NASP

Network for the Advancement in Social and Political Studies

Applied multivariate analysis (20h – 3 CFU)

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Objectives

The objective of the course is to familiarize students with the underlying assumptions of the main statistical techniques for data analysis used in social sciences so that they will be able to evaluate and undertake quantitative research by their own. A great emphasis will be placed on the formulation of hypotheses and on the use of data to test hypotheses.

Short Course Description

This course is an introduction to the main quantitative methods social scientists use to construct and to evaluate systematically empirical representations of political propositions. The aim is to help students to develop better analytic tools for making good empirical inferences and to better recognize when others are making poor inferences. Therefore, a great emphasis is placed on the formulation of hypotheses and on the use of data to test hypotheses.

The first part of the course is devoted to Ordinary Least Squares (OLS) and its assumptions, as well as to dealing with violations of the basic linear model and modeling quadratic relationships and interactions. In the second part we will introduce some more advanced techniques for quantitative analysis (including: multilevel models, logit/probit, and a gentle introduction to time-series analysis). Lectures are coordinated with computer lab instruction in data analysis. Students will also learn how to use the statistical software STATA to organize and analyze data.

Program

First part (10 hours):
First topic: OLS Recap & Regression Diagnostics
Second topic: Non-linear Regression Functions – Quadratic models
Third topic: Non-linear Regression Functions – Interaction models
First written exam

Second part (10 hours):
Fourth topic: Issue of Non-Independence in Linear Models + Instrumental Variables
Fifth topic: Regression with a Binary Dependent Variable
Sixth topic: Gentle introduction to time-series
Second (last) written exam

Reference materials
Stock J.H. – M. W. Watson, Introduction to Econometrics, Boston: Adison Wesley, 2014

Requirements and examination information
The mathematical requirements for the class are minimal. Only a decent knowledge of algebra is assumed, as well as familiarity with the basic concepts of descriptive statistics (levels of measurement, probability, hypothesis testing). While learning these techniques often appears daunting, understanding and using them is not really that hard.

Course grades will be based on 2 (applied) written-exams to be done in class (1 per each part). Students will have to perform statistical analyses commenting on the results. Quick homework or in-class assignments could be assigned at the end of the class sessions and will be discussed together. Outline of the material covered in each class, when needed, will be made available prior to that class.

Further Information

Webpage
http://andreaceron.com/teaching