

The Italian Econometric Society (SIdE) in collaboration with the Venice centre in Economic and Risk Analytics for Public Policies (VERA) Ca' Foscari University of Venice organizes the course for PhD students in:

Networks Econometrics

28 June - 3 July 2021

Coordinator

Roberto Casarin

Address: Dept. of Economics, University Ca' Foscari of Venice
San Giobbe 873/b, 30121 Venezia, Italy

Phone: +39 041.234.91.49

E-mail: r.casarin@unive.it

Lecturers

- Monica Billio
Ca' Foscari University of Venice
<http://venus.unive.it/billio/>
- Roberto Casarin
Ca' Foscari University of Venice
<http://venus.unive.it/r.casarin/>
- Matteo Iacopini
Vrije University of Amsterdam
<https://matteoiacopini.github.io/>
- Sergio Petralia
Utrecht University and London School of Economics
<https://sergiopetralia.wixsite.com/research>

Luca Rossini

University of Milan

<https://lucarossini.wixsite.com/luca-rossini>

Course Outline

1. Graph Theoretic Foundation of Networks

1.1 Definitions

1.2 Graph Connectivity

1.3 Multilayer-networks

1.4 Tutorial 1: Introduction to R (Data manipulation and regression)

1.5 Tutorial 2: Network mapping and visualisation in R

1.6 Tutorial 3: Text mining and visualization in R

2. Network Extraction Methods

2.1 Graphical Models

2.2 Parametric sparse regression models

2.3 Nonparametric sparse regression models

Tutorial 4: Extraction of Financial Networks in Matlab

Tutorial 5: Network visualization with Gephi

3. Temporal Network Models

3.1 Tensor decomposition

3.1 Dynamic Tensor Models

3.2 Markov-switching Tensor Models

Tutorial 6: Application to COMTRADE and Financial Networks in Matlab

4. Multi-layer Network Models

4.1 Definition and analysis

4.2 Extraction

Tutorial 7: Application to Oil Linkages Networks in Matlab

5. Stochastic-Block Models

5.1 Definition and inference

5.2 Application to Financial Networks

Reference textbooks and suggested readings:

Introductory references

- Jackson, M.O. (2008) Social and Economic Networks, Princeton University Press.
- Diebold, F. and Yilmaz, K. (2015), Financial and Macroeconomic Connectedness: A Network Approach to Measurement and Monitoring, Oxford University Press.
- Bollobas, B. (1998), Modern Graph Theory, Springer.

Further references

- Jensen, F. (1996), An Introduction to Bayesian Networks, Springer-Verlag
- Lauritzen, S. (1996). Graphical Models, Oxford University Press
- Pearl, J. (1998). Probabilistic Reasoning in Intelligent Systems: Networks of Plausible Inference.
- Whittaker, H. (1990). Graphical Models in Applied Multivariate Statistics, John Wiley.

SOFTWARE USED FOR THE APPLICATIONS: MATLAB and R

Participants will use their laptops with MATLAB, R and GEPHI already installed on them.

Venue and timetables

The Course requires full-time attendance, and participation is not compatible with other jobs at the same time (e.g. preparation of other exams). Lectures and tutorials will be in English, with the following schedule (provisional):

- Monday to Friday: lectures: 9.00-13.00, 15.00-18.00.
- Saturday: lectures: 9.00-13.00.

Fees and Enrollment

- Students, new graduated students, PhD students and temporary university staff: 340 euro
- University staff: 450 euro
- Others: 1500 euro

In case of enrollment in two or more courses, for a maximum of three, Student and Staff participants are entitled to a discount of 100 euros on each course. Other participants are entitled to a discount of 300 euros on each course.

* The amount due by Master and PhD students from University of Ca' Foscari is 30 euro, since the rest of the fee is sponsored by the Venice centre in Economic and Risk Analytics for Public Policies (VERA)

Contacts

- For more information: Laura Urraci e-mail: info@side-iea.it
- For administrative issues : Laura Urraci (admin@side-iea.it), Alessandra Picariello (alessandra.picariello@unibo.it), phone: [+39 0512092637](tel:+390512092637)

Sponsors

- VERA Center at University Ca' Foscari of Venice