NASP

Network for the Advancement in Social and Political Studies

Academic Year 2018-2019

Applied multivariate analysis (40h – 6 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 modeling and addressing how to deal with violations of the basic linear model. In the second part we will introduce some more advanced techniques for quantitative analysis (including: time-series analysis; multilevel models; logit and probit). 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 session (20 hours-3 credits):
First part: Recap Multiple Linear Regression & Regression Diagnostics (Andrea Ceron)
Second part: Non-linear Regression Functions – Quadratic models (Andrea Ceron)
First written exam

Third part: Non-linear Regression Functions – Interaction models (Andrea Pedrazzani)
Fourth part: Issue of Non-Independence in Linear Models part 1 (Andrea Pedrazzani)
Second written exam

Second session (20 hours-3 credits):
Fifth part: Issue of Non-Independence in Linear Models part 2 (Andrea Pedrazzani)
Sixth part: Regression with a Binary Dependent Variable (Andrea Pedrazzani)
Third written exam
Seventh part: Time-series (Andrea Ceron)
Eighth part: Cointegration (Andrea Ceron)
Fourth (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 4 written-exams in the lab (2 exams for each Session). Work will be assigned for each class session and will be discussed in class. Everyone is expected to be prepared and to participate in class discussion. Outlines for the material covered in each class will be available prior to that class.

Further Information

Webpage
First Part:
http://andreaceron.com/teaching