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Syllabus Quantitative Methods
Dr. Achim Kemmerling
(Short Version)

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General Information

Convener	Dr. Achim Kemmerling
Department	SPP
Term	Winter 2016
Credits	2
prerequisites	none
Office	
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Teaching Assistant	Felipe G. Santos
e-learning	

Aim and structure of the course
For both academic scholars and practitioners of public policy skillful processing of information is a key qualification. Methodological and analytical knowledge is of paramount importance to evaluate policies on basis of available data: reports, expert opinions, descriptive or inferential statistics etc. This course introduces students to the basics of research design, and to the quantitative methods that can be used in addressing policy-relevant research questions. The class will give an overview of issues related to measurement, causal inference, quasi-experimental research, sampling and survey research, as well as practical skills in applying statistics.

Learning outcomes
The course has one major goal: To enhance students' 'passive' literacy of quantitative research methods. In this respect students will learn how to evaluate the adequacy of a given research method for a given research question. They will learn how to judge the quality of reports and academic studies on basis of typical flaws different research techniques may have. A second, minor goal is to give students some active skills and to show them how to apply techniques to original policy studies of their own.

Teaching, Requirements & Grading
- o The required reading usually comprises one textbook chapter. It is also required to read parts of a scholarly article as case studies (see 'cases' below'). Each student has to read at least one case study. The focus lies on the topic of the session, so it is not necessary to understand everything, especially not in the beginning.
- o There will be two homework assignments:
  - o The first assignment (HA1) consists of finding an interesting data source, describing its content and extracting some of its information with simple descriptive statistics and explorative graphs.
  - o The second assignment (HA2) consists of producing some simple tests with the database of HA1.

o   There will be 3 Multiple Choice tests at the beginning of the respective sessions. They will contain between 15 and 20 questions and test only the material from the textbooks & lectures (not, I repeat, not the cases).
o   Homework submitted late will have 0.133 point deducted for each day

2 Homework Assignments	50%
3 Multiple Choice Tests	30%
Class Participation	20%
Lab Sessions	Bonus

Some advice: Your success in this course will depend to a large extent on your keeping up with the material as it is presented. I strongly urge you not to fall behind because the material in the course is intensely cumulative. You will also benefit much more from the lectures if you read the assigned material before the class sessions.

General recommended readings:

Statistics
Course Textbook: (Meier, Brudney et al. 2006) hereafter MBB (Note: The syllabus is based on the 2006 edition. In the new edition, soon available in the library chapter order and numbers have changed. I put the chapter titles in brackets to help you find out which chapter is the reading for which class, in case you will use the newer edition.)
Further Reading:
Statistics/ Econometrics (Wooldridge 2003; Studenmund and Koffman 2005; Gravetter and Wallnau 2008), Methods (King, Keohane et al. 1994; Buttolph Johnson and Joslyn 1995; Frankfort-Nachmias and Nachmias 1996; Pollock 2005)

Detailed Overview

No.	Date	Topic
		Research Design
1		**Introduction**
		Introduction to course: course aims; basic concepts such as theories, variables, hypotheses; a class survey
		Readings: MBB 2 (measurement);
		Case on Corruption in Sumo Wrestling (Duggan and Levitt 2002) [Try to understand, how much you understand!],
2		**Research Design & Data Collection**
		Research process; role of theory; types of research design (experimental vs. non-experimental); types of research methods
		Readings: MBB 3 (research design);
		[What research design do the authors use? What is the set up? What are the limits and benefits of this research design?
		Basics
3		**Simple Descriptives**
		Introduction to SPSS, data presentation, mean, median, mode
		Readings: MBB 4 (frequencies); MBB 5 (measures of central tendency)
		Case on Google Books: How to study the content of books? (Michel and al. 2011),
4		**Measures of Dispersion**
		Descriptive statistics; measures of dispersion
		Readings:, MBB 6 (measures of dispersion);
		Case on Human Health: The history of body height and what it tells us about poverty (Bogin and Keep 1999),
		Lab Session different location and time!
		Intro to Inference
5		**Probability**
		Different quantitative techniques; introduction to statistical inference
		Readings: MBB 7-8 (probability, normal prob. distribution);
		Case on Education: On how to detect teachers cheating (Jacob and Levitt 2003) [How do the authors try to detect cheating? What kind of probabilities do they look at? How do they discern suspicious patterns?]
		HA1 deadline
6		**Hypothesis Testing**
		Nullhypothesis; logic of testing; simple t test;
		Readings: MBB 11-12 (Introduction to Inference, Hypothesis Testing);
		Case on International War: What ensures international peace? (Oneal and Russett 1999)
		[What is the Research Question, and what are the hypotheses? Are these good or bad hypotheses? How do they test them (not the details, pls.)]
7	2nd MC	**Bivariate Statistics and Cross-Tabulation**
		Comparisons of group means; cross-tabs; Chi2 statistics
		Case: Why did Polish people join EU? (Kemmerling 2008)
		No Class
		Regression Analysis
8		**Correlation and Introduction to Regression**
		Basic concepts; correlation; bivariate regression
		Readings: MBB 18 (Introduction to Regression);
		Case on Fertility: What does plow use tell us about fertility rates? (Alesina, Giuliano et al. 2011)

		[Try to interpret the basics of the tables? Focus on the key independent variable (plough use) ignoring other variables. What are the results, in terms of size and significance?]
		Lab Session different location and time!
9		**Assumptions of Regression Analysis** 5 classical assumptions; properties of an estimator Readings: MBB 19 (Assumptions); Case on EU money: Why do some EU regions get more money than others? (Bodenstein and Kemmerling 2008) [What theoretical and empirical reasons are there to think that normal regression analysis would not work? Don't even try to thoroughly understand the regression.]
10	3rd MC	**Multiple Regressions** Extension of bi-variate model; partial slope coefficients Readings: MBB 21 (multiple regression); Case on Unemployment: Why do countries differ in employment rates? (Nickell 1997) Case on the critique of Nickell 1997 (Howell, Baker et al. 2007) [Can you interpret the regression results? Do you believe them? Do you think the assumptions are valid?]
11		**Some extensions & Wrapping Up: time-series analysis and program evaluation** Readings: MBB 20 and 22 (time-series analysis and interrupted time series) Case on Climate: Is climate change a fact? (Crowley 2000; Karl and Trenberth 2003) [Don't panic! I do not understand the text either. But do you understand the empirical strategy of the authors? What is the general problem of forecasts with regressions? What assumptions are violated?]
		HA2 due

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