

Subject card

Subject name and code	Sampling Methods, PG_00157323						
Field of study	Informatics and Econometrics						
Date of commencement of studies	October 2024		Academic year of realisation of subject		2024/2025		
Education level	Master's 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		Polish		
Semester of study	1		ECTS credits		6.0		
Learning profile	academic		Assessment form		exam		
Conducting unit	Department of Statistics -> Faculty of Management -> Rector						
Name and surname of lecturer (lecturers)	Subject supervisor		dr Arkadiusz Kozłowski				
	Teachers		dr Arkadiusz Kozłowski				
Lesson types	Lesson type	Lecture	Tutorial	Laboratory	Project	Seminar	SUM
	Number of study hours	15.0	15.0	0.0	0.0	0.0	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		25.0		95.0	150
Subject objectives	The aim of the course is to familiarize students with the theory and practice of sample research, basic sample designs and methods of estimating population parameters based on random samples.						

Learning outcomes	Course outcome	Subject outcome	Method of verification
	[liEMU2_K01] The student understands the need for continuous completion and deepening of acquired knowledge. The student inspires and organizes others' learning processes.	The student knows how to acquire knowledge about the sampling methods	[SK1] oral statement/conversation/discussion
	[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.	The student is able to determine the optimal method of selecting a sample for a sample survey, draw a sample according to a specific scheme, estimate unknown population parameters, assess the accuracy of estimates, use information from outside the sample to increase the accuracy of these estimates.	[SU2] presentation/project/paper/report
	[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.	The student is able to explain the essence of inference about the parameters of finite populations.	[SK1] oral statement/conversation/discussion
	[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.	The student knows the methods of selecting a sample for a representative study. The student knows what are the sources of errors in sample surveys. The student has knowledge of methods for estimating population parameters and assessing sampling errors.	[SW4] test/exam - oral or written
Subject contents	[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.	The student is able to explain the essence of inference about the parameters of finite populations.	[SK1] oral statement/conversation/discussion
	Introductory issues - basic concepts: finite population, sampling frame, research unit, sampling unit, target population, sampling population, concept of sample, sample population, sampling plan, random sample. Fields of application of the representational method. Accuracy of statistical research - random errors, basic sources and methods of their measurement, methods of limiting random errors, non-random errors and their classification, methods of limiting non-random errors. The essence of the representative method and basic sampling plans, the concept of a representative sample, classification of sampling schemes, their advantages and disadvantages, fields of application. Unrestricted individual scheme - the essence of the unrestricted individual scheme, independent and dependent sampling, estimating the sum, mean and fraction in the population, estimating the variance of estimators. The idea of self-weighting samples, rules for determining sample size. Stratified and balanced design - the essence of the stratified design, the concept and role of sample location, proportional location, estimating the sum, mean and fraction in the population, estimating the variance of estimators, determining the sample size, comparing the effectiveness of a stratified sample and SRS. Balanced sampling using the dice method. Cluster sampling - the essence of a cluster sampling, issues of different numbers of units in clusters and the homogeneity of clusters, estimating the sum, mean and fraction in the population, estimating the variance of estimators, determining the sample size, comparing the effectiveness of cluster and individual sampling. Multi-stage scheme - the essence of the multi-stage scheme, estimating the sum and mean in the population, estimating the variance of estimators. The essence of complex estimation of population parameters. Ratio and regression estimation. Comparison of the effectiveness of simple and complex estimators for selected sample plans. The idea of simplified methods for estimating the variation of estimators - random group method, subsamples, jackknife, bootstrap. Missing data in sample studies. Reasons for occurrence, impact of missing responses on survey results, prevention of missing responses. Calibration approach. Use of additional information at the sample and population level.		
Prerequisites and co-requisites	Knowledge of the basics of probability and mathematical statistics.		
Assessment methods and criteria	Subject passing criteria	Passing threshold	Percentage of the final grade
	project	51.0%	50.0%
	oral exam	51.0%	50.0%

Recommended reading	Basic literature	1. Bracha C., Metoda Reprezentacyjna w badaniach opinii publicznej i marketingu, EFEKT, 1998. 2. Kozłowski A., Szreder M., Informacje spoza próby w badaniach statystycznych, Wydawnictwo Uniwersytetu Gdańskiego, Gdańsk 2020 3. Zasępa R., Metoda Reprezentacyjna, PWE, 1972.
	Supplementary literature	Steczkowski J., Metoda reprezentacyjna w badaniach zjawisk ekonomiczno-społecznych, PWN, 1995.
	eResources addresses	
Example issues/ example questions/ tasks being completed		
Work placement	Not applicable	

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