Econometrics

Educational subject description sheet

Basic information

Field of study Joint Bachelor in Sustainability	**Education cycle** 2025/26
Speciality Economics, Management & Engineering	**Subject code** UJ.WPAJBSEMES.8100.16495.25
Organizational unit Faculty of Law and Administration	**Lecture languages** english
Study level first cycle (joint degree programme)	**Subject related to scientific research** Yes
Study form full-time degree programme	**Disciplines** Economics and finance
Education profile General academic	**ISCED classification** 0311 Economics
Mandatory obligatory	**USOS code**

Subject coordinator	Piotr Szwedo
Lecturer	Jef Hendrickx

Period Semester 5	**Examination** exam **Activities and hours** Discussion class: 26	**Number of ECTS points** 3.0

Goals

C1	Student can draw, starting from a sample, conclusions in a scientifically correct way, by constructing confidence statements and/or testing hypotheses.
C2	Student can understand the possibilities and the limitations (assumptions!) of statistical models.
C3	Student can read and understand a scientific econometric study.
C4	Student can perform a scientific econometric study himself using the statistical package R and interpret the results.

Subject's learning outcomes

Code	Outcomes in terms of	Effects	Examination methods
Knowledge – Student knows and understands:			
W1	multiple linear regression model and more advanced statistical modelling techniques including linear probability and panel data models	JBS_K1_W07	written exam
W2	the main assumptions of statistical models and what is heteroscedasticity, omitted variable bias and multicollinearity	JBS_K1_W07	written exam
W3	the concept of causality and the difference-in-difference model	JBS_K1_W07	written exam
Skills – Student can:			
U1	calculate confidence intervals perform hypothesis tests	JBS_K1_U03	written exam
U2	choose an appropriate functional model and interpret its parameters	JBS_K1_U03	written exam
U3	apply all the statistical methods seen in this course in R and interpret the output	JBS_K1_U03	written exam
Social competences – Student is ready for:			
K1	to run an experiment to proof causality	JBS_K1_K05	written exam

Calculation of ECTS points

Activity form	Activity hours*	
Discussion class	26	
preparation for the exam	56	
Student workload	**Hours** 82	**ECTS** 3.0

* hour means 45 minutes

Study content

No.	Course content	Subject's learning outcomes
1.	Introduction to the course Revision multiple linear regression model and matrix representation	W1
2.	Indicator variables and interaction effects	W1, W2, U3
3.	Heteroskedasticity	W2, U3
4.	PC session	U1, U2, U3
5.	Panel data models fixed effects	W1, W2
6.	Panel data models random effects	W1, W2
7.	Treatment effects and difference-in-differences	W3, K1

Course advanced

Teaching methods :

conversation lecture, solving tasks, practicals

Activities	Examination methods	Credit conditions
Discussion class	written exam	Written closed book exam, including open questions, understanding questions and application requests. Part of the exam will be a practical exercise with R. Students pass if they achieve minimally 10/20

Entry requirements

None

Literature

Obligatory

1. Hill, R. C., Griffiths, W. E., & Lim, G. C. (2018). Principles of econometrics. John Wiley & Sons. PowerPoint slides via digital learning platform Blackboard Ultra.

Effects

Code	Content
JBS_K1_K05	The graduate can defend the importance of scientific data and methods as a basis for decision-making.
JBS_K1_U03	The graduate can apply adequate methods and tools, including selected IT tools, to solve problems related to data collection, analysis, and management in the context of sustainability.
JBS_K1_W07	The graduate can apply the theory and methodology of disciplines included in the selected specialisation track to sustainability-related problems, taking into consideration practical limitations such as protection of intellectual property.