Testi del Syllabus

Resp. Did.	**PAPPALARDO CARMINE**	**Matricola: 352096**

Docenti	**PACIFICO ANTONIO, 0 CFU** **PAPPALARDO CARMINE, 8 CFU**

Anno offerta:	**2017/2018**
Insegnamento:	**M209 - QUANTITATIVE METHODS FOR POLICY EVALUATION**
Corso di studio:	**LM2PG - GOVERNO E POLITICHE**
Anno regolamento:	**2017**
CFU:	**8**
Settore:	**SECS-S/03**
Tipo Attività:	**B - Caratterizzante**
Anno corso:	**1**
Periodo:	**Primo Semestre**

🇬🇧 Testi in inglese

	The course introduces students to the quantitative evaluation of public policies. The theoretical treatment of the course contents is accompanied by applications to real cases for the evaluation of policy interventions. Exercises, empirical exercises, case studies concerning the quantitative evaluation of public policies based on real data, also using statistical and econometric packages, are proposed.
	Descriptive Statistics. Statistical variables. Frequency distributions. Data Graphical representations. Measures of position. Variability. Basics of Probability theory and Common Probability distributions. Basics of Statistical Inference. For information on how to obtain teaching material and assistance on the Prerequisites please contact the Department (scienzepolitiche@luiss.it)
	Review of probability and random variables. Review of statistical inference. The simple regression model. The multiple regression model. Regression with a binary dependent variable. Instrumental variables estimation and two stage least squares. Causal inference for the quantitative evaluation of public policies. Statistical matching. Difference in differences. Regression discontinuity.
	Introduction. Counterfactual analysis of treatment effects. Evaluating EU Expenditure Programmes: A Guide (European Commission) Chapter 1. Economic Questions and Data 1.1 Economic Questions We Examine 1.2 Causal Effects and Idealized Experiments 1.3 Data: Sources and Types Chapter 2 Review of Probability 2.1 Random variables and Probability Distributions Probability, the

Random Space and Random Variables
2.2 The Expected Values, Mean and Variance

Fundamentals of Probability (Appendix B: B1, B3. Introductory Econometrics - Wooldridge)

Chapter 2 Review of Probability

2.3 Two Random Variables
(Joint and Marginal Distributions, Conditional Distributions, Independence, Covariance and Correlation, The Mean and Variance of Sums of Random Variables)
2.4 The Normal, Chi-squared, Student t, and F Distributions
2.5 Random Sampling and the Distribution of the Random Average Random Sampling
2.6 Large-Sample Approximations to Sampling Distributions

Fundamentals of Probability (Appendix B: B2, B4, B5. Introductory Econometrics - Wooldridge)

Teacher's Notes

Exercises, empirical exercises, case studies on the quantitative evaluation of public policies based on real data, also using statistical and econometric packages.

Chapter 3 Review of Statistics

3.1 Estimation of the Population Mean
3.2 Hypothesis Tests Concerning the Population Mean
3.3 Confidence Intervals for the Population Mean
3.4 Comparing Means from Different Populations
3.5 Differences of Means Estimation of Causal Effects Using Experimental Data
3.6 Using the t-Statistic when the Sample Size Is Small
3.7 Scatterplots, the Sample Covariance and the Sample Correlation

Teacher's Notes

Exercises, empirical exercises, case studies on the quantitative evaluation of public policies based on real data, also using statistical and econometric packages.

Chapter 4 Linear Regression with One Regressor

4.1 The Linear Regression Model
4.2 Estimating the Coefficients of the Linear Regression Model
4.3 Measures of fit
4.4 The Least Square Assumptions
4.5 Sampling Distribution of the OLS Estimator

The simple regression model (Chapter 2 Introductory Econometrics - Wooldridge).
2.1 Definition of the Simple Regression Model
2.2 Deriving the Ordinary Least Square Estimates.

Exercises, empirical exercises, case studies on the quantitative evaluation of public policies based on real data, also using statistical and econometric packages.

Chapter 5 Regression with a Simple Regressor: Hypothesis Tests and Confidence Intervals

5.1 Testing Hypothesis About One of the Regression Coefficients
5.2 Confidence Interval for a Regression Coefficient
5.3 Regression when X Is a Binary Variable
5.4 Heteroskedasticity and Homoskedasticity

Chapter 6 Linear Regression with Multiple Regressors

6.1 Omitted Variables Bias
6.2 The Multiple Regression Model
6.3 The OLS Estimator in Multiple Regression

Omitted Variable Bias: The Simple Case (Section 3.3 Introductory Econometrics - Wooldridge)

Exercises, empirical exercises, case studies on the quantitative evaluation of public policies based on real data, also using statistical and econometric packages.

Chapter 6 Linear Regression with Multiple Regressors

6.4 Measures of Fit in Multiple Regression
6.5 The Least Square Assumptions in Multiple Regression
6.6 The distribution of OLS Estimators in Multiple Regression
6.7 Multicollinearity

Chapter 7 Hypothesis Tests and Confidence Intervals in Multiple Regression

7.1 Hypothesis Tests and Confidence Intervals for a Single Coefficient
Standard Errors for the OLS Estimators
Hypothesis Tests for a Single Coefficient

Exercises, empirical exercises, case studies on the quantitative evaluation of public policies based on real data, also using statistical and econometric packages

Chapter 7 Hypothesis Tests and Confidence Intervals in Multiple Regression

7.2 Test of Joint Hypothesis
Testing Hypothesis on Two or More Coefficients
The F-Statistic
7.6 Analysis of Test Scores Data Set

Chapter 8 Nonlinear Regression Functions

8.3 Interactions Between Independent Variables

Exercises, empirical exercises, case studies on the quantitative evaluation of public policies based on real data, also using statistical and econometric packages

Chapter 11 Regression with a Binary Dependent Variable

11.1 Binary Dependent Variables and the Linear Probability Model
Binary Dependent Variables
The Linear Probability Model
11.2 Probit and Logit Regression
11.4 Application to the Boston HMDA Data Set

Chapter 12 Instrumental Variables Regression

Instrumental Variables Estimation and Two Stage Least Squares (Chapter 15, Introductory Econometrics - Wooldridge)

15.1 Motivation: Omitted Variables in a Simple Regression Model
15.2 IV Estimation of the Multiple Regression Model
15.3 Two Stage Least Squares

Exercises, empirical exercises, case studies on the quantitative evaluation of public policies based on real data, also using statistical and econometric packages

Chater 13 Experiments and Quasi-Experiments

13.1 Potential Outcomes, Causal Effects and Idealized Experiments
Potential Outcomes and Average Causal Effects

Econometric Methods for Analyzing Experimental Data
13.2 Threats to Validity of Experiments
13.3 Experimental Estimates of the Effect of Class Size Reduction

Statistical Matching
(supplemented with Teacher's Notes and published journal articles)

Exercises, empirical exercises, case studies on the quantitative evaluation of public policies based on real data, also using statistical and econometric packages

Chapter 13 Experiments and Quasi-Experiments

13.4 Quasi-Experiments

The Difference in Differences Estimator
(supplemented with Teacher's Notes and published journal articles)

Exercises, empirical exercises, case studies on the quantitative evaluation of public policies based on real data, also using statistical and econometric packages

Chapter 13 Experiments and Quasi-Experiments

13.4 Quasi-Experiments

Regression Discontinuity Estimator
(supplemented with Teacher's Notes and published journal articles)

Exercises, empirical exercises, case studies on the quantitative evaluation of public policies based on real data, also using statistical and econometric packages

Summary exercises

James H. Stock and Mark W. Watson, "Introduction to Econometrics", updated third edition, Pearson (This is the main textbook).

Jeffrey Wooldridge, "Introductory Econometrics", fifth edition, South Western (selected Sections of this textbook are available on the course website)

Teacher's notes

Suggested readings:

Joshua D. Angrist and Jörn-Steffen Pischke, (2009) "Mostly Harmless Econometrics: An Empiricist's Companion", Princeton University Press.

Dehejia R.H. and S. Wahba (1999), Causal Effects in Nonexperimental Studies: Reevaluating the Evaluation of Training Programs, JASA.
(Statistical Matching; available on the course website).

Card D. e A,B, Krueger (1994), Minimum Wages and Employment: A Case Study of the Fast-Food Industry in New Jersey and Pennsylvania, AER.
(Difference in Differences; available on the course website).

LaLonde, R.J. (1986), Evaluating the Econometric Evaluations of Training Programs, American Economic Review, 76, 604-620.
(Difference in Differences; available on the course website).

Angrist J.D. and V. Lavy (1999), Using Maimonides' Rule to Estimate the Effect of Class Size on Scholastic Achievement, QJE.
(Regression Discontinuity; available on the course website).

Mancini M. and C. Pappalardo (2006), Evaluating the Impact of Labour Market Regulation on the Size Growth of Italian Firms, Politica Economica, Vil. XXii, No. 3.

(Regression Discontinuity; available on the course website).

"EU Expenditure Programmes. A Guide. Ex Post and Intermediate Evaluation"; European Commission, (1997) (available on the course website).

"Ex Post Evaluation of Cohesion Policy Programmes 2000-2006 Financed by the European Regional Development Fund", (GEFRA-IAB Final Report 2010) (available on the course website).

"Counterfactual Impact Evaluation of Cohesion Policy. Impact and Cost Effectiveness of Investment Subsidies in Italy", Final Report to DG Regional Policy (2012) (ASVAPP) (available on the course website).

Unless otherwise stated, the headings of the Chapters and Sections refer to the textbooks.

Lectures, exercises, applied exercises, case studies concerning the quantitative evaluation of public policies based on real data, also using statistical and econometric packages.

The final examination is the in the form of a written exam, consisting of both theoretical and empirical questions; during the final exam, it is not allowed to consult books or class notes.

A midterm written assessment will be held in the week 2-8 november and a final written assignment in the last week of the course. Students attending the course are requested to solve 4 problem sets, two before the midterm written assessment and two before the final written assignment. The submission of the 4 problem sets is necessary to take the written assessments. The final grade is computed as the arithmetic average of the grades obtained on the 6 assessments. If the student is not satisfied with the assigned grade, she/he may not accept the grade and take the full exam. If the student who takes the exam does not withdraw within one hour from the end of test, the student will be not allowed to re-take the exam at the following exam date within the same session ("salto d'appello"). During the final exam, each candidate will be asked to show a document with a picture (preferably, the university record book). Phones, electronic organizers etc. should be switched off. It is appropriate to use a calculator.

WRITTEN EXAMINATION: this type of examination ("scritto verbalizzante") consists in a written exam without a subsequent oral examination. The student must book for the written test. At the end of the final examination, the teacher corrects the homeworks and publishes the results
on the dedicated VOL web page (within one week from the end of the exam date).

The students enrolled in the final exam will receive a communication with the grade earned on the written examination (the grade earned in the written examination will also be displayed on the web self service).

Since the publication of the results, each student has 3 days to reject the assigned grade. Once the 3-day period is elapsed, the rule of "tacit consent" ("silenzioassenso") applies, and the assigned grade is verbalized by the teacher. The teacher must close down the verbal through the digital signature.

Once the verbal is closed down, the grade earned is released to the student through an e-mail communication. The text of the written exam and the corresponding solution are made available on the course website before the publication of the grades. Each candidate, regardless of the final outcome of the examination, can access the solution of the written exam on a date set by the teacher, so that the student will be on time and able to not accept the assigned grade.

The final paper is a research paper in which statistical methods are applied to the evaluation of public policies.