

NASP

Network for the Advancement in Social and Political Studies

Academic Year 2022-2023

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: Addison 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>