SciencesPo

The Paris School of International Affairs (PSIA) is looking for

A teacher for the course KOUT2040 - Quantitative Tools
24 hours / 72,87 € gross per hour – FALL 2025

Profile
- To be a doctoral student (at least 2nd year - an enrollment certificate will be requested)
- To have a background in one of the topics of the course
- To have a C1 level in English

Course description:

The *Quantitative Tools* course in political, economic, and social sciences focuses on quantitative analysis methods within the context of the problems they help address and solve.

The objective of this module is to equip students with fundamental knowledge in applied arithmetic, financial calculus, descriptive statistics, and introductory inductive statistics. It emphasizes the comprehension and practical application of technical tools for reading, analyzing, and decision-making. The course aims to guide students in understanding key quantitative issues encountered in political science, economics, demography, environmental studies, international trade, and, more broadly, in supporting the master's program's core themes—particularly aspects related to the quantitative analysis of international relations.

The course follows a highly progressive approach, starting from foundational concepts equivalent to those taught in secondary school literary programs or the final years of high school. Additionally, this module introduces students to specific technical tools within Excel.

Teaching Languages : English

SELECTED BIBLIOGRAPHY
Timothy C. URBAN, Statistics in plain english, 3° ed, Routledge edition, 2010
G. KELLER, B. WARRACK, Statistics for management and economics, Thomson, Brooks/Cole, Pacific Grove, 2003.
F. K. REILLY, K.C. BROWN, Investment analysis and Portfolio Management, Thomson South Western, 2006

TOOLS
The use of an Excel spreadsheet will be developed in the tutorials.

ASSESSMENT
The module is validated by continuous assessment -2 in-conference assessments and by final assessment.
The final assessment is an essay. The essay must be delivered by December 13th.
Continuous assessment accounts for 2/3 and the final exam for 1/3 of the final mark.

DETAILED PROGRAMME

I/ One-character descriptive statistics
The emphasis will be put on the understanding, the analysis and the interpretation of statistical data.

1/ Statistical data

Qualitative data
Quantitative data

2/ Charts and Graphs
Histogram
Cumulative frequency polygon
The graphics and the classical "traps"
The spinning tops Applications: statistical distributions

3/ Descriptive statistics- Time series data
Measurement of relative variations
Growth
Degrowth
Percentages
Variations in percentage points
Average growth rate
Comparison of growth
Applications: inflation, value / volume, scale of income tax with progressive marginal rate

Index and Synthetic Index
Properties index
Laspeyres Index
"Soft" indicators: HDI
Applications: terms of trade, purchasing power of exports, common currency / constant currency, nominal / real

4/ Static Descriptive Statistics -
Core Values
Mode
Median
Arithmetical, geometrical and harmonical means
structural effects
The common pitfalls of means Applications: analysis of statistical series
Values of dispersion and concentration
Inter-quantiles
Standard deviation
Middle-medial deviation
Lorenz curve - Gini index
Applications: Measuring inequality, dualism analysis, analysis of wage distributions, income distribution, property distribution

5/ Statistical errors
Relative measurement and reference
Core values and evolution
The ecological fallacy
Simpson paradox

II – Two characters descriptive statistics

The analysis of possible links between economic variables and in particular the explanatory scope of these links. The analysis will be limited to linear problems, without change of variable.

1 / Linear adjustment
Method of least squares (OLS)

2 / Correlation
Sensitive approach and interpretation of results
Total variance
Explained variance
Residual variance
The difficulties of analyzing a correlation coefficient.

III – Financial Calculus

This part of the program concerns financial or deterministic mathematics and considers time as being discrete and not continuous.
The emphasis in this section will be on applications.

1/ Simple interest
Principles
Interest checked off - effective rates of investment
Discount, discount shopping.
Equivalent effects of simple interests.
Average maturity

2/ Compound Interest rates
Principles
Equivalent Rates
Proportional rates
Search for effective rates
Schedule discounting, loan repayments
Applications: Search of the duration, the deposit rate, the amount invested, or the amount obtained knowing the other data of the problem.

Are you interested in this position?
Please send your application (CV + cover letter) by email to
cecilia.baezarodriguez@sciencespo.fr and to by March 31 2025 at the latest.