Uniwersytet Ekonomiczny w Katowicach

SAMPLING METHODS

Syllabus

Basic information

Field of study Data Analytics Electives	**Didactic cycle** 2023/24
Speciality -	**Subject code** EKODNSS.L10SW.1837.23
Organizational unit School of Undergraduate and Graduate Studies	**Lecture languages** English
Study level undergraduate studies	**Mandatory** Elective
Study form full-time	**Block** Free choice electives
Education profile general academic/practical	**Department responsible for the subject** Department of Statistics, Econometrics and Mathematics
	Subject related to scientific research No
	Subject shaping practical skills No

Coordinator	Tomasz Żądło
Teacher	Tomasz Żądło, Wojciech Gamrot

Period	**Form of teaching, number of hours and method of examination**	**Number of ECTS points**
Semester 5	• lecture: 15, Credit with grade	3

Goals

Code	Goal
C1	To acquaint students with the theoretical and practical issues related to inference based on random and non-random samples in the R program.
C2	Developing the skills in estimation of population parameters.
C3	Developing the skills in prediction of population parameters.

Recommended requirements

descriptive statistics

Subject's learning outcomes

Code	Outcomes in terms of	Major learning outcomes for the subject	Examination methods
Knowledge:			
W1	Student knows and understands the role of sampling as a support source of economic decisions.	DNS.L_W01	End-of-course assessment - individual project
Skills:			
U1	Student can use a foreign language at B2 level in the area of sampling methods.	DNS.L_U07	End-of-course assessment - individual project
Social competences:			
K1	The student is prepared for independent and critical assessment of knowledge in the field of sample surveys.	DNS.L_K01	End-of-course assessment - individual project

Study content

No.	Course content	Subject's learning outcomes	Activities
1.	Introduction to R in survey sampling	W1, U1, K1	lecture
2.	Design-based approach – basic definitions	W1, U1, K1	lecture
3.	Inference based on random samples - selected sampling strategies in R	W1, U1, K1	lecture
4.	Model-based approach – basic definitions	W1, U1, K1	lecture
5.	Inference based on random and non-random samples - selected models and predictors in R	W1, U1, K1	lecture

Course advanced

Activities	Methods of conducting classes
lecture	Lecture using multimedia techniques, Programming

Activities	Examination method	Percentage
lecture	End-of-course assessment - individual project	100%

Activities	Credit conditions
lecture	A project based on real data selected by students, using R software.

Literature

Obligatory

1. Ardilly P., Tille Y. (2006). Sampling Methods. Exercises and Solutions. Springer New York.
2. Tillé, Y. (2006). Sampling algorithms. Springer New York.
3. Wywiał, J. L. (2003) Some Contributions to Multivariate Methods in Survey Sampling. University of Economics in Katowice, Katowice.

Optional

1. Żądło, T. (2020). On accuracy estimation using parametric bootstrap in small area prediction problems. Journal of Official Statistics, 36(2), 435-458.
2. Chwila, A., & Żądło, T. (2020). On the choice of the number of Monte Carlo iterations and bootstrap replicates in Empirical Best Prediction. Statistics in Transition new series, 21(2), 35-60.
3. Stachurski, T., Żądło, T., & Wolny-Dominiak, A. (2024). Predicting Social Inequality in Poland Using Price Dispersion on the Real Estate Market. Social Indicators Research, 172(3), 985-1003.

Calculation of ECTS points

Activity form	Activity hours*
lecture	15
Analysis of lecture notes	20
Preparation of the end-of-course assessment - individual project	40

Student workload	**Hours** 75
Number of ECTS points	**ECTS** 3

* hour means 45 minutes

Major learning outcomes for the subject

Code	Content
DNS.L_K01	Jest gotów do krytycznej oceny posiadanej wiedzy i odbieranych treści.
DNS.L_U07	Potrafi posługiwać się językiem obcym na poziomie B2 Europejskiego Systemu Opisu Kształcenia Językowego.
DNS.L_W01	Zna i rozumie w zaawansowanym stopniu wybrane fakty, obiekty i zjawiska oraz dotyczące ich metody i teorie wyjaśniające złożone zależności między nimi, stanowiące podstawową wiedzę ogólną z zakresu Informatyki Technicznej i Telekomunikacji tworzących podstawy teoretyczne oraz wybrane zagadnienia z zakresu wiedzy szczegółowej dyscyplin uzupełniających: Informatyki i Nauk o Zarządzaniu i Jakości właściwe dla programu studiów na kierunku Informatyka.