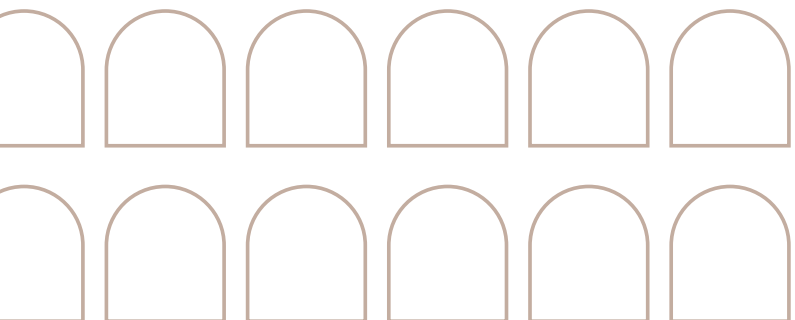


# NETWORK ANALYSIS IN FINANCE AND ECONOMICS

Online Course,  
28 March - 13 April 2022



Over the last years, network analysis has become an active topic of research, with numerous applications in macroeconomics and finance. In a nutshell, network analysis is concerned with representing the interconnections of a large panel as a graph: the vertices of the graph represent the variables in the panel, and the presence of an edge between two vertices denotes the presence of some appropriate measure of dependence between the two variables. Dependence can derive from direct exposures or from indirect or common exposures. From an economic perspective, the interest on networks has been boosted by the research of, inter alia, Acemoglu et al. (2012), which shows that individual entities can have a non-negligible effect on the aggregate behaviour of the economy when the system has a high degree of interconnectedness. Especially since the 2008 global financial crisis, the interest in analysing the role of network structure in transmitting – or dissipating – stress has grown significantly.

In this course, participants will be introduced to the theoretical framework and literature behind network analysis techniques for applications in finance and economics. Practical application of the methodologies will be presented in the form of examples, case studies and exercises. These sessions will be supported by code written in Python, with some parts available also in R.

## KEY INFO

PLACE	DATES	AREA	LEVEL	TARGET
Online Course	28 March 13 April 2022	Statistical and Econometric Methods	Intermediate	EU Officials (ECB, SSM, SRB, ESRB, EBA, ESM), National Supervisory Authorities, Financial Stability officers, Economics Departments And Forecasting Departments of Central Banks, Ph.D. and Post-doctoral researchers, Research department officers of private banks.

## Course Instructors



**Christian Brownlees**

Universitat Pompeu Fabra and  
Barcelona GSE

Christian Brownlees is an Associate Professor in the Department of Economics and Business at the Universitat Pompeu Fabra.

Christian's research lays at the intersection of statistics, econometrics, economics and finance. In particular, his research focuses on volatility and systemic risk.



**Iman van Lelyveld**

VU University and DNB

Iman van Lelyveld is a Senior Policy Advisor with DNB's Statistics Division and Professor of Banking and Financial Markets at the Finance Group of the VU Amsterdam.

At DNB he is spearheading the Data Science Hub initiative. He has published widely on international banking and financial networks.

## FBF Team



**Natalie Kessler**

Teaching Associate



**Jan Trevisan**

Course Designer

## WHAT YOU WILL LEARN

After having completed this course, you will be able to:

- Understand the basic concepts of network theory, including: vertices, edges, network
- properties, random graphs, etc.
- Derive theoretical results about stability in interbank networks
- Model contemporaneous dependence in large panels of time series
- Estimate large dimensional network models (using LASSO estimation)
- Identify the reasons for contagion via indirect exposures
- Select the most appropriate tools for the estimation of large network models
- Distinguish between different network structures
- Identify network structures such as hubs and communities
- Use network models in practical policy applications.

## MODULES

Networks Basic Concepts  
Direct exposure networks  
Direct contagion: the classics  
Capturing network structure  
Indirect exposure networks  
Crowded trading  
What are the policy implications  
Network Models for Large Panels

# COURSE SCHEDULE

## 28 MAR. 2022

### Opening of the course

Kick off live session,  
Mon 28 March, 1.00 PM-2.45 PM

## 28 MAR. - 05 APR 2022

Self-paced progression throughout  
video lectures on the course modules

## 06 APR. - 13 APR. 2022

You will apply the theory into practice  
by participating in a series of live  
lectures and exercises, as well as  
individual assignments.

## Live online sessions

All times are in CET

1st Live Session:  
Wed 06 April, 12.00 PM-2.00 PM

2nd Live Session:  
Mon 11 April, 12.00 PM-2.00 PM

Closing Live Session:  
Mon 11 April, 01.00 PM-2.00 PM

The course will require  
15-18 hours to complete  
all mandatory activities

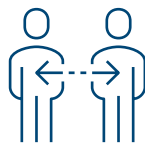
## ACTIVITIES

- Watch video lectures, pre-recorded, mandatory
- Participate in the live classes, mandatory
- Complete two exercises, mandatory
- On the platform: access to readings and discussion fora.

Optional: Exercises and one-to-one contacts with instructors in 'virtual office hours'



Video Lectures



Direct Interactions



Discussions



Quizzes



## ABOUT EUI AND RSCAS

The European University Institute (EUI) is a unique international centre for doctorate and post-doctorate studies and research, situated in the Tuscan hills overlooking Florence.

Since its founding in 1972 by the six original members of the then European Communities, the EUI has earned a reputation as a leading international academic institution with a European focus. The four departments – Economics, History and Civilization, Law, and Political and Social Sciences – host scholars from more than 60 countries.

The EUI hosts also the Max Weber Programme, the largest postdoctoral programme in social sciences in Europe, and the School of Transnational Governance (STG), which trains tomorrow's leaders on the concepts, methods and practices of governance beyond the state.

Furthermore, the EUI is the home of the Robert Schuman Centre for Advanced Studies (RSCAS), focused on interdisciplinary, comparative and policy research on the major issues affecting European societies.

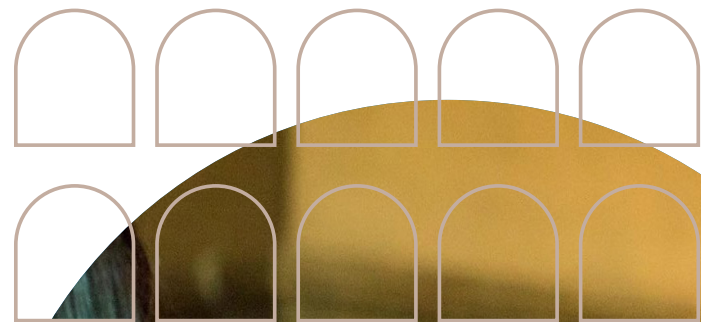
**FBF will bring the EUI experience on your devices!**

## ABOUT FBF

The Florence School of Banking & Finance (FBF) is a European platform bringing together practitioners and academics from the Banking and Finance sector to develop a common culture of regulation and supervision in the European Union.

Established in January 2016 as part of the EUI's Robert Schuman Centre for Advanced Studies, the FBF organises training and policy dialogue activities, in close interaction with its network of leading academic institutions, both in the residential and online formats.

Together with its partners, the School helps experts and decision-makers to take informed decisions in the medium and long-term, critically accompanying the economically and socially sound functioning of the European banking sector.



# FBF ONLINE ACTIVITIES

**+14000**

Attendees to online activities to the online seminars

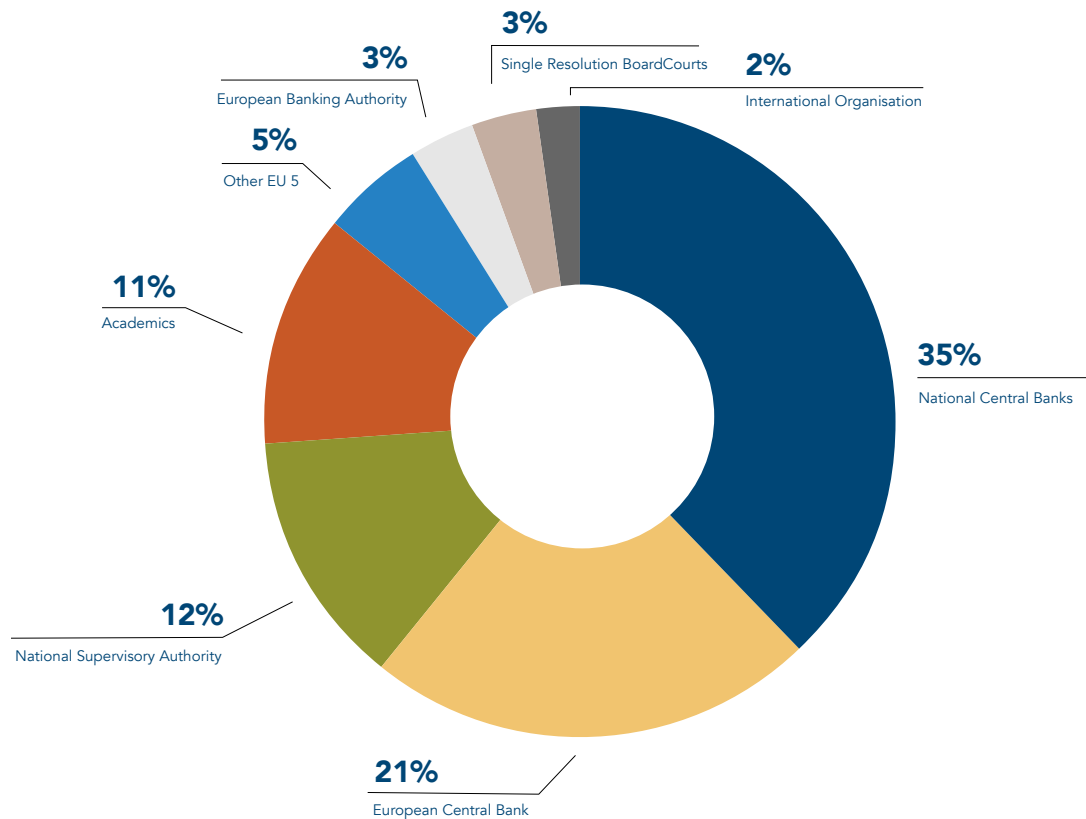
**+1200**

Participants for the online courses.

## COLLABORATIONS WITH

European Commission, European Central Bank, European Securities and Markets Authority, Bruegel, Oliver Wyman, Pierre Werner Chair, Center for Economic Policy Research and more.

## Types of Trained Institutions



## Training participants since 2016

**92+** courses

**3200+** participants

**190+** instructors

**75+** countries represented

**370+** organisations of origin

## FEES AND INFO

- **945€ Early bird fee** (Standard fee 1050€) - Private Sector.
- **855€ Early bird fee** (Standard fee 950€) -Public Authorities (e.g. National Competent Authorities, Central Banks and European Institutions).
- 750€ - Academics (Full-time Professors, full-time PhD Students and full-time Research Associates).  
Please submit a certificate attesting your status of Professor, PhD Student or Research Associate to [fbf@eui.eu](mailto:fbf@eui.eu) before registering. FBF secretariat will provide you with a code to register.  
*\*Seats for academics are limited and assigned by the FBF secretariat on a case-by-case basis.*

**Early bird fee applies until 15 February 2022**

**Registration deadline: 24 March 2022**

Please note that the payment must be settled one week before the start of the course.

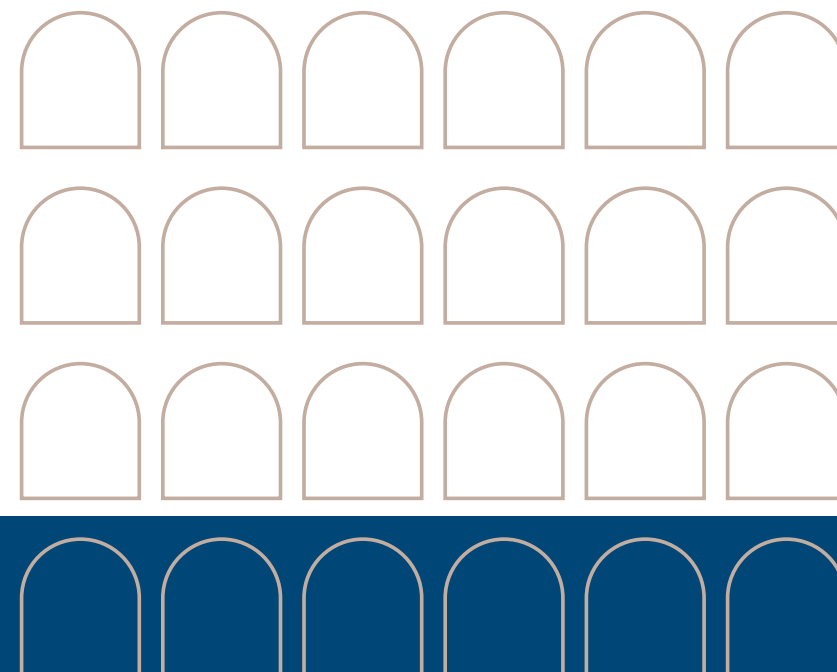
Limited seats per institution

A certificate of attendance will be provided to all participants after the course.

## PREREQUISITES

- Master's Degree in Economics
- Basic knowledge of coding in Python

The course will not require active coding, but participants should be able to understand and execute existing code.



## CONTACTS

Florence School of Banking and Finance,  
Robert Schuman Centre for Advanced Studies,  
European University Institute  
Villa Raimondi, Via Boccaccio 121/111  
Florence, Italy

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For more information on this course, see the [webpage](#)

