



Università degli Studi di Cagliari

DIPARTIMENTO DI SCIENZE ECONOMICHE ED AZIENDALI

Direttore Prof. Rinaldo Brau

Corso di Dottorato in Scienze Economiche e Aziendali – XXXIX ciclo

Econometric Analysis

Course leader: Emanuela Marrocu

Instructors: Ludovica Giua, Emanuela Marrocu and Marco Nieddu

Aims of the course

The course aims to develop students' ability to understand, critically assess and carry out econometric analysis at an advanced level.

Organization of the course

The course consists of 36 hours of lectures (9 CFU) divided into three modules of 12 hours each.

Lectures will run in-person with the possibility of a synchronous transmission in Teams. Lectures will be complemented by lab classes during which students will get familiar with statistical and econometric software to be used in applied analyses.

The *Teams class* is named after the course "Econometric Analysis – PhD in Economics and Business_XXXIX cycle". First year PhD students are made members by using their UniCa email account. Students can access the *Teams* application by using the same account.

Learning outcomes and competences

At the end of the course students will have acquired knowledge of the core econometric methods and the ability to critically understand the relevant economic literature. Students will have also acquired practice with software packages and the ability to develop empirical strategies to be applied in their own research work.

Pre-requisites

The course assumes that students have already acquired the knowledge and skills taught in postgraduate-level courses of Statistics, Mathematics and Econometrics. Students are expected to be familiar with the concepts related to (all pre-requisites are essential):

- linear algebra
- probability theory
- how to draw inference on the population from sample evidence
- linear regression model and Ordinary Least Squares estimation method
- linear restrictions, how to deal with violations of the assumptions of classical linear regression model

Moreover, it is also assumed that students are already familiar with basic data management procedures and the use of spreadsheet applications (e.g. Excel).


Course contents and syllabus

Module A – instructor Marco Giovanni Nieddu	
<p>Week 1 - 29 January - 2 February</p> <p>Wednesday 31 January: 10.00-13.00 Aula Anfiteatro</p> <p>Thursday 1 February: 10.00-13.00 Aula Anfiteatro</p> <p>Total hours: 6</p>	<p><i>Introduction to causal inference</i></p> <ul style="list-style-type: none"> ● Potential outcomes causal model ● Estimating causal effect using experimental data and RCT ● Applications using Stata
<p>Weeks 2 - 5-9 February</p> <p>Wednesday 7 February: 10.00-13.00 Aula Anfiteatro</p> <p>Thursday 8 February: 10.00-13.00 Aula Anfiteatro</p> <p>Total hours: 6</p>	<p><i>Quasi-experiments</i></p> <ul style="list-style-type: none"> ● IV approach ● Regression discontinuity design ● Applications using Stata
Module B – instructor Ludovica Giua	
<p>Week 3 - 12-16 February</p> <p>Wednesday 14 February: 10.00-13.00 Aula 12</p> <p>Friday 16 February: 10.00-13.00 Aula 12</p> <p>Total hours: 6</p>	<p><i>Panel data models</i></p> <ul style="list-style-type: none"> ● Pooled OLS ● Fixed effects ● Applications using Stata
<p>Week 4 - 19-23 February</p> <p>Wednesday 21 February: 10.00-13.00 Aula 12</p> <p>Friday 23 February: 10.00-13.00 Aula 12</p> <p>Total hours: 6</p>	<p><i>Design of difference-in-differences</i></p> <ul style="list-style-type: none"> ● Basic DID ● Generalized DID ● Applications using Stata
Module C – instructor Emanuela Marrocu	
<p>Weeks 5 - 26 February - 1 March</p> <p>Thursday 29 February: 10.00-13.00 Aula 2</p> <p>Friday 1 March: 10.00-13.00 Aula 2</p> <p>Total hours: 6</p>	<ul style="list-style-type: none"> ● Spatial dependence and spatial spillovers ● The Spatial weight matrix ● Spatial models for cross-section data: from the linear to the general spatial nesting model ● Model selection and estimation methods ● Applications using Stata
<p>Weeks 6 - 4 March - 8 March</p> <p>Thursday 7 March: 10.00-13.00 Aula 2</p> <p>Friday 8 March: 10.00-13.00 Aula 2</p> <p>Total hours: 6</p>	<ul style="list-style-type: none"> ● Direct, indirect and total effects ● The Spatial weight matrix ● Spatial models for panel data ● Applications using Stata



Assessment methods

The assessment is based on a paper assignment (50%) and an oral discussion (50%).

Reading list

- Cunningham, S., Causal Inference: The Mixtape, Yale University Press, 2021.
- Elhorst J. P. (2014), Spatial econometrics. From cross-sectional data to spatial panels. Heidelberg: Springer
- LeSage, J. P. and Pace, R. K. (2009) Introduction to Spatial Econometrics, Boca Raton, CRC.
- Verbeek M., A Guide to modern econometrics, 5th edition, Wiley 2017.
- Wing C., Simon K., Bello-Gomez R.A., Designing difference in difference studies: best practices for public health policy research. Annual Rev Public Health 2018; 39: 453– 69.
- Wooldridge J.M., Introductory Econometrics: A Modern Approach, 5th edition, Thompson South-Western, 2013;
- Wooldridge J.M., Econometric Analysis of Cross Section and Panel Data, 2nd edition, MIT Press, 2010.

For reviewing pre-requisites notions:

- Stock J.H. and M. Watson, Introduction to Econometrics, fourth edition, Pearson, 2019.