gather up-to-date literature and materials.	[SU3] text preparation/written work

Subject contents	The seminar covers the application of data analysis methods to economic and social problems. Student selects a topic based on their interests and develop a concept for their thesis in the form of a detailed outline, including: 1. Thesis topic 2. The research problem and thesis objective 3. Development of the thesis plan and structure 4. Preparation of relevant, current literature and materials 5. Selection of appropriate research methods 6. Proposal of a data set for research or a concept for obtaining data for research Student selects a thesis topic based on their research interests. Use of data analysis methods and techniques to evaluate the socio-economic phenomenon selected by the seminar participant. Use of data analysis methods and techniques to identify risk factors for the occurrence of the studied event (e.g., risk of unemployment, insolvency, business closure, insured event). Search for patterns in the data set under study. Comparison of the effectiveness of various data analysis strategies. Analysis of empirical data from original surveys or recognized secondary data sources. dr. hab. Beata Jackowska, prof. UG The application of statistical methods (including data mining methods) in the analysis of the structure and dynamics of selected socio-economic phenomena, e.g., in the analysis of the labor market and insurance markets. Simulation methods: the role, applications, and development of research using Monte Carlo methods, random number generators, and randomness testing. Simulation studies, e.g., comparing the quality of exploratory data analysis methods and examining the properties of estimators in large data sets. Statistical methods and existing computer data processing capabilities, e.g., proposing a custom module for analyzing research results. The application of sample research in the analysis of selected socio-economic phenomena. Problems of sample research, e.g., problems of insufficient sample size (small area statistics), sampling frame construction; questionnaire design problems; the role of random and non-random errors in research. dr. Tomasz Jurkiewicz Machine learning algorithms and data mining methods (for classification, regression, clustering, and dimension reduction). Data sources and quality. Preparing data for analysis (including handling missing data, detecting and handling outliers). Data visualization (especially in the R environment). Computer simulations. Foundations of data-based reasoning (including classical estimation and hypothesis testing, Bayesian inference, and inference from non-simple samples). dr. Arkadiusz Kozłowski The scope of this diploma seminar covers all theoretical issues and empirical applications of modern data analysis methods in solving economic or social problems.Using methods of statistical multivariate analysis, data mining, artificial intelligence, and social networks, the following topics can be analyzed: grouping and classification of data in creating consumer profiles, market segmentation, positioning, analyzing consumer needs and habits, analyzing social sentiment and attitudes, identifying decision-making factors, identifying emotions in statements, analyzing market mechanisms and competition, surveying opinions, analyzing the behavior of different generations, including analyzing attitudes towards work and career, social engagement, analyzing networks of interpersonal relationships, social norms, trust, values, and expectations (sustainable development, equality and social integration, social capital). dr. hab. Kamila Migdał-Najman, prof. UG The scope of the diploma seminar covers all theoretical issues and empirical applications of modern data analysis methods in solving economic and social problems. Using methods such as social network analysis, data mining, artificial intelligence, multivariate statistical analysis, graph theory, web and text mining, the following problems can be analyzed: construction and verification of AI-based models for solving selected social problems, searching for and describing relationships between social media users, grouping and classifying data in creating consumer profiles, market segmentation, analyzing investment risk, consumer needs and habits, and social sentiment and attitudes, advanced visualization of complex economic problems, identifying emotions in online statements (hate, liking, identifying false ratings, fake news, bots), - identifying spam in email correspondence, building and testing the effectiveness of machine learning algorithms in analyzing selected social problems. dr. hab. Krzysztof Najman, prof. UG Statistical analysis of the development of selected economic and social phenomena. Modern methods of data collection and processing Designing and implementing a sample survey on a specific topic. Big data tools in contemporary statistical research. Elements of artificial intelligence in the operations of enterprises and institutions. prof. dr. hab. Mirosław Szreder

	Statistical analysis in economics - statistical methods used in economic research. Risk modeling - building and testing scoring models. Insurance statistics - data analysis in the context of insurance. Big Data in economics - the use of large data sets for economic analysis. Application of survival analysis in economics, particularly in research on the survival of companies, unemployment, consumer loyalty, and borrower solvency. dr. hab. Ewa Wycinka, prof. UG
Prerequisites and co-requisites	Knowledge of descriptive and mathematical statistics methods. Familiarity with at least one of the following programs: Statistica, SPSS, Python, or R
Assessment methods and criteria	

Subject passing criteria	Passing threshold	Percentage of the final grade
The thesis outline approved by the supervisor	51.0%	100.0%

Recommended reading	Basic literature	Literature used by the student for writing the thesis, verified by the thesis supervisor.
	Supplementary literature	1. Kaszyńska A., Jak napisać, przepisać i z sukcesem obronić pracę dyplomową?, Wyd. Złote Myśli, 2008 2. Lelusz H., Kowalewski M., Lasmanowicz R., Metodyka pisania prac dyplomowych o tematyce ekonomicznej, Wydaw. Uniwersytetu Warmińsko Mazurskiego, Olsztyn 2000 3. Ładoński W., Urban S., Proces tworzenia prac dyplomowych i magisterskich na studiach ekonomicznych. Poradnik, PWN, Warszawa 1989 4. Opoka E., Uwagi o pisaniu i redagowaniu prac dyplomowych, Politechnika Śląska, Gliwice 2001 5. Pawlik K., Zenderowski R., Dyplom z Internetu. Jak korzystać z Internetu pisząc prace dyplomowe?, CeDeWu, Warszawa 2010/2011 6. Roszczypała J., Metodyka przygotowania prac licencjackich i magisterskich, Wyższa Szkoła Ekonomiczna, Warszawa 2003 7. Wójcik K., Piszę akademicką pracę promocyjną licencjacką, magisterską, doktorską, Wydawnictwo Placet, Warszawa 2005 8. Zenderowski R., Praca magisterska, licencjat. Krótki przewodnik po metodologii pisania pracy dyplomowej, CeDeWu, Warszawa 2009
	eResources addresses	
Example issues/ example questions/ tasks being completed		
Work placement	Not applicable	

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