Techniques and Methods I
Educational subject description sheet

Basic information

Field of study Joint Bachelor in Sustainability	**Education cycle** 2025/26
Speciality Geography & Economics	**Subject code** UJ.WPAJBSGECS.840.16518.25
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	Jean-François Caulier, Patricia Vornetti, Gustavo Romanillos

Period Semester 3	**Examination** exam **Activities and hours** Discussion class: 45	**Number of ECTS points** 5.0

Goals

C1	Acquire the disciplinary methodology needed to complete the track and get acquainted with the tools.

Subject's learning outcomes

Code	Outcomes in terms of	Effects	Examination methods
Knowledge – Student knows and understands:			
W1	the concept of sustainability and recognize the differences in relevant definitions, models and approaches.	JBS_K1_W01	written exam
W2	how to apply the theory and methodology of disciplines included in the selected specialisation track to sustainability-related problems, taking into consideration practical limitations such as the protection of intellectual property.	JBS_K1_W07	written exam
W3	how to identify sustainability-related problems in a specific geographical context	JBS_K1_W03	written exam
Skills – Student can:			
U1	apply adequate methods and tools, including selected IT tools, to solve problems related to data collection, analysis, and management in the context of sustainability and can use specific tools to produce and analyze data in geoeconomics	JBS_K1_U03	written exam
U2	expose and present conclusions based on the collected data to different types of public	JBS_K1_U02	written exam
Social competences – Student is ready for:			
K1	to critically assess and verbalize their own competencies and skills related to different aspects of sustainability as well as their need for development.	JBS_K1_K04	written exam
K2	to defend the importance of methods presented in the course, presenting them as a viable source of data and predictions for scientifically informed decision-making.	JBS_K1_K05	written exam

Calculation of ECTS points

Activity form	Activity hours*
Discussion class	45
problem analysis	45
preparation for the exam	30
preparation for classes	15

Student workload	**Hours** 135	**ECTS** 5.0

* hour means 45 minutes

Study content

No.	Course content	Subject's learning outcomes
1.	Section 1: Mathematics for Economists 2.2.7 • Basic algebra • Functions of one variable • Differentiation, concave & convex functions, optimization, functions of several variables • Integration	W1, W2, U1, K1, K2
2.	Section 2: Statistics for Economists 2.2.8 • Basic tools for analysing variations (rate of change, multiplying coefficient, elementary index – year-on-year growth rate / average annual growth rate) • Analysing variations in a complex variable (Structure effect - Synthetic indices (Laspeyres, Paasche) • Time series (decomposition models, trend estimation, , seasonal adjustment, forecast) • Univariate analysis I (continuous/discrete variable - graphical representation (histogram, cumulative distribution curve)) • Univariate analysis II (mean, median, standard deviation, quantile, concentration indices)	W1, W2, U1, K1, K2
3.	Section 3: GIS/remote sensing/spatial analysis in geoeconomics 2.2.9 • Introduction to Geoeconomics and Spatial analysis • Spatial data collection and management • Spatial analysis techniques • Geoeconomics indicators and metrics • Spatial analysis of (natural) resource distribution • Assessment of geopolitical risks • Geoeconomics, spatial analysis and decision support	W2, W3, U1, U2, K1, K2

Course advanced

Teaching methods :

text analysis, brainstorming, conversation lecture, practicals

Activities	Examination methods	Credit conditions
Discussion class	written exam	Active participation (non-graded), written exam based on open questions (graded).

Entry requirements

None

Literature

Obligatory

1. Core Econ Team (2024), The Economy 2.0 : Microeconomics, url : https://www.core-econ.org/project/the-economy-2-0-microeconomics/
2. Core Econ Team (2024), The Economy 2.0 : Macroeconomics, url : https://www.core-econ.org/new-edition-of-the-economy/
3. Core Econ Team (2024), Experiencing Economics, url : https://www.core-econ.org/project/experiencing-economics/
4. Core Econ Team (2024), Doing Economics, url : https://www.core-econ.org/project/doing-economics/
5. Core Econ Team (2024), The Economy 1.0, url : https://www.core-econ.org/project/core-the-economy/
6. Core Econ Team (2024), Economy, Society, and Public Policy, url : https://www.core-econ.org/project/core-espp/

Effects

Code	Content
JBS_K1_K04	The graduate can critically assess and verbalize own competencies and skills related to different aspects of sustainability as well as their need for development.
JBS_K1_K05	The graduate can defend the importance of scientific data and methods as a basis for decision-making.
JBS_K1_U02	The graduate can present and report knowledge, methodologies, ideas, problems and solutions, clearly and comprehensively, in different forms destined for different audiences – including discussions and debates which require defending a substantiated opinion, as well as conversations in a foreign language at the CEFR B2 level.
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_W01	The graduate can describe the concept of sustainability and recognize the differences in relevant definitions, models and approaches.
JBS_K1_W03	The graduate can give examples of sustainability-related dilemmas and hypothesize on the optimal course of action.
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.